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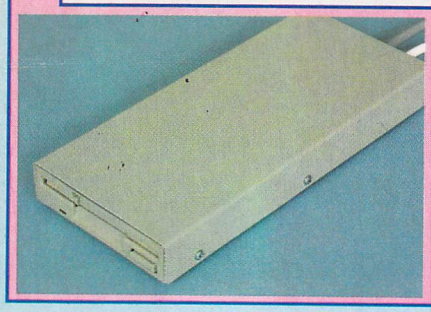

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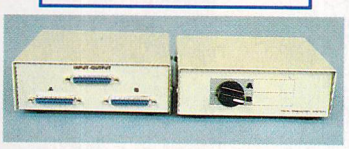

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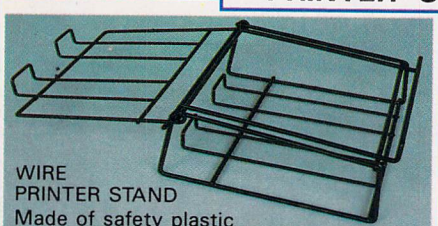

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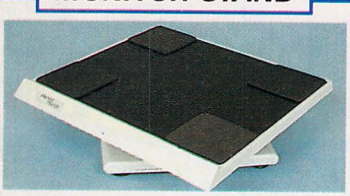

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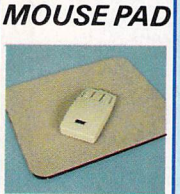

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We look back over the film conversions of 1989 – were they as good as the hype implied? – and test two top box office smash hits: Batman and Ghostbusters II

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ACE MAGAZINE • DECEMBER 89

So it's carry on hacking

THE strong anti-hacking lobby has been surprised and shocked over what is considered a glaring omission from the Government's proposed legislation.

Three new criminal offences recommended by the Law Commission in October were expected to be brought in during the next parliamentary term but the Queen's speech at the state opening contained no mention of new laws to curb hacking.

While Secretary of State for Trade and Industy Nicholas Ridley commended the Law Commission report on computer misuse and recognised that it is a nettle which must be grasped, he has surprisingly failed to act.

A spokeswoman for the Department of Trade and Industry said Mr. Ridley was still of the opinion that the Law Lords report would make a firm basis for new legislation and the official government line is still that computer misuse remains an important issue which must be dealt with.

"In terms of the Queen's speech, the government has a heavy legislative programme for this session and other matters have taken precedence", she said.

Reflecting the strong lobby for action on computer misuse, the goverment has said it will give all its support and help to any individual wishing to raise a private member's bill based on the Law Commission's recommendations.

The Law Lord's report suggested three new criminal offences to combat hacking. First is a basic offence of unauthorised entry into a computer system which would apply to anyone who enters another's computer either for fun or to try and interfere with it. This would be punishable with a maximum of three months imprisonment.

Second comes a more serious offence of unauthorised entry into a computer system with intent to commit or assist in the commission of a serious crime and third is an offence of intentionaly altering computer-held data or programs. Both of these would carry a possible five year jail sentence.

When the Law Commission's report was published, Mr. Ridley said: "I am inclined to accept the Commission's recommendations. The Government considers that legislation should be brought forward when a suitable opportunity arises".

The Virgin adventurer

A NUMBER of new adventure, fantasy role playing projects will be the main responsibility for David Bishop (right) who has been appointed product manager by Virgin Mastertronic. He will be working for the Melbourne House label.

David's background ranges from games design and product management for Andromeda to instigating the first 16-bit reviews in C&VG, setting up his own games design company and recently working as European project manager for Epyx.

CASH SQUEEZE IS HITTING SALES

SALES figures for more than half of the country's top 250 computer dealers have been affected by high interest rates and 78 per cent have a pessimistic view of the future if borrowing remains expensive.

These are some of the findings in the latest Top 250 dealer report from market researchers Romtec.

As part of its regular dealer report, Romtec carried out a supplementary analysis into the effects of increased interest rates on end-user sales in the computer industry.

Dealers were asked if the rates had affected their sales to end users in the summer quarter. More than 55 per cent said sales had been impacted. Of those, one half felt that the effect was marginal and the remainder said the effect was moderate or even considerable.

There was a pessimistic view of the future with 78.3 per cent anticipating detrimental effects if high interest rates continue. Over one third of dealers included in the survey felt that sales were depressed in budget-conscious sectors such as the consumer or retail markets. Fifteen per cent felt business levels had been affected considerably in the last quarter, 45.7 per cent felt they had been affected marginally and 39 per cent spoke of moderate problems.

Three in four of the top dealers said profit margins had been squeezed. Those whose margins had not been affected felt this was due to the value added nature of their service.

Multi-tasking on its way

ST software developers attending Comdex Fall in Las Vegas were disappointed not to be shown a final prototype of the STE series.

Developers were pacified, however, with the release of the preliminary specifications of a multi-tasking package for the ST, STE and TT series. The as yet un-named program is expected to be released by Atari in the next few months.

The new software runs under TOS 1.4, the new version of the ST's operating system that is beginning to find its way into the ST user community.

The multi-tasking package was developed by Atari and allows several programs – subject only to the available ram on the ST – to run concurrently under Gem. No memory partitioning is needed by the program, meaning that the ST at last begins to match the Commodore Amiga in terms of multi-tasking.

Nice timing

EVEN before its release, Future Wars: Time Travellers from Palace Software (01-278 0751) received two prizes at the Tilt d'Or awards in Paris. It was named best adventure and judged to have the best soundtrack.

Other games receiving awards at the ceremony included Populous (best strategy), Silkworm (best shoot-'em-up), Shadow of the Beast (best graphics), Falcon (best flight simulator), Kick-Off (best sports) and Strider (best arcade conversion).

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ST calling...

IT may not tell you to fasten your seat belt but your ST could soon be voicing other commands thanks to David Sands, the man responsible for the first talking car dashboard.

From his company Sands Technology (0223 420288) has come Speakeasy II, a phonetic speech synthesiser which makes it easy and cost effective to add synthetic speech to computers. It produces clear and natural speech by programming a model of the human vocal tract.

The new programing method includes a unit called Starpabet, a spelling system which puts the user in control of such things as pronunciation and inflexion.

Speakeasy II can function as an RS232 peripheral or as a standalone unit.

It has its own HM64180 microprocessor and battery backed CMOS ram for holding several messages which can then be spoken by simply shorting a digital input to ground. As a complete boxed unit it costs £402. As a board needing 12 Volt supply and a loudspeaker it costs £310.

Shopper Show goes a bomb

THEY came, they queued, they jostled and they went away with armfuls of Christmas bargains. Including trade passes, some 30,000 visitors packed into Alexandra Palace for the three days of the Computer Shopper Show making it the most successful pre-Christmas computer bonanza to date.

Support for the cross-format show took everyone by surprise with congested roads, clogged car parks and massive queues.

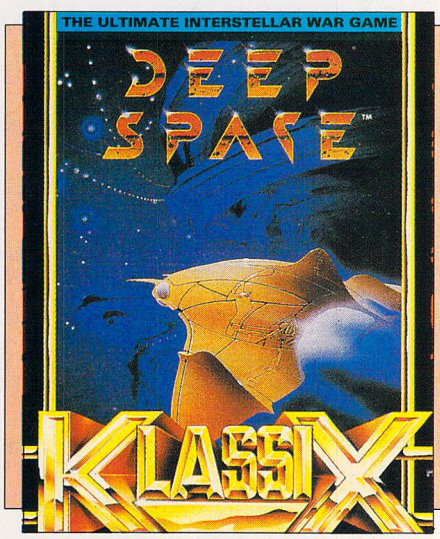
On more than one occasion the doors had to be temporarily closed and toward the end of the final day 3,000 hopefuls had to be turned away. Organisers Database Exhibitions and sponsors Computer Shopper magazine were forced into the unusual decision of putting out appeals on both Capital Radio and LBC begging people not to come to the show.

Buskers were brought in to entertain the queues and in the Palm Court the world's largest Christmas stocking was soon filled with balloons paid for by donations to the Childline charity.

Bargains were the main order of the three days and the cash flow across the counters was in continual spate much to the joy of the 200 exhibitors. Despite this, DTI staff who manned the small business stand reported reasonable numbers of people wanting to know more about their Enterprise Initiative schemes and the handful of more serious exhibitors still had their share of interest.

Next year's event is scheduled for December 7 to 9 at Wembley Conference Centre.

"The new venue will allow us an increased capacity and we are currently looking into extending the hours and possibly increasing the numer of days so that we can cater for up to 50,000 visitors", said head of Database Exhibitions Michael Meakin.



On a budget

DEEP Space and Solomon's Key are the two latest budget re-releases from Klassix (0260 299023).

Licensed from Psygnosis, Deep Space is an interstellar adventure including both warfare and exploration. Solomon's Key poses the problems of finding King Solomon's riches while fighting off fat parrots and jellyfish. Both cost £9.99.

SOFTWARE HOTLINE

ATARI ST users are being catered for at the 16 Bit Computer Fair to be held at the Royal Horticultural Halls, London on January 12, 13 and 14. Organised by Westminster Exhibitions (01-549 3444), the event is expected to boast 90 stands with an expected 20,000 visitors.

★ ★ ★

FANTASY role-playing game Starflight is due for imminent release on the ST by Electronic Arts (0753 49442). Set in the year 4619, it gives the player the mission of finding colonizable worlds, gathering minerals and ancient artefacts and learning the secrets of alien races.

It boasts 270 star systems, 800 planets, 1.9 million locations per planet and 1.5 billion locations throughout the galaxy. Price £24.99.

★ ★ ★

WOULD-BE aviators can now experience greater realism in their ST flights of fantasy thanks to Sublogic (0494 728439).

Scenery Disc 9 is available for Sublogic's flight simulation programs. It covers the skylines of Chicago, St. Louis and Cincinnati in 3D detail and costs £14.95.

Hawaiian Odyssey scenery adventure takes in the unique landscape of the Hawaiian islands and also includes the adventure of locating the secret jewel of the goddess Pele.

It can be used with any Sublogic simulation program and cots £14.95.

Flight Controls 1 gives the ST user proper aircraft controls with tactile feedback for greater realism. The yoke features T-handle throttle, accurate gear and flap switches and an optional rudder pedal. Price to be fixed.

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NEW LABEL

EIGHT bit conversions and re-releases have given a good ST showing for Smash 16, the new budget label from Interceptor (0734 817421).

Crusading fighter Joe Blade and the sequel Joe Blade 2 are teamed with the combat action of War Machine and the Roman arena battles of Gladiators. Players face entering a Nazi stronghold in Eagles Nest, using their reflexes in the futuristic arcade game Extensor and playing a saucy game or cards with Hollywood Poker.

All are priced at £4.99.

Shaping up to numbers

GRADUATES Computing (0734 509516) has released a new maths course for the Atari ST. Designed to national curriculum standards, Mathematics Keystages 1 to 4 take students from shape and number recognition up to GCSE level. The first program is for pupils up to seven years-old, Stage 2 is for 7 to 11, Stage 3 from 11 to 14 and Stage 4 from 14 to 16.

Programs come on disc accompanied by a user manual which explains them to the teacher. Each course costs £20.

More on maths

EDUCATIONAL software house LCL (0491 579345) has produced four new programs for the ST. Primary Maths Course follows the national curriculum guidelines for three to 12-year-olds. Micro Maths is a GCSE course for 11-year-olds, Micro French is a GCSE for ages eight to adult and Mega Maths is an A level course.

They use all the features of the ST and most are mouse controlled. As with all LCL courses, each includes 24 programes, two books and a voice tape where appropriate. The courses each cost £24.

Existing versions of LCL's Primary Maths Course have now been updated to be compatible with national curriculum levels one to four.

Prize spin

For the more adventurous the October Talespin competition in *Atari ST User* offered you the chance of realising your dreams by winning a copy of this superb adventure creator.

The most inventive entry from James McGilton from County Down has earned him a Supra 32 MB Hard Disc.

From the many entries, covering a wide variety of themes, 30 runners up will be receiving 20 copies of Talespin and 10 Deluxe Disc Wallets.

Beverley Hills maze

LATEST ST offering from TyneSoft is the multi-game package Beverly Hills Cop. Players join Detective Axel Foley on a day's patrol in Beverly Hills. First duty is to try and prevent allout warfare on the streets by stopping consignments of arms getting to gangland trouble makers. Action moves to a car chase followed by a commando-type game and ending with a a puzzling maze. ST version costs £24.99.

Link from Paradise

PARADISE Computer Systems of San Luis Obispo, California has teamed up with SGS Software to develop an inexpensive and easy-to-use local area networking system for the Atari ST.

Called SGSnet, it allows from two to 32 STs to share programs and data, using the Midi ports in each ST to provide a data transfer rate of 31,500 baud.

At present the software is not available in this country but there are plans for it to go international. In America the price is $159.95 for a two machine network with $109.95 add-on kits for each extra node. Paradise Computers can be contacted at 3485B Sacramento Street, San Luis Obispo, California 93401. Tel: 0101 805 544-7130.

STs go to war

AS the Atari software label ARC (0753 33344) gets into its stride, one of its latest releases is Prince, an arcade wargame from the Frames development house.

Players can link up two machines, have a magnified view of the whole war zone or zoom in on individual scouts in the army and all the action is accompanied by digitised battle sounds. Price £24.99.

On target

THERE could be light at the end of the tunnel for Atari games players. Atari showed its first lightgun for the STE at the Comdex show in Las Vegas. Similar to the Atari XE version, it should be in the UK later this year.

Bargain buy

MICHAEL Graham (24), an electrician from Dover-by-Cockermouth, Cumbria carried off a £500 video recorder as his award from being the purchaser of the 500,000th copy of Mini Office, the small business package from Database Softare (0625 878888).

Comic capers

THE Punisher is Marvel Comics' most popular publication selling up to 140,000 copies a week. Now it's gone computerised thanks to The Edge (01-831 1801). The computer game of the comic character costs £19.99.

Alliance boost for adventures

FANTASY role play adventurers should have some rare treats in store for the nineties thanks to a new and powerful alliance in the software world.

Virgin Mastertronic has signed a long term licensing deal with adventure/FRP experts Magnetic Scrolls.

At present under wraps, the first progeny of this marriage will hit the marketplace in the late spring and is the result of two year's programming.

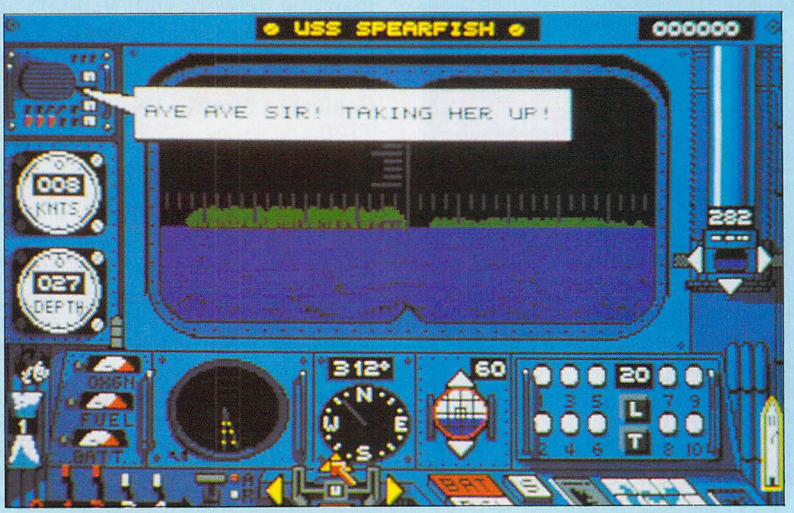
Magnetic Scrolls was founded in 1984 by Anita Sinclair and Ken Gordon. Its first package The Pawn went on to collect many major awards and over the last five years it has achieved an enviable reputation in the industry with products of consistently high quality. "We had many substantial offers for our new product", said Anita Sinclair. "What made me choose Virgin was their commitment to the market place and the resources they are willing to put behind good product. Most importantly, they are nice people to do business with".

Managing director of Mastertronic Nick Alexander added:"Over the last 18 months we have demonstrated our commitment to top quality arcade games. We now feel ready to do the same with adventure games and they don't come any better than those from Magnetic Scrolls".

Software produced through the deal will be marketed under the Magnetic Scrolls label.

Meanwhile, Mastertronic's new price-busting label 16 Blitz is continuing to give other software houses food for budget thought.

Due out soon on the £4.99 a time label are Hunter Killer, the combat submarine game from World War II and Conflict, set in the precarious military and economic situation of the Middle East. For a February release is Grimblood, a gothic whodunnit written featuring digitised sound and graphics and promising a different game every load. The player takes on the role of Earl Maximus, trying to uncover the secrets of Castle Grimblood where a murderer lurks.



Hunter Killer

Law lore on-line

RECENT Department of Industry statistics show that the need to comply with employment law costs the average company more than £5,000 a year.

Where health and safety laws are concerned this can be as much as £13,500.

The best way to avoid these high costs is to get good advice on the relevant legislation, and that is now available to computer users through the MicroLink communications service (0527 28515).

This new facility has been launched by MicroLink in conjunction with professional consultant Premier Employment Services which gives specialist advice on personnel and health and safety law 24 hours a day, 365 days a year.

"Making such a service available to subscribers minimises the risk for management", said MicroLink's marketing manager Martin Turner. "Instead of going through the lengthy legal process, subscribers to MicroLink can now consult their computer terminals".

The charge is £3 per inquiry, and in most cases answers are given in the same working day.

Key to security

CROWBOROUGH Instruments (0892 662078) has come up with a handy gadget for computer security. The Viewlock is a key-operated double pole switch which is connected in place of the existing mains plug. It disables the machine at the turn of a key and costs £22.42.

Flying tanks

SURVIVAL is the name of the latest game from Arcana (0272 297162). Set in the future, it gives players the chance to join the Roto-Raiders attack force. As trainees they must show their skill with Rotors, the flying battle tanks and complete increasingly difficult missions. The final goal is to become a Rotor ace. Price £19.99.

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Jacko at Comdex

INSTEAD of feeling his collar, police were concentrating on keeping Michael Jackson safe when he showed up at the Comdex computer show in Las Vegas.

Wacko Jacko was visiting the Roland stand. He used some of the company's range of Midi products during one of his recent tours and dropped in at Comdex to see what new refinements could help with his music making.

Manager moves in

THERE are claimed to be 39 new features in Steinberg Cubase 1.5, the latest version of in the Cubase music range from Evenlode Soundworks (099 389 8484).

A dynamic Midi manager, support for 19in monitors, an auto save facility and new multi-record mode are just some of the improvements.

Anyone on Steinberg's upgrade scheme will receive the new features free of charge.

New way with words

SIGNA Publishing (0252 341600) is aiming at a February release for Script, its new word processing package for the ST.

"It really will be the first walk up, use and walk away word processor for the ST", said Signa's Mike Dale. "It looks very much like a Mac product". Price yet to be fixed.

PD animation

ATARI ST users who want an animation package can now get one which used to cost £80 for just £3. The Animator program previously marketed by Aegis has gone back to author Jim Kent who has placed it in public domain.

ST owners can use it for the cost of the duplication fee. Kent has placed it in public domain because he was disappointed at its showing in the commercial marketplace.

Flair for layout

WORD Flair is the name of an advanced text processor that has been in the making for more than a year. The package was conceived with the idea that most home users don't begin to use the full potential of high-end desktop publishing, but find it desirable to have the layout versatility that DTP packages offer.

According to program author and designer Lauren Flanegan-Sellars, Word Flair combines the standard features of a word processor with the graphics and layout facilities of a DTP system.

Although memory constraints mean the program lacks a spell checker, it more than makes up for this in other areas. Flanegan-Sellars claims that the $99.95 package has "the critical 20 per cent" of the capabilities of DTP packages that most users actually use.

As an introductory offer, Blue Chip International is offering purchasers $20 off the program's $99.95 price tag until the end of January. That means that Word Flair costs less than most word processors for the Atari ST.

Blue Chip International can be contacted at 501 Second Street, Suite 14, San Francisco, CA 94107.

Digitised professor arrives

A HOME version of schools program Play and Read has now been produced by Prisma Software (0244 326244). It features a central character Prof who helps children learn to read.

"Play and Read has proved so successful in schools that the logical next step was to publish it specially designed for the home", said Trude Salisbury, senior partner at Prisma.

The new version which costs £29.99 on the ST is aimed at parents who want to give their children pre-school reading tuition or to boost school lessons with home teaching.

SOFTWARE HOTLINE

FERRYING a feast of new games across the Channel for the new year is French software house Infogrames.

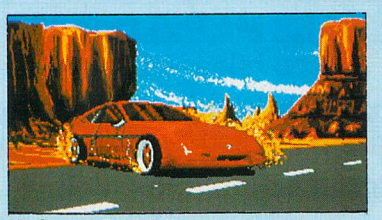
Safari Guns puts the player in the role of an African gamekeeper

Sim City

shooting with a camera to log wildlife and protect it from poachers. Price £19.95.

Sim City is similar in concept to Populous as you play God with a city's construction and development while trying to avoid bankruptcy. Price £24.95.

Eagles Ride is a shoot-'em-up in space with a mixture of several dif-



Highway Patrol II

ferent games. Due out in March it will be £19.95.

Highway Patrol II features stunning scenic graphics as a background for the work of America's police force. An ST conversion of the successful Amiga version it will cost £19.95.

Rounding off the forthcoming releases from Infogrames will be Full Metal Planet and Chicago '90

★ ★ ★

LOGOTRON (01-359 3594) has three new games in the pipeline due for spring release. Defender of the Ground is a 3D space flight arcade game using solid polyhedrons and a solid scrolling landscape. Resolution 101 makes the player a bounty hunter with an increasingly sophisticated vehicle in which to hunt down trouble makers.

Completing the line-up is Cloud Kingdoms an eight-way scrolling Bubble Bobble type game with 32 different levels. Each of these names are working titles.

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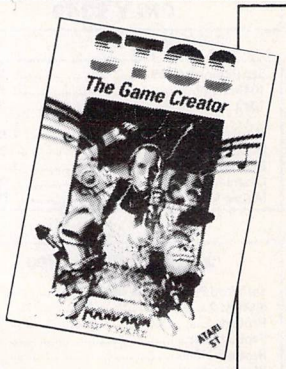

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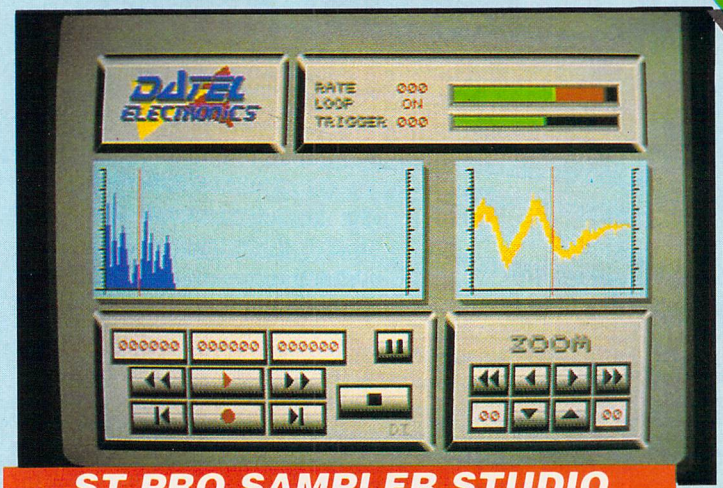
GALLUP

software chart

This month	Last month	Title (Software House)	Price	Month reviewed in Atari ST User	Comments	Marks from 10
1	11	STUNT CAR RACER *Microprose*	24.99	Jan 1990	Absolutely brilliant. Beautifully responsive. Who cares what the background looks like when it feels this good?	10
2	2	TV SPORTS FOOTBALL *Mirrorsoft*	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
3	1	XENON 2 *Mirrorsoft*	24.95	Oct 1989	Lacking original gameplay, but a must for any serious arcade addict. It's unlikely to be bettered for a long time. Highly recommended.	10
4	13	ROBOCOP *Ocean*	19.99	Sept 1989	Stylish but a bit sluggish. However, there is some good digitised speech and the gameplay of this film conversion holds up well.	9
5	*	BATMAN – THE MOVIE *Ocean*	19.99	Feb 1990	Beautiful graphics and superb use of linking screens. Certainly one of the best film conversions ever. Atmospheric, but oh so difficult.	8
6	*	CONTINENTAL CIRCUS *Virgin/Mastertronic*	19.99	Jan 1990	Will appeal instantly to the player who demands plenty of action. Bringing the glitz of the of the arcades to the ST screen.	8
7	*	HARD DRIVIN' *Domark*	19.99	Jan 1990	Will meld itself to your abilities. The harder you drive, the greater the thrill, and the nature of the simulator makes exciting driving.	9
8	*	STRIDER *US Gold*	19.99	Oct 1989	Fun, addictive and deserving of a place in any arcade collection. The sound could be better, but in the heat of battle you don't notice it.	8
9	4	KICK OFF *Anco*	19.99	July 1989	One of the fastest and most exciting games around. The best football simulation ever – realism, thrills and unrelenting action.	9
10	*	POWERDRIFT *Activision*	24.99	*	Back to the racing track with this tongue-in-cheek offering. A wide range of drivers and courses to traverse. This will keep you very busy.	●
11	3	POPULOUS – PROMISED LANDS *Electronic Arts*	9.99	Sept 1989	Extra screens for this exceedingly popular game. You don't need to buy them, but you'll certainly miss out if you don't.	9
12	14	SHINOBI *Virgin/Mastertronic*	19.99	Dec 1989	Addictive, with difficult gameplay designed to hold your interest. Poor graphics but likely to appeal to martial arts fans.	7
13	16	PAPERBOY *Elite*	19.99	*	The journey to the 16 bit has taken many years and the lad is probably on the dole or behind bars by now. A bit long in the tooth.	●
14	8	BLOODWYCH *Mirrorsoft*	24.99	Oct 1989	Assume the identity of one of the last 16 champions. Another role-playing game set in a maze of dungeons, but well implemented.	8
15	7	INDIANA JONES – LAST CRUSADE *US Gold*	19.99	Oct 1989	Trace the exploits from cinema to arcade, from rumbling trains to rat-infested corridors and to the Holy Grail. Not bad at all.	9
16	*	CENTREFOLD SQUARES *CDS*	19.99	*	An American import for CDS and another in the line of strip poker games. Not poker this time, but the rewards are much the same.	●
17	18	ALTERED BEAST *Activision*	19.99	Dec 1989	Good graphics and addictive gameplay are let down by poor animation and a severe shortage of fighting moves. Worth a look though.	7
18	*	FERRARI FORMULA 1 *Electronic Arts*	24.95	Jan 1990	A complex racing simulation managing a top team as well as taking risks behind the wheel. Wooden sprites let down a good idea.	5
19	5	FALCON *Mirrosoft*	24.95	March 1989	Prepare yourself for a Mach 2 flight in an F-16 and enjoy arguably the best in a growing field of quality flight simulators.	9
20	*	STAR WARS TRILOGY *Domark*	24.99	*	Following the films, the first two games use vector graphics and are good adaptations of the arcade. The third is more of a race with sprites.	●

DATEL ELECTRONICS



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- HiRes sample editing.
- Realtime frequency display & level meters.
- Microphone & line input.
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- Separate scroll line waveform windows & zoom function with Edit windows for fine accurate editing.
- 3D shot of sound waveform. Wave editor to design your own waveforms or adjust existing ones.
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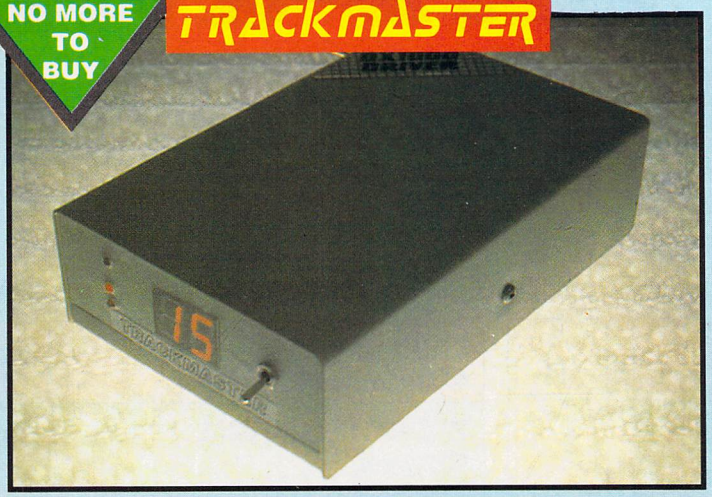

- Trackmaster track display unit is a must for the disk user.
- Simply plugs into disk drive port of the ST.
- No other modifications or connections required.
- Displays up to track 85.
- Displays track number, disk side and read/write status as the head moves along the disk.
- Has daisy-chain socket to connect external drive.
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- Works on both internal and external drive (switchable).
- Complete hardware solution - no software required.

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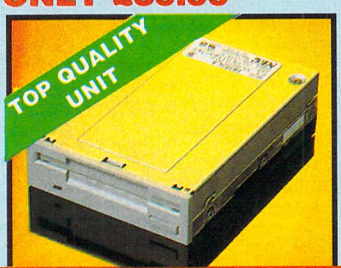

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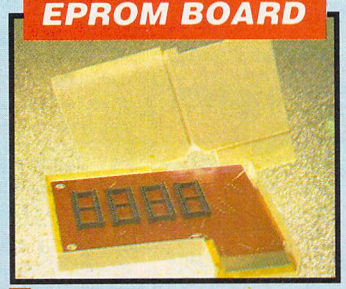

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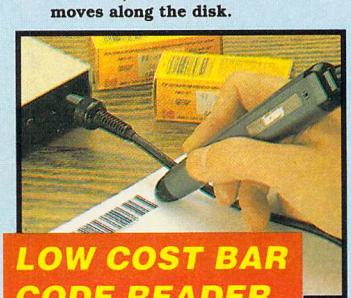

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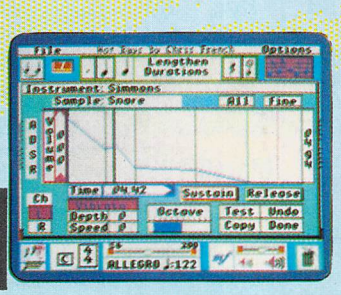

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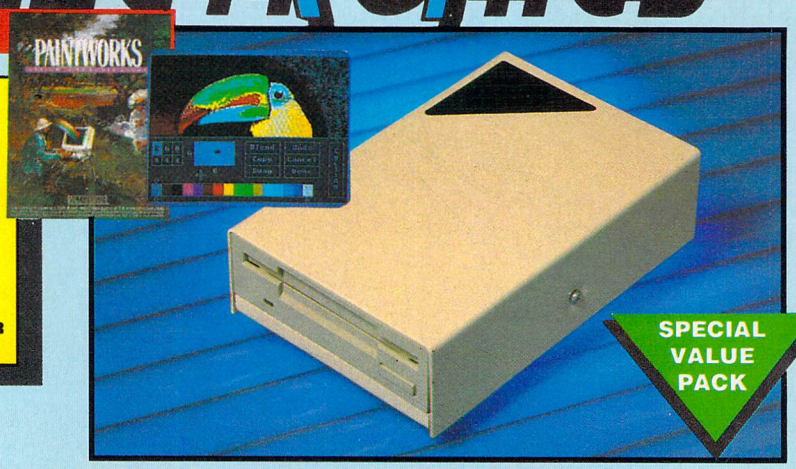

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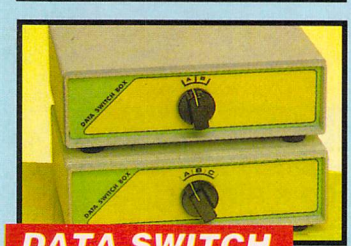

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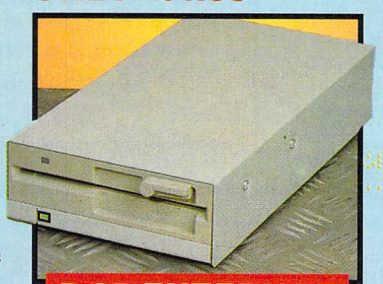

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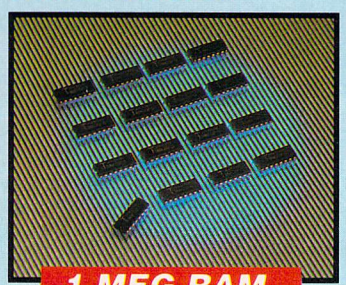

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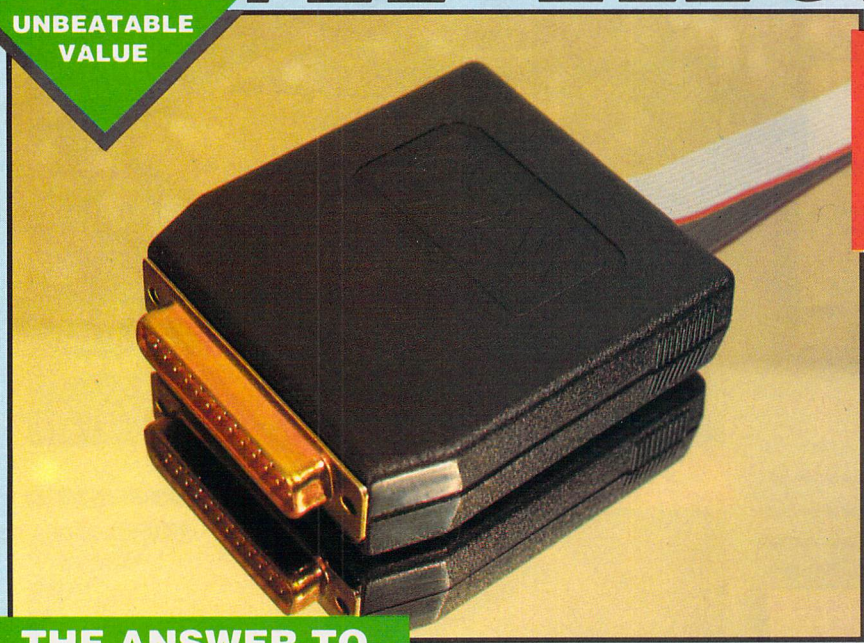

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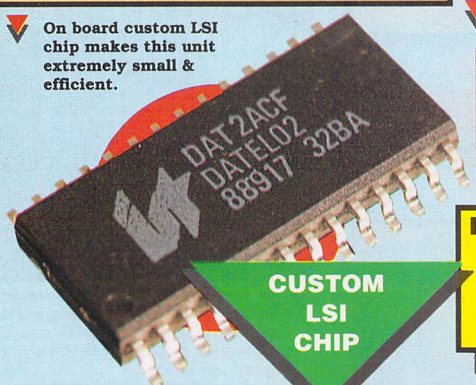

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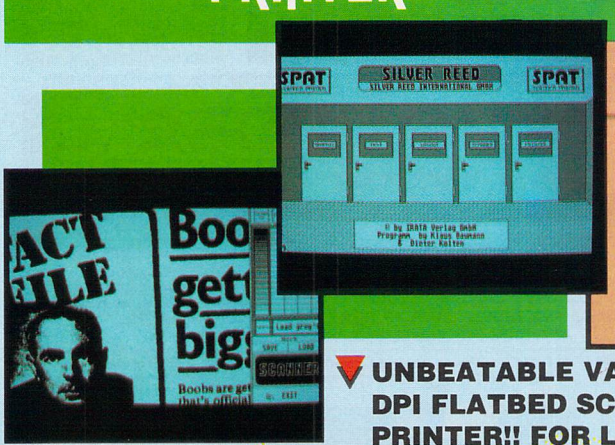

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Licences to print money?

Roland Waddilove looks back at some of the film conversions of 1989

SOFTWARE companies are constantly looking for new ways to publicise their games. Making the public aware of a title and what it is about – shoot-'em-up, adventure, arcade action and so on – is half the battle when it comes to chalking up high sales figures.

One of the most popular methods of promotion over the past year has been to produce the computer game of the big-screen film. Think of a few films: The Indiana Jones series, Batman, Ghostbusters I and II, Superman, James Bond's various adventures, Rambo I, II and III, Moonwalking with Michael Jackson. All have been converted to the home micro.

Film licences aren't cheap – no one will say exactly how much a particular one cost – so few software companies can afford them, but the potential rewards are high.

Producing a computer game based on a successful film enables the software company to be carried along on the back of the film publicity. It almost guarantees a successful top seller, but are these games really as good as the hype would suggest? Would the games have sold as well without the film tie-in?

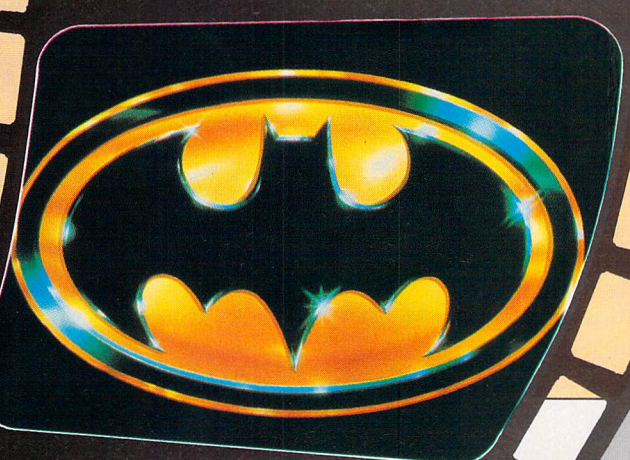
Some games are undoubtedly good in their own right, other conversions are, to put it politely, disappointing. Moonwalker, Rambo III, Tom and Jerry and Spitting Image – a TV rather than film licence – fall into this latter class.

Red Heat and Running Man (Arnold Schwarznegger), Live and Let Die and Licence to Kill (James Bond), and Thunderbirds (a TV conversion) are fairly ordinary games that without the film hype probably wouldn't have sold as well.

Some of the better licences are Superman, Robocop, Indianna Jones – The Last Crusade, Ghostbusters II and Batman. All feature superb graphics and well thought out gameplay, and their only fault is that they are quite difficult to play.

It is not possible to predict whether a film conversion will result in a good computer game. For instance, the comical cartoon capers of Tom and Jerry on the ST's monitor screen sounds like a sure-fire recipie for success. The game however, was dull and uninspired. Yet Batman and Ghostbusters, surely more difficult subjects, have resulted in quality games.

With any software, my advice is always to try it before you buy it – and read the reviews in *Atari ST User*.



Product: Ghostbusters
Price: £24.95
Supplier: Activision, Blake House, Manor Farm Road, Reading, Berkshire RG2 0JN.
Tel: 0734 31166

Who you gonna call?

THE film licences roll on, and now it is the turn of Ghostbusters II, one of the box office hits of Christmas '89. Five years have passed since the Ghostbusters team saved New York from the slime monsters from another dimension.

They now scratch a living by hiring themselves out at parties, occult bookshops and seedy TV programs. However, the evil has returned and the team reforms once more to save the city from being slimed by ghosts and ghouls.

The game boots up to display one of the most impressive title sequences yet seen on the ST. The story is told using digitised pictures taken from the film, accompanied by scrolling text and a sampled film soundtrack, plus Ray Parker's hit single, Ghostbusters.

In the first of three games based on scenes in the film, you guide a ghostbuster down a narrow airshaft to a sewer 120 feet below. Once there you collect a sample of the evil green slime and return to the surface.

Sounds simple, but it turns out to be very tough indeed. You can swing the rope left and right and raise or lower it using the joystick. On your way down you have to collect the three parts of the retractable slime scoop from ledges on the walls.

This isn't too difficult, it's the ghosts, grabbing green hands and claws sawing through the rope that cause the problems. In fact, I haven't seen anyone complete this level without using the built-in cheat mode (I won't tell you what this is as it might spoil your enjoyment – wait until next month's Arcade Corner).

For your defense you have a PKR bomb, a shield and a proton beam, which is something like a flamethrower. Extra ammunition can be picked up in the shaft, along with bottles of courage to top up your dwindling reserves. The graphics are good and the gameplay would be addictive if it wasn't so difficult. The sound effects are OK.

In the next scene from the film the ghostbuster team bring the statue of liberty to life using slime. Guiding it from within the crown they direct it down Broadway in order to get to the museum of art before the start of the New Year.

This section is a horizontally scrolling shoot-'em-up in which the statue walks left to right and the slime monsters fly or stagger onscreen from the right. You zap the nasties with Liberty's flame. If she runs out of slime power you send one of the following crowd of people out in front to scoop up dollops dropped by slime monsters.

The graphics are tiny but very detailed, and quite effective. The New York nightscape looks impressive and scrolls smoothly past.

In the final game you pit your wits against Vigo the Carpathian. You have to rescue Dana Barrett's baby, Oscar, who is being taken over by the ghost of Vigo, duff up a zombie called Janosz Poha and finally dispose of Vigo himself.

The game is seen in 3D look-

Zap the ghosts in the airshaft

Scoop up the slimer at the bottom of the airshaft

one as necessary, do the dirty on the evil Vigo. Graphically slightly simpler than the first two levels, it is again a tough game. The 3D perspective makes it difficult to know exactly in which direction your weapon is pointing. Ghostbusters II, although a brilliant game, has two flaws. First is its very difficult level one, and second is the disc swapping and tedious introduction that you must sit through each time you lose all your lives – I want to have another crack at the game, not sit watching the introduction again, no matter how good it is.

Those faults apart, the game is recommended.

Roland Waddilove

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

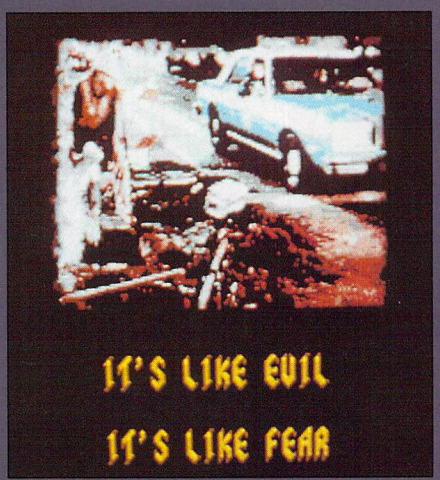
ing down on the museum room from high up in one of the corners. Abseil each of the four ghostbusters down from the roof, and selecting each

SECOND Sight

I quickly stopped playing Ghostbusters II because of the extremely difficult first level. However, once I had discovered the cheat mode – activated by pressing four keys when the Activision logo is displayed – I thoroughly enjoyed it. Worth buying simply to watch the introduction and opening credits.

Janice Murray

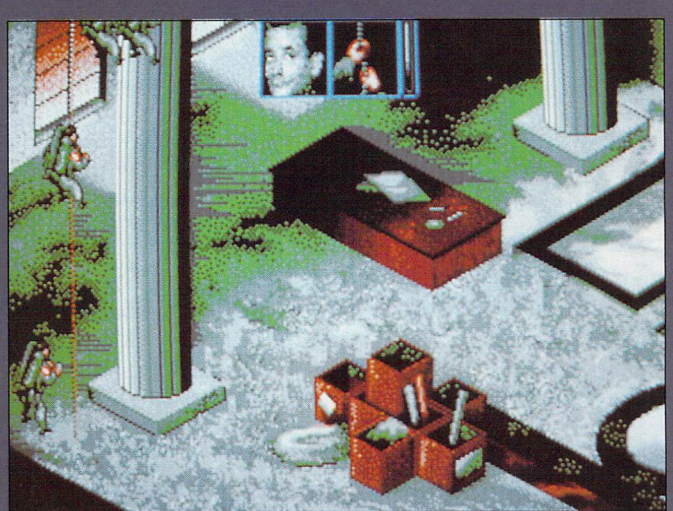
ATARI STAR USER GAME



Digitised pictures link each level

Rescue Dana's baby from the evil Vigo

Bring the statue of Liberty to life



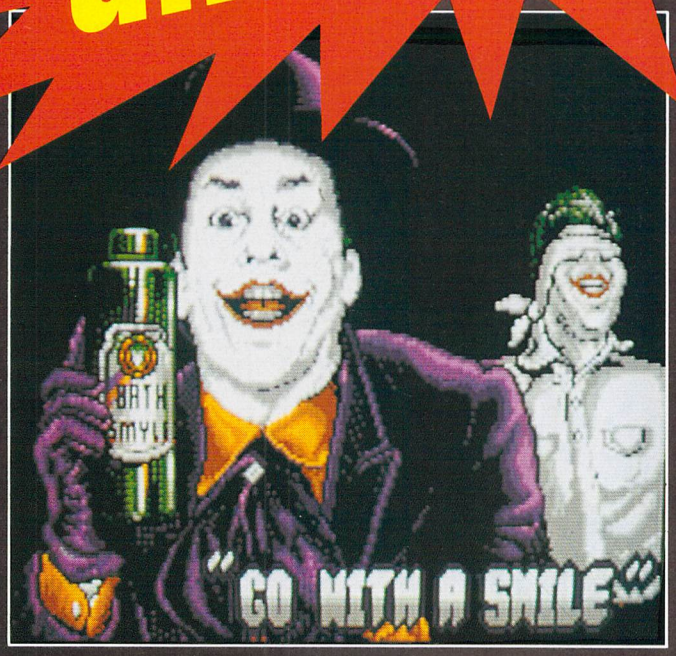
Abseil down the ropes into the museum

Holy inside-out underpants

Product: Batman The Movie
Price: £24.95
Supplier: Ocean, 6 Central Street, Manchester M25NS.
Tel: 061 832 6633

IN this five-level action packed arcade adventure, based on the blockbusting movie, you take on the role of the Dark Knight in his quest to rid Gotham City of the world's greatest criminal mind, Jack Napier, alias The Joker.

After overhearing Commissioner Gordon discussing an attack on the Axis Chemical Plant you put your underpants outside your long johns, don



Your arch-enemy, the fiendish Joker

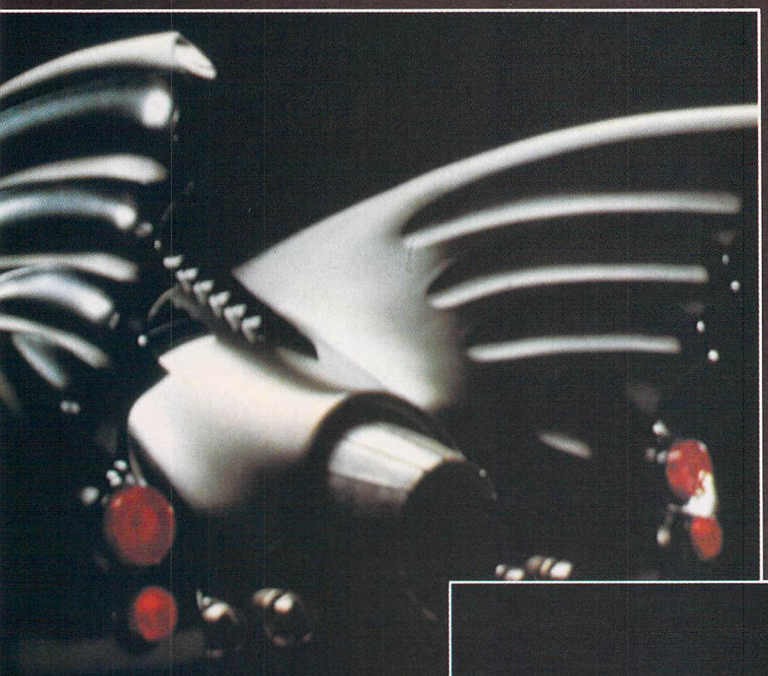
Race through the streets of Gotham City in the batmobile

ATARI STAR USER GAME

your black leather cape and knee-length boots and set out to perform today's good deed. In order to save the plant you'll have to fight your way through the scrolling platform and ladders type first level, knocking out Napier's henchmen along the way, and finally confront the evil genius himself.

The bad guys come in three types, general thugs, gunslingers and grenade lobbers, who can easily be wiped out with a well aimed Batarang. The simple rule is to throw on sight, while avoiding leaking chemicals and gas bursts.

Moving between the different platforms can be achieved by using the ladders, but a much more impressive method is to climb and swing on your Batrope. When you beat Napier he'll fall into a nearby vat of toxic chemical waste, disfiguring not only his body but his mind as well. Congratulations, you've just created The Joker.



At this point those poor boys in blue still haven't a clue as to whether you're a good guy or a baddie, which explains their road blocks hindering your high speed race through Gotham City in level two.

Having just rescued Vicky Vale from the Flugelheim Museum, you escape from the Joker's gang by tearing through the city in the Batmobile. Just in case you don't know the streets of downtown Gotham City, a sophisticated radar system (an arrow at the top of the screen) shows which way you should go.

Avoid all the other road users, bypass the road blocks and make it safely back to the Batcave. Turning around 90 degree corners at 150mph could be a little difficult, but the Batmobile is fitted with a rope and grapnel to shoot at lamp posts. If your aim is good you'll be spun around the corner to face another streetfull of motoring mayhem.

Eventually you'll reach the Batcave, the scene of level three. This is similar to the old Mastercode games, where you have to discover the hidden sequence of colours in the shortest number of guesses.

In this case there are eight objects, three of which The Joker has booby trapped to produce the lethal gas Smilex, which not only kills its victims, but also twists their faces into a horrible grin. You have 60 seconds to discover the three items and so survive to the next level.

By promising generous handouts of cash, The Joker has lured thousands of unsuspecting citizens into the streets, all ready to be smiled to death in level four. A carnival atmosphere fills the city, but the dozens of brightly coloured balloons contain enough Smilex to wipe out the whole population.

Luckily you're flying the Batwing, so you can cut the ropes mooring each balloon to the carnival floats and so let them rise harmlessly into the atmosphere. You only have a short time in which to free 99 balloons, so you'd better put your foot down.

The final level is set in a cathedral and is another platform/ladders game. Make your way to the roof and confront The Joker in the final showdown. If you fail the whole of Gotham City will be at his mercy.

The graphics and sound are superb, especially the high speed street scenes. My only critism is level three, which seems to a waste of time. The game is rather difficult to play, but who wants a game that can be finished in the first couple of hours?

Phil Lawson

Stitch this you creep!

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

SECOND Sight

I prefered the old Batman TV series with plenty of Biffs, Pows and Kersplats, but this game has me quite hooked. So far I haven't got past level four because it's just to difficult. Batman The Movie is all set to become a bestseller, if only due to the film publicity.

Henry Dee

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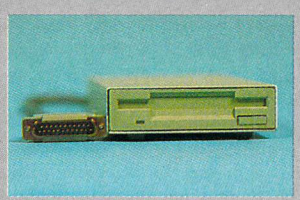

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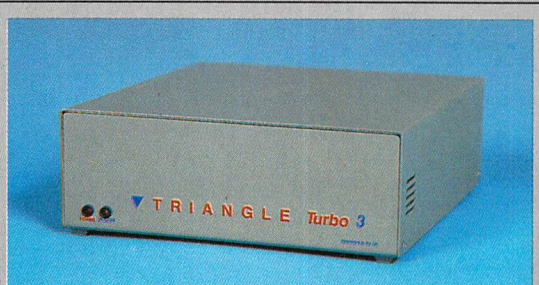

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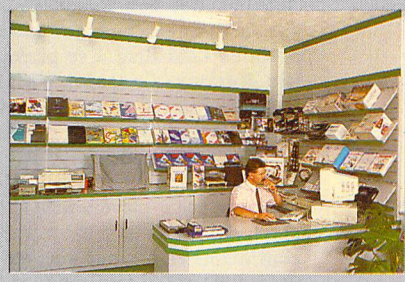

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Winning hands

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I HAVE always had a yen for playing cards, ever since I took my younger brother for his week's spends during a midnight game of Three Card Brag. I've played Gin Rummy, Canasta, Whist and also dabbled at Bridge, but more than anything I'd love to become really proficient at it.

Without joining a club, finding three other players with the patience of Job to put up with continuous errors, yet with sufficient expertise to provide the necessary tuition can prove difficult.

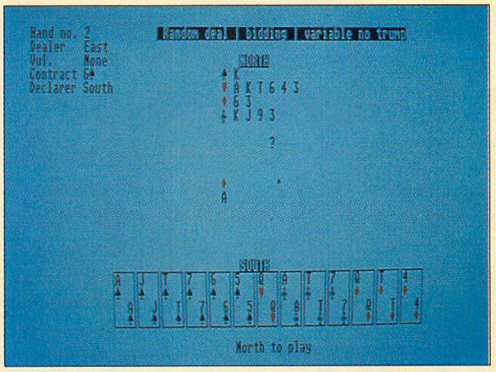
This is where Bridge Player scores hands down: The other players have all the above qualities and you have the extra bonus that if you are getting a pasting you can always chuck your hand in and start again.

Bridge Player 2150 Galactica is produced by The London School of Bridge and contains a range of features that will cater for players of all standards – from absolute beginner to world champion.

You can choose to let the computer deal the hands at random, enter hands of your own choosing, play preset hands in Tutor mode or use the save/load option.

Tutor mode provides 100 different deals, each annotated in the neat, easy-to-read comprehensive playing guide supplied. Selected to demonstrate one or more of the key aspects of bidding and/or play, they range from the fairly straightforward to finessing and endplays.

During bidding you make your input in the form number/suit. For example 2S then 3H will bid Two Spades then Three Hearts, with P, D and R available for Pass, Double and Redouble. When playing a hand the order of input is reversed: HQ or S5 to play either the queen of hearts or the five of spades. Simple really – but why didn't they use the mouse to point at the chosen card?

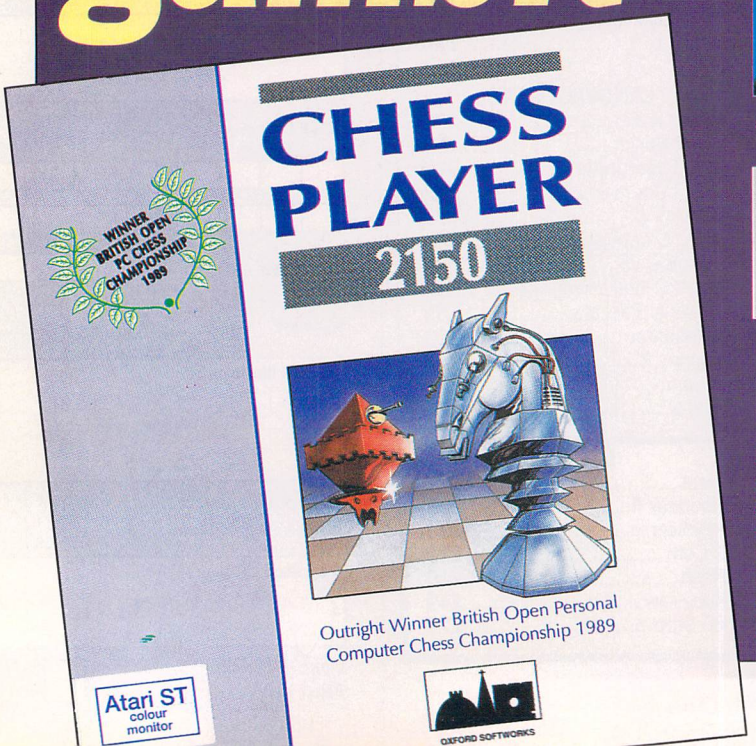


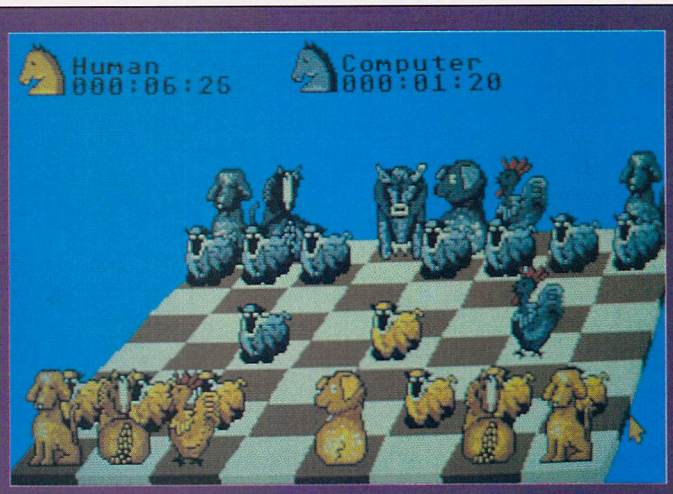
Bidding for success

Your hand is displayed across the bottom of the screen sorted automatically into order. I think regular players would have a minor gripe here – the sorted order is S, H, C, D instead of the accepted order S, H, D, C in which dummy's hand is displayed.

There are some useful short cuts during play. For example, the computer will automatically take over if you can legally playonly one card. To follow suit you can just enter the

Grade A gambit





Battle it out down on the farm

Product: Chessplayer 2150
Price: £24.95
Supplier: CP Software, 198 The Hill, Burford, Oxfordshire OX8 4HX.
Tel: 099-382 3463

RIGHT from the start Oxford Softworks' Chess Player 2150 has unusual features. After negotiating the password protection scheme you are given a very clear 2D board. Select the first menu item and the board switches to a 3D representation which is much better than those of Colossus Chess X and Chessmaster 2000.

Here there is no jerky piece movement, no doubt whether one piece is passing in front of or behind another, and no question as to which piece or square is being pointed at.

Another advantage over the other programs is that the board can be rotated, shrunk or enlarged without perspective being distorted. The 2D board has only standard chessmen, the 3D board has an unusual choice of two Staunton sets, spacemen, farmyard animals or toys.

You should have no problems in finding a suitable type of play from the five available.

down

SECOND Sight

As an out-and-out arcade fanatic, I do for Bridge what Cyril Smith does for hang gliding. Having said that, after a couple of hours with this program I'd picked up the basics. If you're a Bridge player with no partners it's got to be right up your street.

Bill Differs

value of the card, to play the lowest card just press Return, or to play the lowest card in any suit just enter the suit.

You can also have a bid made or a card played by the computer, see cards played in earlier tricks, peep at other hands, unplay a trick, and claim or concede remaining tricks.

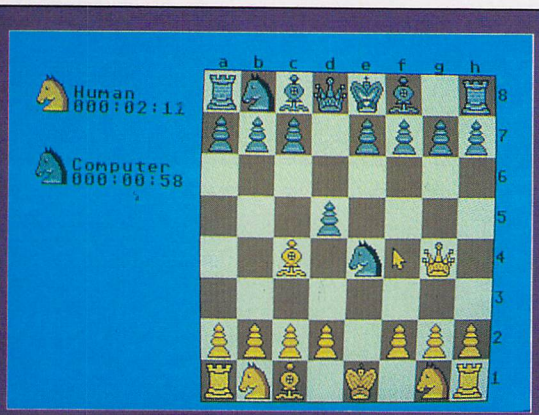
The simulation supports several conventions: Stayman, Blackwood, Gerber, Grand Slam Force, Usual No Trump, although it will not initiate them except in Tutor mode.

The graphics are not particularly inspiring when you consider the capabilities of the ST: White cards in black and red on a plain white background. A few picture cards thrown in and a green baise table would have looked better and given the program that touch of class.

To be fair, it does the job it sets out to do. My Bridge has improved and I haven't lost any friends. Eat your heart out Omar Sharif – I'm gunning for you.

Alan Sergeant

Sound	*0*
Graphics	*5*
Playability	*5*
Value for money	*10*
Overall	*8*



Traditional 2D display is available

First is Weak Player, which has 10 sub-levels which force the program to play random, but legal moves. The other four levels are more conventional: Tournament allows you to enter a move time between one second and infinity, Average makes it take the same time over every move, Matching matches both players' times and Infinite makes it think until Esc is pressed.

In addition, Chess Player 2150 can be told to avoid draws at all costs, always play for the draw, or anything in between, and can be handicapped by being prevented from thinking in its opponent's time.

While a game is in progress you are free to select most menu items. Moves can be taken back and played forward, sides can be swapped, the program can play itself or monitor two human players. There is some horrific Frank Bruno-style digitised sound which will have you reaching for the menu to replace it with a bleep.

It would have been helpful to be able to store such alterations in a preferences file, but no such option is available.

You can switch to an information screen, which shows moves made, time taken, depth of search and current line. Hardcopy uses algebraic notation, but with the neat touch that the time taken for each move is printed beside it.

Chess Player 2150 has features which set it aside from the competition. Provided a copy of the program disc is used, any unexpected moves can be added to the openings library. Although the library is 93,000 bytes long, it has some surprising gaps. For example, 1.e4 d6 2.d4 Nf6 3.Nc3 g6 4.f4 takes the program out of the book.

More important is the option which allows you to test both your playing strength and that of the computer at any skill level. This involves solving 24 chess problems by giving up to four possible moves for each at two minutes maximum per move. The manual says this is enough to estimate a grading to within 50 points.

While this is true for my grading – it over-estimated by 35 points – I can't see how it can possibly work in all cases. I would be very wary of reading anything into results obtained with it.

There is no substitute for safety in numbers – many games against many graded opponents, both computer and human, together with a mathematically sound method of grading.

The final curiosity is What If? This allows you to search the tree of moves and find out why the program rejected a line of play, possibly forcing it to play that line and see what happens. Although difficult to use, it does give you a feeling for what goes on behind the fancy graphics.

Endgame play is even more impressive. Looking at the demonstration games on the disc, it is surprising how often its opponents hold their own until the latter stages of the game and are then ground down relentlessly.

Alastair Scott

Sound	*0*
Graphics	*7*
Playability	*7*
Value for money	*9*
Overall	*9*

SECOND Sight

Chessplayer's strength cannot be disputed. There is a good variety of openings, mostly standard, although with a few exotic lines. Middlegame play is exceptionally good. The program seems to be able to calculate much deeper in the time given than its rivals, and the variable Draw option gives you all types of play from speculative to dull.

Mike Rowe

Magic mayhem

Program: Axel's Magic Hammer
Price: £19.99
Supplier: Gremlin, Alpha House, 10 Carver Street, Sheffield S1 4FS.
Tel: 0742 753423

WHERE can the inspiration for Axel's Magic Hammer have come from? Anyone remember a tune by the the Beatles called Maxwell's Silver Hammer?

In this game your name's Axel and your silver hammer is magic. Your girlfriend, Lucy (as in In the Sky with Diamonds, or am I reading too much into this?), has been kidnapped by a huge Green Dragon and is being held in a castle. To rescue her you must wend your way through different lands, killing many adversaries .

There are eight levels – Roman village, the cliff, ice cave, jungle, Egyptian pyramid,underground factory, cave and woods, and castle and dungeons. Each level has 25 screens making, 200 in all.

On the way to the castle you collect items which can replenish lost energy, give you extra time, destroy everything on the screen and allow you to headbutt the baddies. Part of this involves smashing gold-coloured blocks which just hang in the air on each screen.

When you start you can only hit with the hammer but, being magic, you soon collect enough power points to be able to throw it – which is far more fun. The monsters zap your energy at an alarming rate and as you progress they become nastier. And when the white bird of paradise lands on your head it's anything but lucky.

As if your task wasn't dangerous enough, there are secret rooms containing special bonuses which you will only discover by trial and error. Certain locations are behind locked doors and keys must be found to open them.

The programmers have tried their best with the ST's sound chip, but the music would have been better if it wasn't hidden under a welter of heavy vibrato and pingy slides. There's no music during gameplay, just a few sound effects. A sampled yell is heard when you die.

The game isn't too difficult once you get the hang of jumping and moving forward at the same time, but the first few screens are really too hard. There is a limit to how many times you're willing to travel the same ground in order to progress. The first level should draw you in and this one doesn't.

Only the most dedicated players will be bothered to tread the same path again and again to rescue Lucy.

There isn't a save game feature and no high score table to add any incentive.

Axel doesn't score very highly for originality, but it's a pleasant little game if you like jumping up and down and throwing things. It's more taxing on your joystick hand than the grey matter.

Ian Waugh

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

SECOND Sight

Though a collection of different winning game themes, they doesn't mesh very well. If you want to spend half hour whiling away the time, it is fine and I have the feeling that it may well grow on you while you're not looking.

Jo Giles

High spirits

Product: Ghouls 'n Ghosts
Price: £19.99
Supplier: US Gold, Units 2&3, Holford Way, Holford, Birmingham B6 7AX.
Tel: 021-625 3388

THREE years ago the fearless Sir Arthur rescued a beautiful maiden from the clutches of the Overlord in Ghosts and Goblins – a game which still has to be converted to the ST. Meanwhile, US Gold has made a brilliant job of converting Capcom's sequel, Ghouls 'n Ghosts, an arcade hack-'em-up with supernatural overtones.

The scenario is much the same. Again, brave Sir Arthur has to rescue a damsel in distress (Princess Hus), but this time she's being held captive by the devil himself. His domain lies at the end of five lands populated by demons and evil creatures of the night – only when you have defeated or avoided all the monsters along the way do you get the chance to have a good scrap with Lucifer.

Each level is split into two sections and you begin the game dressed in a new suit of armour, which protects you against one attack by ghoulish opponents. Unfortunately, enemies spring up everywhere and home in on you, making it very difficult to avoid them, let alone send them screaming back to hell with a handy javelin throw.

All is not lost, however. Completing half a level means that when you die you start on the second half rather than having to go all the way back to the start.

Every so often you'll find a monster carrying a cauldron – kill it, and the cauldron will crack open to reveal its contents which can be one of two

Failing force

Product: Knight Force
Price: £19.95
Supplier: Titus, Unit 4 Stannets, Laindon North Trade Centre, Basildon, Essex SS15 6DJ.
Tel: 0268 541126

KNIGHT Force is a tale of heroes, villains, princesses and time travel. A story from the days of old when the Kingdom of Belloth was the crossroads of space and time and the valiant Knight of Thunder stood a steadfast vigil over five gateways to different ages.

Unfortunately the evil sorcerer Red-Sabbath has kidnapped the Princess Tanya and done a runner through one of the gateways. Red-Sabbath has discovered the secret of cloning and has sent his look-alikes through the gateways to rule over the unfortunate inhabitants.

Your objective is to confront and defeat five clones, zap the supreme sorcerer and free the helpless maiden from her bondage.

The manual babbles something about special amulets and magical powers, but it is so badly written that I never figured out what I was to do with the things once I had found them.

The graphics are very good – both the dragon slaying title screen and the sprites themselves are first rate. Unfortunately, the game itself fails to attain a similarly high standard as the combat routines aren't as good as they could have been.

The standard joystick waggle and fire button combinations elicit no more than a few feeble lunges and pokes – why can't we have the wonderful flourishes of swordplay that these same combinations initiated in Barbarian?

Even the unfortunates who are at the sharp end of your anger do little more than take one step back when dealt a blow by your mighty broadsword.

The five gateways are your routes to the Stone Age, New York today, a long time ago in Verseille, the space age and a mystical land of no fixed time. Each zone has physical traps to be avoided and numerous enemies to be defeated.

I was not impressed by Knight Force. It has good graphics and a fair smattering of sampled sound, but when it comes to gameplay there was more action at last year's SLD conference.

Nev Astley

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

SECOND Sight

Intrigued by the glossy adverts, I have been waiting for months to play this game. It looked like the kind of program that Psygnosis churns out, but bigger and better. Alas, how appearances can deceive. The game held my attention for about an hour, after which time the review became a chore rather than a pleasure.

James Riddell

Another one for the chop

special items. Firstly, there are cute, flashing mini-knights, which you can pick up for extra points. Secondly, and more important, there are weapons.

These come in different shapes and sizes, such as a rapid-firing dagger – handy when things get a bit hot– a short-range firebomb, a sword and an axe (a gratifying way of eliminating enemies, but not very useful). By far the best way of killing the undead is by using what looks like a set of mini flying saucers.

As you travel along each level your footsteps trigger the appearance of magical chests. Shoot one and you either get a suit of armour or a sorcerer. Kill the latter swiftly and you escape unharmed. However, let him unleash his mystical ring of stars and he'll turn you into a duck for a few seconds. You can't fire, but you can run away.

The second item you'll find in chests is the armour. If you've already got a suit this will give you extra protection and a handy superweapon to boot, varying according to the weapon already in use. Probably the best is an electric storm which zaps everything within range.

If you aren't already wearing armour – that is, if you're reduced to your knightly underpants – this item will put you back to normal armour level. It's a good idea to be as well protected as possible if you're going to defeat the end-of-level mega-monsters and progress to the next stage.

US Gold should be congratulated for such a graphically and sonically superb conversion of Capcom's coin-op. Some compromises have had to be made, but it has managed to capture the balance of addictive, unusual and extremely tough gameplay found in the original. One to look out for.

Gordon Houghton

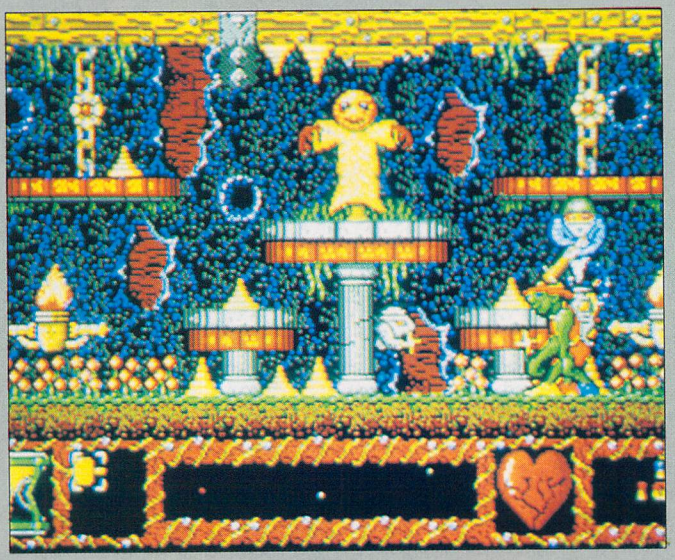
Sound	9
Graphics	9
Playability	8
Value for money	8
Overall	9

SECOND Sight

Ghouls 'n Ghosts is a superb game from US Gold. The graphics and sound are both top quality and the addictive gameplay will keep you glued to your monitor for hours. It's tough, but possible, which makes you try all the harder. Definitely one to add to your arcade collection.

Janice Murray

Best feet forward



Product: Verminator
Price: £24.99
Supplier: Microprose, Unit 1, Hampton Street, Tetbury, Glocester.
Tel: 0666 504326

SECOND Sight

Verminator was first advertised almost a year and a half ago and since then has been dogged by problems and delays. The game might now appear dated compared to recent releases, but it still manages to be fun and addictive. The music and graphics are both very good and the gameplay is good. Recommended.

Janice Murray

VERMINATOR from Microprose is set in the Treedom of Dendra. You are Jake – that's right, Rolf Harris fans – with three legs. Green ones to boot, or three boots, to be precise.

So there you are browsing through the Daily Leaf and wondering how you would fare in the three-legged race in the Green Olympic Games when you read about a plague of vermin about to eat its way through Dendra.

What can an honest, down-to-earth, out-of-work, green three-legged mutant do but take up the challenge – and earn a few shekels into the bargain.

Armed with your trusty hammer you set out to clobber the nasties. Each one has a price on its head (or heads). Collect enough heads, pick up your bounty and pop along to the general store to buy more sophisticated equipment to make life – and death – that little bit easier.

If you have any spare cash you can put it in the bank or carry it around with you, hopefully avoiding muggers.

If you are a bit short you can tap your friendly bank manager for a few bob. If he says No you can always slide down to the bottom of the tree and sniff out The Mob who will arrange a loan. It'll only cost you an arm and a leg or three.

If you don't pay up remember that it's bargain day at the local builders' merchants – three concrete wellies for the price of two. Or the boys may come around and break a leg. But never fear, you'll still have two good ones.

When you get clobbered an on-screen heart starts to crack. Get clobbered too much and it breaks, you disappear in a sparkle of stars and your hat floats to the ground.

Dendra is constructed from more than 250 whacky screens spread over four levels. Arrows point the way to various locations such as the store and the bank.

Control is from the keyboard or with a joystick and there's a save game feature. The program comes on two discs but once it has booted you don't have to swap. There may be a few disc whirrs as you move around, but it won't hold you up much.

An infuriatingly jolly David Whittaker tune bounces around as you try to do your job and put your best foot forward.

Verminator is an excellent ladders and platforms game. It's not wildly original but it is sufficiently different to make it interesting. If you like plants and acorny jokes report to the Tree Council straight away, and watch out for trailing tendrils.

Ian Waugh

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

QUICK PEEK

Roller Coaster Rumbler

Tynesoft (091-414 4611)

FOR some reason my mate Hughie has always hated roller coasters, but Roller Coaster Rumbler from Tynesoft is a totally different kettle of diced carrots. Strapped in the front car, you're hurtled around the twisting track at breakneck speeds, which nicely describes your probable fate.

Scattered along the track are hundreds of obstacles and targets, all of which have to be blasted away before you can progress to the next track. Another shoot 'em up? Well yes, RCR does involve shooting various targets, but that's where the similarity ends.

Since the car follows the track, all you have to worry about is getting the targets in your sights and hitting the fire button. Which is much easier said than done, as many of the targets are hanging from gates, swinging or bouncing up and down. Ramming is another way of obliterating moving objects, but this often throws you off the tracks.

Starting with 606 rounds of ammo and 3.5 minutes on the clock, you have to get rid of everything before either counts down to zero. The game's speed can be controlled with the keyboard, but everything else is done through the mouse.

In certain areas it's advisable to slow down to a crawl, shoot everything in sight and speed up again, but more than that I'm not telling.

The graphics and sound effects are quite nice, but if this isn't enough for you, the accompanying tape contains an audio soundtrack of a real roller coaster in full swing. At £19.99, Roller Coaster Rumbler won't be everyone's choice, but I'd recommend at least taking a good look at it.

Phil Lawson

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Alien terror

Product: Xenophobe
Price: £24.99
Supplier: Microprose, Unit 1, Hampton Street, Tetbury, Gloucester.
Tel: 0666 504326

XENOPHOBIA is the hatred or fear of foreigners or strangers – in this case aliens – and this prompts the title of Microprose's latest arcade release.

Unable to spend their Saturday afternoons rampaging through city centres under the pretext of attending a football match, the Xenon hordes have to content themselves with ransacking peaceful space stations.

Your mission is to fly to these defenceless outposts and blast the little green creeps before the base is overrun and initiates its self-destruct sequence.

Your secondary objective is to collect as many valuable pieces of equipment as you can carry and stash them in your ship to be handed over to the appropriate authorities when the job is complete.

My first impressions of Xenophobe were mixed – the title screen picture of an alien baboon with indigestion was very impressive, but the background music was horrendous. I've heard some irritating rubbish in the past, but this was something else.

The comprehensive options screen offers the opportunity to disable the music and substitute sound effects, I suggest that this be done immediately if you are to retain your sanity. Other features allow you to determine the level of difficulty and the type of base you want to begin with. The only flaw with the options screen was the fact that you could only use it once – during the loading process. If you changed your mind while playing the game you had to re-boot to modify your selection.

One of Xenophobe's main features is the two player option. By splitting the display horizontally, the game allows two players to work as a team, each with their own mini display.

Operating independently of each other, they can wander off in different directions thus eliminating the alien intruders in double quick time.

The life expectancy of each player is determined by the status of his health read out – beginning with 2,000 units, these are consumed at varying rates depending on how many, and what species of aliens are attacking you at the time.

Collecting food and potions can help extend your life, so make the most of all the morsels you find.

Mission number one is to rid a space shuttle of alien life forms; this is the smallest of the bases that you will be requested to save. Success on the shuttle moves you on to the moon base, then a starship and finally a space station.

All of these bases are very similar in architectural design, but differ in the number of levels on which they are constructed. From the moon base onwards you will have to locate and activate the elevator if you are to descend safely to the lower levels – you can jump down the vacant elevator shaft, but this is not recommended.

On-screen information is limited to your health and score. Occasionally you will wander through a room and see a computer terminal displaying the time remaining to self-destruct. What would be valuable is an indication of the number of aliens still to be eliminated.

In its current form the first indication that you have cleared the base is when you are teleported back to your ship while the base is still intact – the place is still swarming with aliens, but that doesn't seem to matter.

Most of the alien population appear to be extras from the cast of the film Alien. The smallest crustacean variety emerge from pods and scuttle around nipping at your ankles. Be careful if you squat to pick up an object because you are very likely to get one wrapped around your face. These diminutive beasts can be destroyed with a single phasor blast.

At the opposite end of the spectrum are the huge lumbering aliens, which appear to be relatively harmless except for their filthy habit of spitting acid. To destroy a beast of this magnitude requires multiple phasor shots or just a couple of zapper blasts.

You can change your weapon whenever you find a new one on the floor. I wouldn't bother picking up the rifle, its range is short and effect minimal. On the other hand you can't go wrong with a zapper. It has a limited range, but its impact is awesome. Xenophobe's graphics are adequate, but not in the same class as those frequently seen in Psygnosis games. Similarly with the sound effects, they are OK, but not in the Xenon 2 league.

The program's gameplay is one of its weaker facets. Maybe I expect too much nowadays, but wandering from room to room, blasting everything that moves and picking up mostly useless objects just doesn't hold much appeal any more.

Xenophobe does everything fairly well, but not well enough to ensure its success.

Jon Revis

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

SECOND Sight

Xenophobe's only glimmering of originality is the simultaneous two player option and this makes for exciting gameplay. In the single player alien anihilation league I'm afraid that Xenophobe may be doomed to relegation.

Carol Barrow

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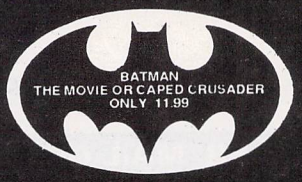

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Power play

QUARTZ, the latest game from Microprose, involves a spaceship pod. It can point in eight directions and the screen scrolls around it when you move. You begin in the Crystal Lattice, a neatly-designed screen in which one background slips behind another to produce an eye-smacking psychedelic effect.

Shooting hadrons (big balls) creates quarks (smaller balls), and shooting quarks releases neutrinos (even smaller balls with a ring around them).

You can collect neutrinos to build Powerups. But you have to be quick because the neutrinos don't hang around on screen forever and you even have to make your Powerup selection against the clock.

Powerups can be traded in for extra pods, bombs, repairs, extra armour and so on. You can accumulate up to three Powerups and change from one to the other by pressing the spacebar – that is if you can steel yourself to take your hand away from the joystick.

Just when you think you're getting the hang of it you'll be blown off-course into the Atomic Zone. Action here is of the horizontal scrolling variety. You have to dodge atomic windmill arms while fighting sweeping hoards of alien ships.

Scope for the accumulation of more Powerups here. If things don't work out you will be told to reliquish one of your hard-earned Powerups. I particularly resented this.

Quartz is a well-written game containing plenty of zap-'n'-blast-'em action. It is easy to play, but it's one of those games where the aliens have more control over the situation than you, and it's often frustrating because of it.

It is reminiscent of Meteors in which you blast meteors into increasingly smaller segments. But that game is so old it was in black and white. Quartz has developed the idea although not to any great degree.

For a full-price program it is short on variety of gameplay, yet I found it oddly addictive.

Ian Waugh

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

SECOND Sight

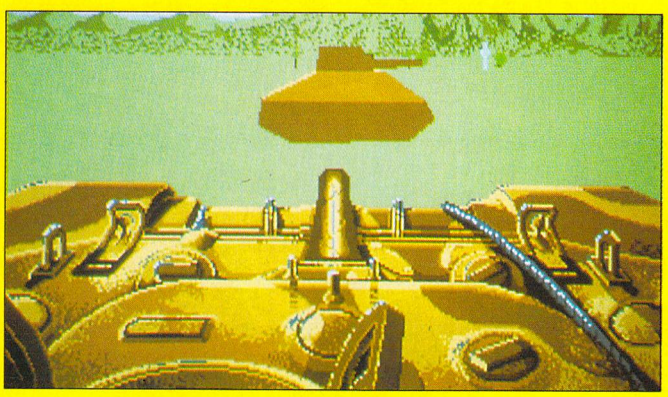
Quartz is a variation on that old classic arcade game Meteors. There are slight differences – such as the superb parallax scrolling graphic backgrounds, solid snooker ball-like meteors and various aliens in the sideways scrolling section, but the gameplay is very similar. Fun, but much too expensive.

Roland Waddilove

QUICK PEEK

Sherman M4

US Gold (021-625 3388)



OVER the past 18 months the market has been flooded with aerial combat games taking you back to the war years of the early '40s. Now, thanks to US Gold, it is the turn of the tanks in this exciting combination of blasting and strategy.

Step back into the past and choose from three campaigns, Africa, Normandy or the Ardennes. The main view is always looking straight ahead and can be from the driver's seat or the command hatch of the tank. The movements and firing, which the driver's hands mimic quite nicely, are controlled from the joystick, although some use of the keyboard is required for selecting various features.

Locating the enemy is child's play, just examine the map and head off towards them. The only feature lacking is a compass to show your direction, but you'll soon get the hang of moving around without one.

There are towns, villages, Allied positions and rivers to navigate around. Track down the opposition and destroy their emplacements and equipment.

The graphics and sound are good, as are some of the special features such as examining every type of enemy tank, scrolling the map to reveal other areas and positions and choosing which enemy leader to fight, including Rommel and Piper.

This is an excellent game for anyone looking for a little more strategy in their gratuitous slaughtering.

Henry Dee

Program: Fiendish Freddy's Big Top O'Fun
Price: £29.99
Supplier: Mindscape, PO Box 1019, Lewes, East Sussex BN8 4DW.
Tel: 0444 86545

Clowning around

FROM the moment you open the package and no fewer than five discs tumble out, you know Fiendish Freddy's Big Top O'Fun (let's just call it Freddy) is going to be something special. It marks a big move away from simulations for Mindscape, and promises better things in the future.

Freddy himself is an evil clown who looks from the box illustration rather like a demented version of Prince Charles. You are the circus owner, and your job is to avoid having your circus closed down by the Big Bank to which you owe loadsamoney. The only way you can do this is for your stars to perform perfect tricks for the fee-paying audience, but Freddy is out to stop you.

From the opening sequence of the limo drawing up and presenting you with the demand for cash, it's obvious that the game is somehow very American, with the concentration on marvellous graphics, sampled sound effects and magnificently decorative inter-game captions obscuring the fact that the six events are all rather simple.

From the opening menu you can select the number of players - up to five players can take part, each competing to make the largest amount of money. If you want to save the circus, one individual must make $10,000.

Each player chooses an animal character, and after each round a distinguished, if slightly barmy, panel of judges appears to award you cash for that event, and show your total so far. Alternatively, you can choose to practice any of the events, high diving, juggling, trapeze, knife throwing, tightrope and human cannonball.

Each event features marvellous animation and graphic design, with a good deal of slapstick humour which is funny the first time you see it, if not the tenth. The game music is rather monotonous, but that can be turned off, leaving you with the very effective sampled sound effects of whizzes, bangs, screams and honks - that's a sealion.

Taking the six events in turn, high diving is a matter of wiggling the joystick madly in order to keep in a straight line as the screen scrolls upwards past the plummeting figure of Horace the high diver.

To score points you push the joystick in the right direction to perform stunts specified on the screen. Leave it too long to respond to a task set, and Freddy pops up with his giant fan, blowing you off course and towards a sticky landing.

Juggling is possibly the best event. Staggering left and right on a unicycle, you must catch and toss more and more objects, keeping them in the air until a time limit expires, and getting rid of Freddy's bombs and missiles before they explode. I particularly like the sound effects when you drop the baby.

Trapeze is a bit monotonous. Swing left and right building up enough momentum to leap to the next trapeze, and watch out for obstacles such as paper hoops and Freddy with his jetpack and giant scissors.

Knife-throwing is a bit more entertaining. Line up your knife point and let fly at the rotating target, trying to pin the balloons and avoid your shrieking assistant Knancy Knife. Freddy's blinding smoke bombs make this more difficult than you'd expect.

Tightrope is remarkably difficult. Steer the tightrope walker along the diagonal line, balancing by moving the joystick right and left, and fending off Freddy's attacks with blows of the pole.

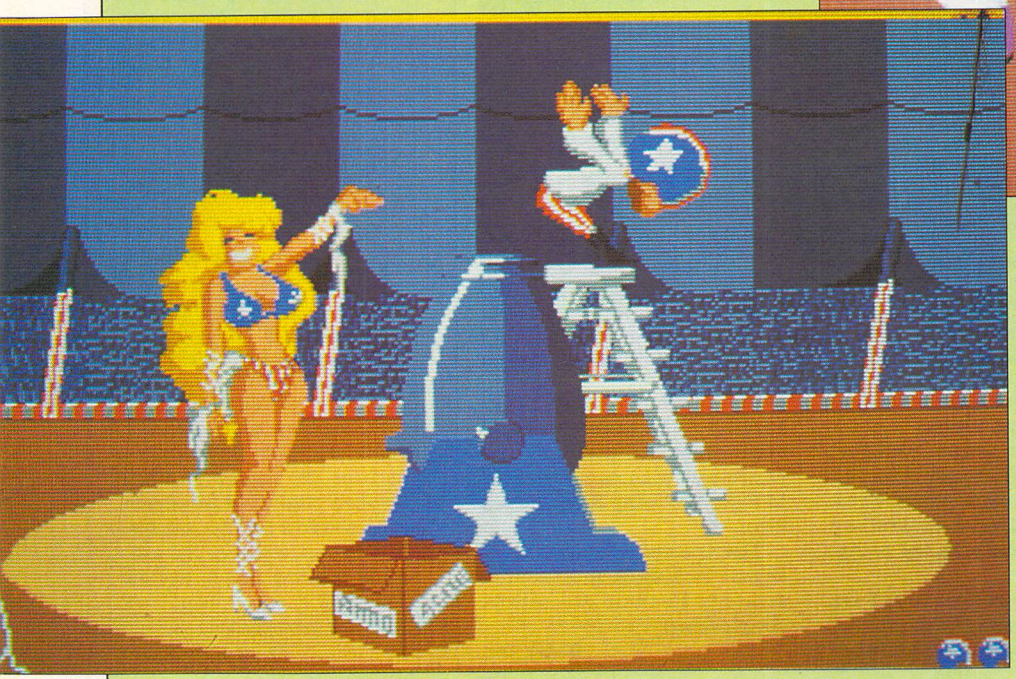
Lastly, Human Cannonball challenges you to place the target and choose the angle of your shot so that you land in the net rather than in a smoking crater.

Some excellent cartoon-style design and animations don't really make up for the fact that Freddy is basically six rather simple games strung together. Because there's a large amount of long-winded disc accessing involved, once you've practised all the events you might not want to go to the effort of playing through them all, particularly if more than one player is competing.

You can speed things up by transferring the game to a hard disc if you have one - it takes up 2.5Mb. You also have to bear in mind that at almost £30 you could go to the real circus six times for the cost of one game with Freddy.

Still, you can't deny that an enormous amount of time and effort has gone into the design and execution of the game, and I'm pleased to say it doesn't feature any cruelty to animals, though there's plenty of cruelty to humans.

Chris Jenkins



"Each event features marvellous animation and graphic design"

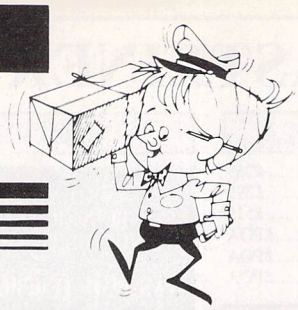
Sound	*9*
Graphics	*8*
Playability	*9*
Value for money	*8*
Overall	*8*

SECOND Sight

Fiendish Freddy is a graphic delight - the comical capers of the characters are superbly drawn and animated. However, once you have seen the graphics and laughed at the game, there's very little else left, the games being very simple.

Janice Murray

BYTEBACK



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An apple a day...

Product: Crossbow – The Legend of William Tell
Price: £19.95
Supplier: Intelligent Design, Second Floor, Phoenix Building, 32 West Street, Brighton, Sussex BN21 2RT.
Tel: 0273 27915

LEGENDARY heroes are a common source of inspiration in the weird and wonderful world of computer gaming. Now, courtesy of Mark Eason and Jonathan Howell of Intelligent Design, comes your chance to follow in the footsteps of the famous Swiss apple shootist William Tell.

As Tell, you continue the feud with arch enemy Gessler while attempting to rescue your son, who has been arrested by the Black Knights for refusing to bow down to the ducal hat placed on a pole in the marketplace by Gessler.

A simple enough task you might think, but in this difficult arcade adventure there are many stumbling blocks.

So far I've been attacked by wolves, eagles and castle guards and captured by warthogs. Even the monks and villagers are proving uncooperative. To cap it all, Gessler's Black Knights are on the lookout for Tell as a suspected subversive.

The action in this two-disc game takes place in the woods and mountains near Tell's village, the surrounding settlements, and the towers and dungeons of Gessler's castle. Graphics are bright and bold, and sample sounds abound.

Screen layout is simple and effective with the top two thirds depicting Tell and his location along with any characters or objects present.

Left of this is a golden sword indicating Tell's strength, the gradual disappearance of which signals his end. Happily any loss of energy, for example after a fight, may be replenished by eating some of the food found throughout the game.

A silver sword representing the vitality of his nearest opponent appears to the right when Tell is under attack. The bottom third of the screen is taken up by a control panel, split into three and operated via mouse or joystick.

The first section contains nine icons representing your possessions – valuables, keys, food, drink, manuscripts, shields and your quiver – along with the icons for combat mode and, of course, crossbow mode.

The icons are used to control William Tell's actions

The middle of this display performs a few functions. A picture of a crossbow and arrows with a text description of the current location may be replaced from time to time by messages from the various characters encountered, along with your own communications.

Also present is your score or status, any objects nearby, or a more specific description of an object carried, and finally, when crossbow mode is selected, a view down the crossbow's sights together with any targets.

The right-hand portion of the panel has a further nine icons to communicate with other characters, eat, move in one of the four available directions, halt, show or offer an object, pick up an object, and load an arrow.

When an icon is selected a further series of icons may appear relating to the specific mode. If the icon is coloured further action is possible, but black and white indicates that no option is available, for example, selecting the quiver when no arrows are being carried.

Tells' sprite shuffles about in an agreeable enough fashion, halting when near any objects or exits, and, upon reaching the edge of the screen the picture flips quickly to the next location without tiresome disc accessing.

Much of the gameplay involves bartering with the locals, many of whom are friendly, some ambivalent, and a few downright hostile. A softly softly approach is in order here, as quite a number of essential objects can be collected by this method.

Combat should only be used when all else fails, as useful items may only be obtained from living beings, and indiscriminate use of violence not only saps Tell's energy but also results in a trail of bodies should your efforts prove successful.

A variety of weapons have been carelessly left lying about for you to choose from, some short range, others long. Should you be unfortunate enough to lose them Tell will do his best with old-fashioned fisticuffs.

Perseverance will finally lead Tell to his son, where a spot of apple shooting occurs. Fortunately, you get three goes. And then there is a final confrontation with Gessler himself.

It is a nice production, enhanced by a comprehensive instruction manual, yet I have certain misgivings about the game's limited audience appeal. Neither traditional adventurers nor hardened joystick wagglers will find their lives greatly enriched by Crossbow in the post-Christmas doldrums, which is a pity as a great deal of thought seems to have gone into the program.

Phil Armstrong

Sound	5
Graphics	7
Playability	8
Value for money	7
Overall	7

Attempting to enter Gessler's castle

SECOND Sight

I thoroughly enjoyed this high-tech version of the classic William Tell tale. The graphics are excellent with well defined characters, fairly smooth movement and easy controls. The music at the start is instantly recognisable and the sound effects are good. It's not the best arcade adventure around, but will provide some light relief from blasting aliens.

Roland Waddilove

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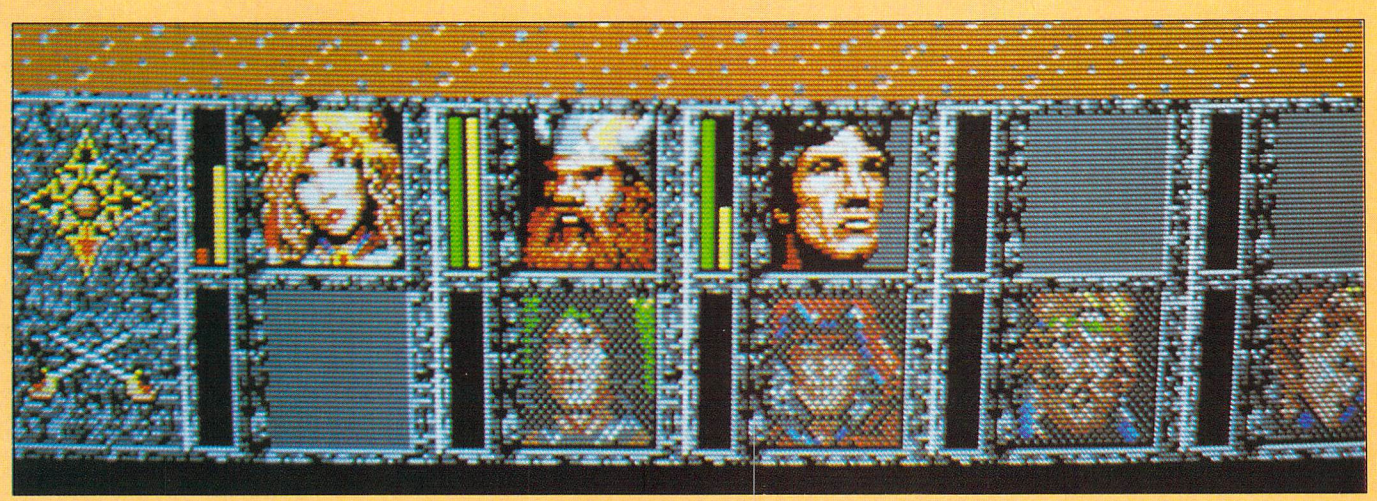

The members of your party

Product: Dragons of Flame
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Tel: 021-625-3388

THE sequel to the popular US Gold AD&D action game, Heroes of the Lance, follows from where the original left off. The eight Companions of the Lance – they're not classed as heroes until they succeed – have recovered the powerful Disks of Mishakal, but the land of Krynn is still under terrible threat from the Queen of Darkness.

Unless the Companions manage to free the slaves held in the fortress of Pax Tharkas and recover the Wyrmslayer, Krynn will be powerless to resist the Queen's Draconian forces and evil will engulf the land.

The quest begins in the middle of the wilderness. Your party is represented by a single icon in the centre of a large scale map and by eight separate head and shoulders icons at the base of the screen. A menu of available actions and an overall map showing the advance of the Draconian forces can be accessed at any time.

Whenever a non-player character comes within shouting distance, the viewpoint automatically switches to a horizontally scrolling combat mode with your party leader onscreen. Only a few characters give useful advice or offer to join your party (there's room for two extra). Goblins, wraiths, blood-sucking stirges and gully dwarves each have their own specialised way of giving adventurers pain and there's one thing they all have in common – they're extremely hard to beat.

Of the two fighting methods available, long range combat is preferable to short range, though there sometimes isn't room to use weapons such as spears and bows. All party members start out with at least one weapon and there's a fairly wide selection of fighting moves. Not that you have long to try them out – a weak companion can be destroyed quickly.

Any goodies you find along the way can be picked up and distributed among party members. You can search for secret doors, put items into chests, open doors, rest, examine a character's status and cast magic spells.

Each of the two magic users – Goldmoon and Raistlin – have a different repertoire of spells which include such occult specialities as finding traps, casting a magical war hammer, detecting magic, throwing a short range attack, healing serious wounds and even raising the dead.

Raistlin's staff absorbs any spells cast at the party for a limited time, but it is liable to explode if it gets overcharged. Any used spells are regenerated during a rest period.

With the exception of the more detailed combat sequences, the graphics are functional rather than exceptional, though that's not a significant disadvantage in this type of map-based game. The limited sound, on the other hand, is a major disappointment. A heavy rock-style title tune and a few walking and shouting effects are all you get.

The gameplay is well designed. The variety of opponents and the complexity of the environment gives the action a definite sense of depth. Survive to the later stages and you'll encounter a wealth of secret locations containing mazes, traps, chests, treasure, additional spells and extra ammunition.

Unfortunately, unless you've got enormous reserves of patience you're unlikely to get that far as some monsters are just too tough. Once you've been attacked by a particularly hard enemy, more and more start appearing from nowhere. In a matter of minutes your whole team can be wiped out.

With an extra escape option in combat mode or a more gradual increase in the difficulty level, Dragons of Flame would have been an excellent action-oriented RPG. As it stands, it is simply too tough.

Kati Hamza

Mission impossible

One heck of a mean dude

Sound	*3*
Graphics	*6*
Playability	*7*
Value for money	*8*
Overall	*7*

SECOND Sight

Dragons of Flame is an interesting role playing game, but the difficulty level is so high on the later levels that it spoilt my enjoyment. The graphics and sound are OK, but nothing to write home about. This game won't suite everyone so try before you buy.

Janice Murray

Chop-'em-up

Product: The Ninja Warriors
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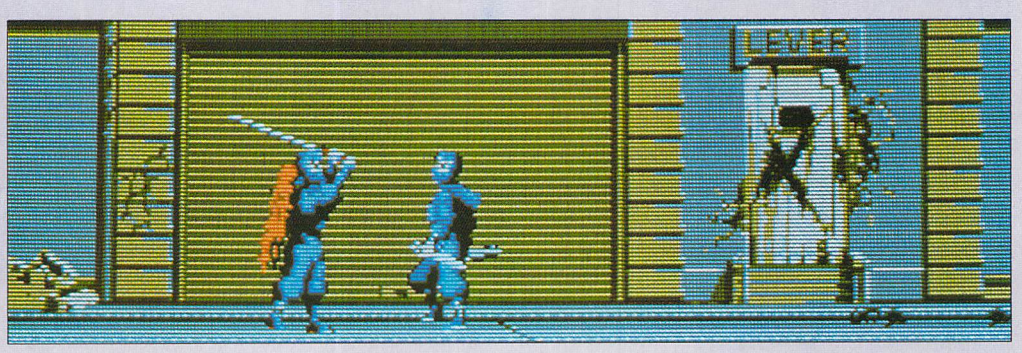


Here comes a chopper to chop off your head

IF you've been waiting for a good martial arts game for your ST here it is. The Ninja Warriors is a superb conversion of the Taito arcade game. It doesn't have the original's three monitors, but you can enlist a friend to fight alongside you.

In the year 1993 the world is ruled by an evil man called Bangler. This mad megalomaniac controls the army, the police, and even the criminals. However, Bangler doesn't have it all his own way; the resistance movement may not have the manpower to overthrow Bangler, but members certainly have the technology.

Mulk, leader of the revolutionaries, has created two assassination machines nicknamed The Ninja Warriors. Armed only with a pair of flashing blades and a pocket full of shuriken, the ninja warriors must attack and defeat Bangler's evil army. Only then can they reach the man himself and terminate his evil rule.

Striding purposefully through the slum scene our mechanical marauder begins level one. Running on-screen from both directions, Bangler's troops begin their first assault. Without breaking your stride you stab the fire button – Ssheesh! – a flash of steel, a spurt of blood, and the aggressor slumps.

In hand to hand combat you are invincible. Bangler soon realises this and changes his tactics. Emerging from a disused garage is a mean looking gangster with an even meaner looking shotgun. Dropping to the ground you launch two well aimed shuriken – a sampled scream signals the bad dude's demise. By this time I was beginning to think that the game was in the bag. With me in control of the ultimate fighting machine, who could stop us?

At this point the first of the mutant hunchback ground spiders lurched into view. A few seconds later I was in control of my second ninja.

Fans of the Arnold Schwarzenegger film, The Terminator, will recall the way the android creation was slowly relieved of its fleshy exterior as it suffered increasing degrees of damage. The ninja warriors suffer a similar fate. Direct hits from bullets and mortar fire result in the gradual loss of their human appearance – the damaged areas being stripped of flesh to reveal the mechanical skeleton.

At the end of every level there is a guardian. On level one this role is performed by a lady ninja. Armed with a healthy supply of shuriken and a sword the size of a broomstick, she is a mean opponent.

Level two is set in a US army base. Once again there is an ample supply of marines to mutilate, plus a circus freak who belches fire. I was slashing my way through the base, when suddenly the enemy left.

Seconds later I was surrounded by explosions coming from nowhere. A few more seconds passed and a loud mechanical rumbling began to shudder from my monitor. From the right hand side of the screen began to emerge the turret of an enormous tank, occupying more than half of the screen, it was impervious to shuriken or steel. But I soon found a way past it.

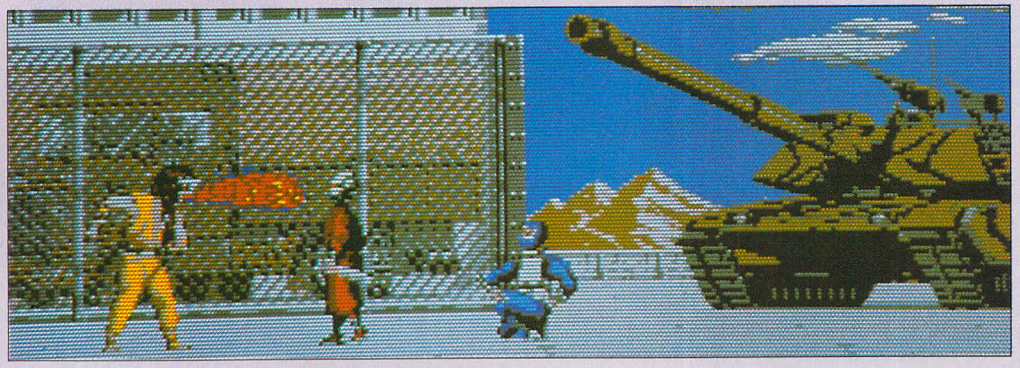
The Ninja Warriors is packed with surprises, weird and wonderful creatures, and some of the best sampled sound effects to emanate from your ST.

During loading the program determines the number of drives, whether they are double sided and how much ram you have. Double sided drive users get an extra level and more extensive use of sampled sound effects.

Ninja Warriors is a superb arcade game conversion, one I will return to long after completing this review.

Jon Revis

In hand to hand combat you are invincible



Tanks a lot

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

SECOND Sight

The Sales Curve has put a lot of time and effort into creating a superb arcade game.
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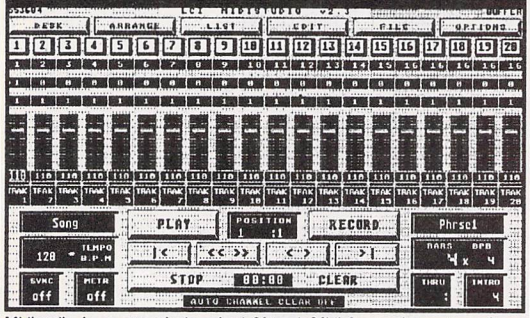

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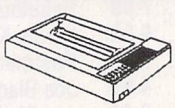

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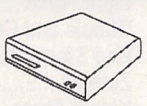

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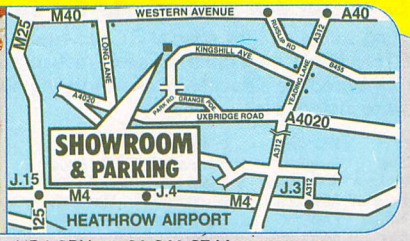

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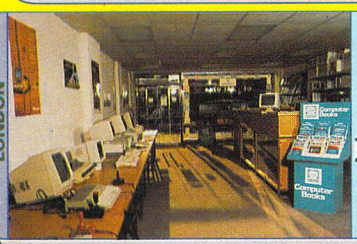

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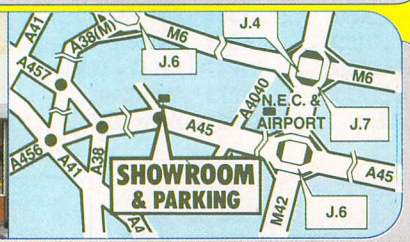

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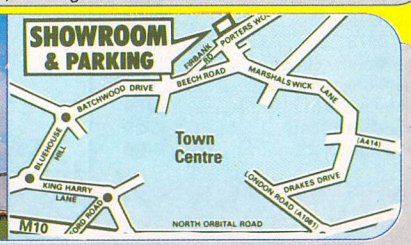

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Digital Wisdom Cheap and Cheerful C COMPILER

Roland Waddilove tries a new C compiler and finds quality without the price

THERE are already several good C compilers for the ST – Laser C, Prospero C and Mark Williams C instantly spring to mind. Why then, would Digital Wisdom release its own version?

Well, every company believes that its own development system is best and that it provides several advantages or facilities not supplied by the opposition. So what makes Digital Wisdom C stand out from the crowd?

The first thing to catch your eye is the low price – £68.95 is cheap for a C development system. If you shop around you may be able to find a cut-price mail order firm that can supply Mark Williams and Prospero for about £100 and Laser for about £130.

Has Digital Wisdom cut corners to reduce the price? Not so. The package includes C-Breeze, a superb text editor designed to be incorporated into development systems such as this which costs £24.95 when bought on its own.

C-Breeze isn't as fast as Tempus, but is far more flexible, as you can alter almost every menu and command keystroke. Digital Wisdom has configured it to call the compiler and linker, separately or in sequence, to produce PRG or ACC files, to call a Make utility or the debugger.

It has comprehensive search and replace facilities, the ability to jump to a function by clicking on it with the mouse, up to six different files can be edited at once, three different sized character sets, a keypress record and replay facility, a comprehensive Undo facility that remembers a number of deletions, and much more. Read the full review in the September 1989 issue of *Atari ST User*.

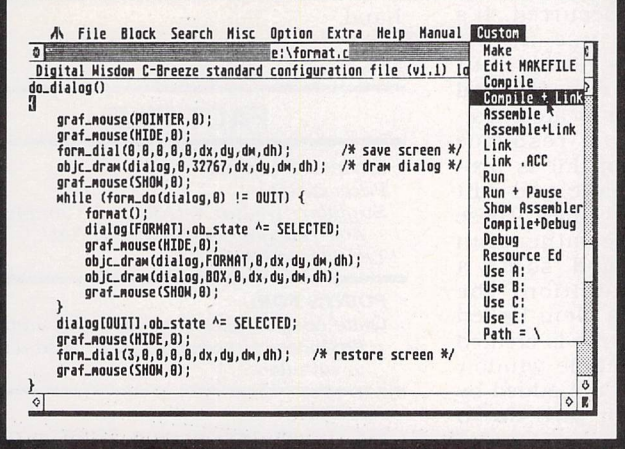
The compiler, capable of being called from the editor or the Make utility, takes C source code and in-line 68000 assembly language and produces either an object code file or an assembly language file. There is also an option to use the compiler as a pure assembler.

The linker will take a number of object code files and combine them with the supplied library functions to produce an executable program. It has an option to store the symbol information in a separate file for use by the debugger.

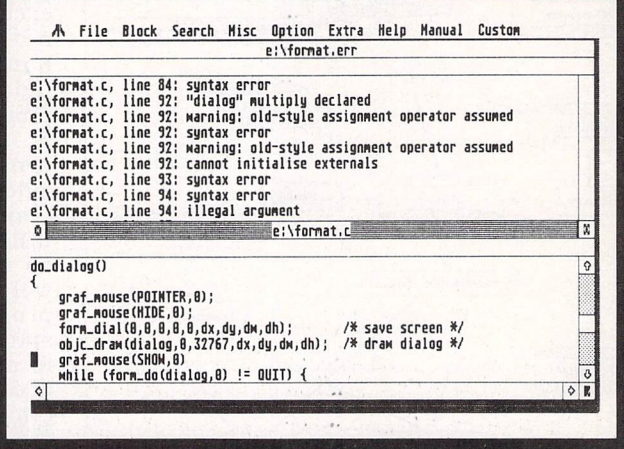
Compiling programs

I tried compiling several small C applications and discovered three minor problems. First, there isn't enough memory in a 520ST to call the compiler and linker from the C-Breeze editor, making the edit-compile-link-execute-edit development cycle tiresome. You must save the source code, quit the editor, invoke the Make utility, run the program, then reload the editor and source code.

No such problems existed with a Mega 2 ST and 40Mb hard disc – the whole process is extremely quick and easy. Compile and link times are com- ➤



The powerful C-Breeze editor has been customised for use with Digital Wisdom's compiler, linker and debugger



Miss out a single semi-colon from your source code and the compiler prints a screenful of error messages. Isn't it fun programming in C?

➤
mendably fast, and you can run the program and also the debugger straight from the editor. Compilation errors are reported in a separate editor window.

The second problem was discovered to be due to the fact that unlike many other ST C compilers, Digital Wisdom's considers the *int* type to be 32 bits long, the same as most other systems' *long*. Changing every occurrence of *int* to *short* solved the problem.

The third problem encountered was with the standard C functions to read and write data to a file. Normally, according to Kernhigan and Ritchie, a carriage return/line feed combination – Ascii 13/Ascii 10 – is converted to C's \n, newline, character.

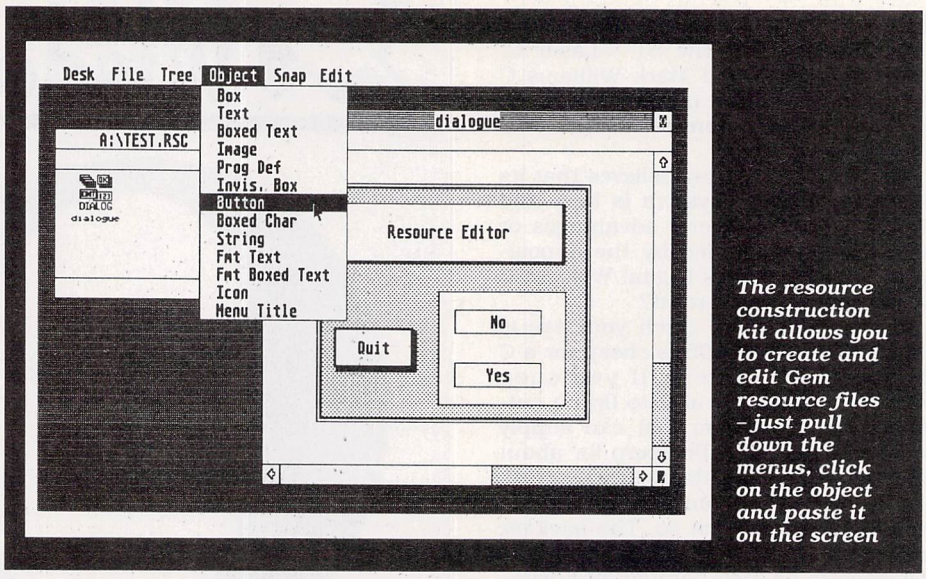
This is fine for reading text-based files, but it causes problems if you want to read a file into memory exactly as it is stored on disc. Other C compilers provide an extra option with the *fopen()* function to read a file without performing this conversion, but not Digital Wisdom.

The solution is to rewrite the program to make use of the much lower level functions *Fopen()*, *Fread()*, *Fwrite()* and *Fclose()*. It's not a major task, just mildly annoying.

The executable files produced are very small and compact, and there is only a small runtime overhead involved. The compiler seems to be capable of producing efficient code, for example, a formatter that compiles to 7,068 bytes using Laser C squashes down to 4,253 bytes with Digital Wisdom. And a 6,775 byte Laser C virus killer compiled to just 3,274 bytes.

MicroEmacs, a public domain text editor, is supplied, but as C-Breeze is so good it is redundant. Megaform is a formatter that produces special fast-format floppy discs, like the formatter on the January Cover Disc.

Maxidisc is a ram disc capable of surviving a reset and keeping the contents intact. It also performs data compression on the files so you can squeeze more on the ram disc than you normally could given its size.



The resource construction kit allows you to create and edit Gem resource files – just pull down the menus, click on the object and paste it on the screen

Utilities

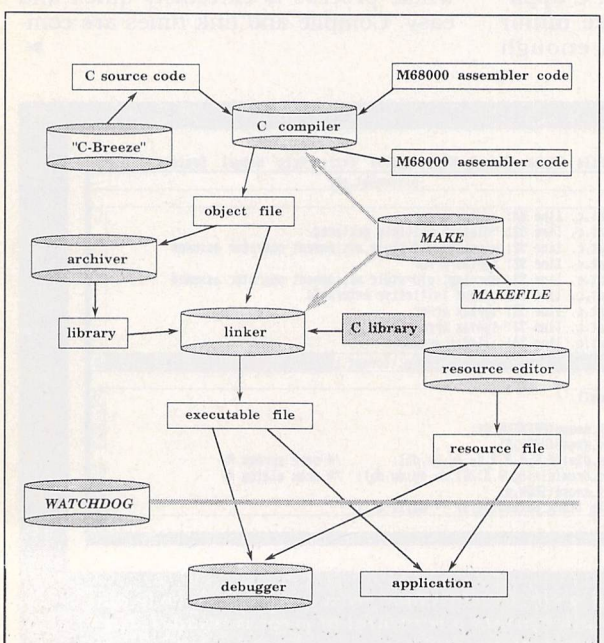
Make is a useful utility that keeps track of the source files that need to be compiled to make a program. If for instance a program requires three source files and you altered one file, then only that file would be recompiled and this then linked to the other two object files.

A library creator is also supplied which enables you to create a library from object files. The source-level debugger provided lets you set breakpoints and single step through programs.

Like all C debugers, it's not for the faint-hearted. Watchdog and Woofwoof will trap bombs and produce a 68000 disassembly of the source code around the address at which the exception occurred. It's not much use in the hands of a novice, but helps the experienced programmer locate bugs.

Finally a resource construction kit is provided to make and edit Gem resource files. These utilities are rather thin on the ground, so it's a welcome addition. The program is Gem-based and a new tree is created in a re-sizeable window and objects are added by clicking on pull-down menu options. Object states, flags and so on are set by clicking on radio buttons in a dialogue box. Digital Wisdom's Red is good, but even though Kuma's K-Resource is long in the tooth, I still prefer it over more recent offerings for ease of use and facilities.

The documentation consists of three manuals, one for C-Breeze, one for the compiler, linker, debugger and Make utilities and one listing the C library functions. These are all excellent and the only drawback is the almost complete lack of program examples and snippets of code. Theory is fine, but there is no substitue for seeing the various Gem functions used in practice.



A flowchart of the processes involved in developing a C program

Conclusion

Digital Wisdom has produced a good C development system. If you have only a 520ST then there are some restrictions as to what you can do from within the C-Breeze editor, but if you have 1Mb or more you'll find the package both fast and easy to use.

Which C package do I now use? It's Laser C on a 520ST with one double sided floppy disc and Digital Wisdom on a Mega 2 plus hard drive. Prospero's C documentation has never been bettered, so that is always at hand.

FACT FILE

Product: C Compiler
Price: £68.99
Supplier: Digital Wisdom, 3 Camphill Ave, Glasgow, Scotland G41 3AU.
Tel: 041-649 3965

POINTS FOR:
Quite easy to use. Very good text editor. Produces very compact files. Good documentation.

AGAINST:
Not enough memory on a 520ST to run the compiler or linker from the editor. Manuals need more program examples.

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Paul Overaa gets to grips with Atari's Stacy portable and grabs the opportunity to try everything from games and utilities to the C compilers and Midi sequencers. In this first instalment of a two-part review he gives some first impressions

Computing on the move

IT has already been predicted that the 1990s will be the decade where the portable computer really makes its mark and there's a race going on which, from an buyer's viewpoint, is well worth watching.

Atari's new offering, the Stacy, has arrived with an interesting mix of credentials: In the business world the ST range seems to get less attention than it deserves, so here the Stacy is going to have to battle it out with the competition unaided. Irrespective of how it fares as a business machine, the Stacy is destined to be a winner in the music world because of the ST's high profile in the Midi/music arena.

I must admit that this review nearly didn't get written. My Stacy arrived with no user documentation, no system or utility discs and no technical documentation. It turned out that the documentation had walked somewhere along the line.

To be fair, Atari organised fresh documention as soon as I contacted them, but I was still left with a Stacy and there was no way I intended to let it sit unused on my desk while I waited for the official words to arrive. Off I went to borrow not only a range of ST programs but a collection of general Gem/ST material.

By this time I'd hoped my troubles would be over, but another minor hiccup was in the offing. The hard disc auto-booted some demonstration games from which there was no obvious means of escape, and to make matters worse there appeared to be a drive fault on the review model's floppy drive, which resulted in not being able to boot from the floppy for the first 10 to 15 minutes after the machine was switched on.

The drive problem cleared itself within the first two days and, as it never recurred, I put it down to teething problems with the review machine. They do, incidentally, get thrown around, dismantled and generally interfered with in a manner which most people just wouldn't dream of.

This was obviously a far from ideal start, and you might think that the initial problems would have put me off. During the first few hours of attempted use it almost did, but now I'm very glad that I persevered. Despite the above gripes I am in fact going to say many nice things about this new machine. Firstly however, let's have a brief look at the hardware itself.

Specifications

Processor: Motorola 68C000
System clock: 8 MHz
Internal ram: Stacy 2 – 2Mb
Stacy 4 – 4Mb
Internal rom: 256k
Monitor: Supertwist backlit LCD monochrome
Resolution: 640 x 400 pixels
Keyboard: Full function ST-compatible with 10 function keys
Drives: 3.5in floppy, plus Stacy 2 – 20Mb hard disc, Stacy 4 – 40Mb
Power: Internal by batteries or DC input jack for use with external mains adapter (supplied)
Standard ports: Midi, monitor, serial, parallel, floppy, hard disc, two mouse/joystick, cartridge
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Stacy 4 £2,068

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DOUBLE DRAGON	PREDITOR	FIRST BASIC
ELIMINATOR	R-TYPE	MUSIC MAKER
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The hardware

When closed the Stacy measures 37.5cm wide by 33cm deep by 8.2cm high. It weighs in (without batteries) at around 15 pounds, and although this puts it a bit on the heavy side as portables go, you get an immediate feeling that the unit has been well built.

The lid hinges about two-thirds of the way back and houses the monochrome 23.5cm x 14.5cm backlit LCD display. The screen offers a resolution of 640 x 400 pixels with blue and silver-grey screen colours.

It's a good display, easy on the eye, clear and, bearing in mind that you can also use an external monitor for conventional colour or black and white display, I don't think many users will find fault. The Stacy's lid does, incidentally, also house the brightness, contrast, speaker, volume control, and the drive/battery indicator lights.

Given the limited space available, one of the first things that strikes you about the keyboard layout is that Atari has got most things right. The Qwerty area of the keyboard, arguably the most important, is full size, so word processor users will find themselves at home with the Stacy after a few hours use (I've yet to find a keyboard yet that didn't have a strange feel for the first hour or so). Ten function keys in two rows of five are provided and again these are of reasonable size.

Cursing the cursor keys

I'm less happy with the cursor control keys; they're small and it's all too easy to hit the Clr-Home key instead of cursor-right by mistake during editing operations. The numeric keypad keys are even smaller – calculator style in fact.

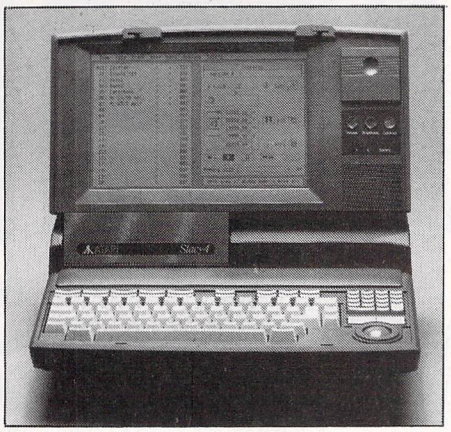
If you need to enter a lot of numerical data for spreadsheets and so on, then you might find the physical size of the keys a disadvantage.

I hated the numeric keypad at first, but once I had used it for a while I became a bit happier. Given that a choice had to be made, having the full size Querty keyboard and a cut down numeric pad was surely the best decision for the majority of potential users.

The Stacy's twin button trackball device is mounted in the bottom right hand corner of the keyboard. Trackball devices are not, in general, as convenient as mice and the Stacy unit is no exception.

There's no problem at all as far as menu operations go, but for cut and paste work or even simple drawing the trackball leaves a bit to be desired. Despite such drawbacks, there are many times when you'll need such a device on a portable.

I wasn't too keen on the trackball at



first, but by the time I'd finished this review I had developed quite a reasonable technique based on spinning and moving the trackball with the thumb while keeping the forefinger on the left button.

Up until this time much of my work had been done while sitting comfortably in an armchair with the Stacy on my lap, and I had begun to realize that perhaps there were some interesting advantages to be had after all. You are not, incidentally, restricted to only the trackball device – you can use a mouse if working space permits.

While we're talking about the hardware perhaps some other details are in order: The Stacy uses the cmos version of the Motorola 68000 microprocessor running at 8MHz. For mains operation there's a relatively unobtrusive external power supply measuring 16cm x 8cm x 5cm.

I suspect that for most users this will end up being the main (no pun intended) power source. Battery use is certainly possible, but it appears that standard alkaline batteries are not the answer. The projected continuous use figures of 5 to 35 hours look far too optimistic, and rumour has it that Atari have a NiCad cell pack in the pipeline, although as yet I have no official details.

As far as basic configurations go, you could in theory have one or two floppies or one floppy and a 20Mb or 40Mb hard disc coupled with a choice of 1, 2 or 4Mb of ram. At the moment the choice is limited to the single floppy/hard-drive combinations with either 2 or 4Mb of ram.

The Stacy's interface areas are spread around the sides and back of the case – a cartridge port, two mouse/joystick ports, one parallel, one serial, the external monitor connector, SASI(Atari SCSI), hard disc, floppy disc, and of course the Midi-In and Midi-Out ports. When not in use all connectors except the back panel can remain hidden behind clip-on covers.

Initially I thought that the back panel, which also houses the reset button, was permanently exposed, but it turns out that there should have been a fold-down flap to protect the connectors during transit. This presumably disappeared along with my documentation and so on. I'm beginning to suspect that someone is trying to build a Stacy out of pieces collected from review machines!

Musical Stacy

Put simply, the Atari ST is not just a Midi/music computer – it is *THE* Midi/music computer. Why? It comes down to the good old price/performance ratios: The Apple Macintosh has some great Midi software, but for many people both the hardware and the software are just too expensive.

The Amiga might be conceptually brilliant, but I've seen virtually every piece of Midi software available for the Amiga and, in general the ST to Amiga ports have been done rather badly. In this latter area I can't see things changing much in the near future because programmers, at least those involved with the Midi/music applications, are still having trouble with the complexity of the Amiga and its operating system.

The affordable ST on the other hand is now well understood. Programmers have had the advantage of Gem, and despite the inevitable gripes, this has allowed software houses to produce standardised and reliable programs quite easily.

Good Midi/music software attracts users and as the user base grows more software houses are pulled into the arena. This vicious circle has put the ST where it is today and to be honest there's little hope of the competition getting a look in.

For the serious Midi user then, the availability of an Mega ST packed into a box which is the size of a portable typewriter has got to be one of the most important contributions Atari have made to the music world since the birth of the ST itself.

Good design

As far as the overall design goes the Stacy scores quite highly. The general design lines are good and the machine is both attractive and functional. There are only two things I would have liked to see: Firstly a locking device on the power socket (at the Stacy end) together with a coil-type stretchable power lead, and secondly connector covers that couldn't be lost – that is, ones which slid into the case as opposed to being physically taken off.

I've tried a range of software – games, utilities, Megamax's Laser C compiler, Dr T's KCS sequencer and so on, and so far there doesn't seem to have been any compatability problems. But there is plenty more software still to be tried, including the very latest Trackman and Midiman software.

● ***Next month: How the Stacy shapes up to the pressures of serious use.***

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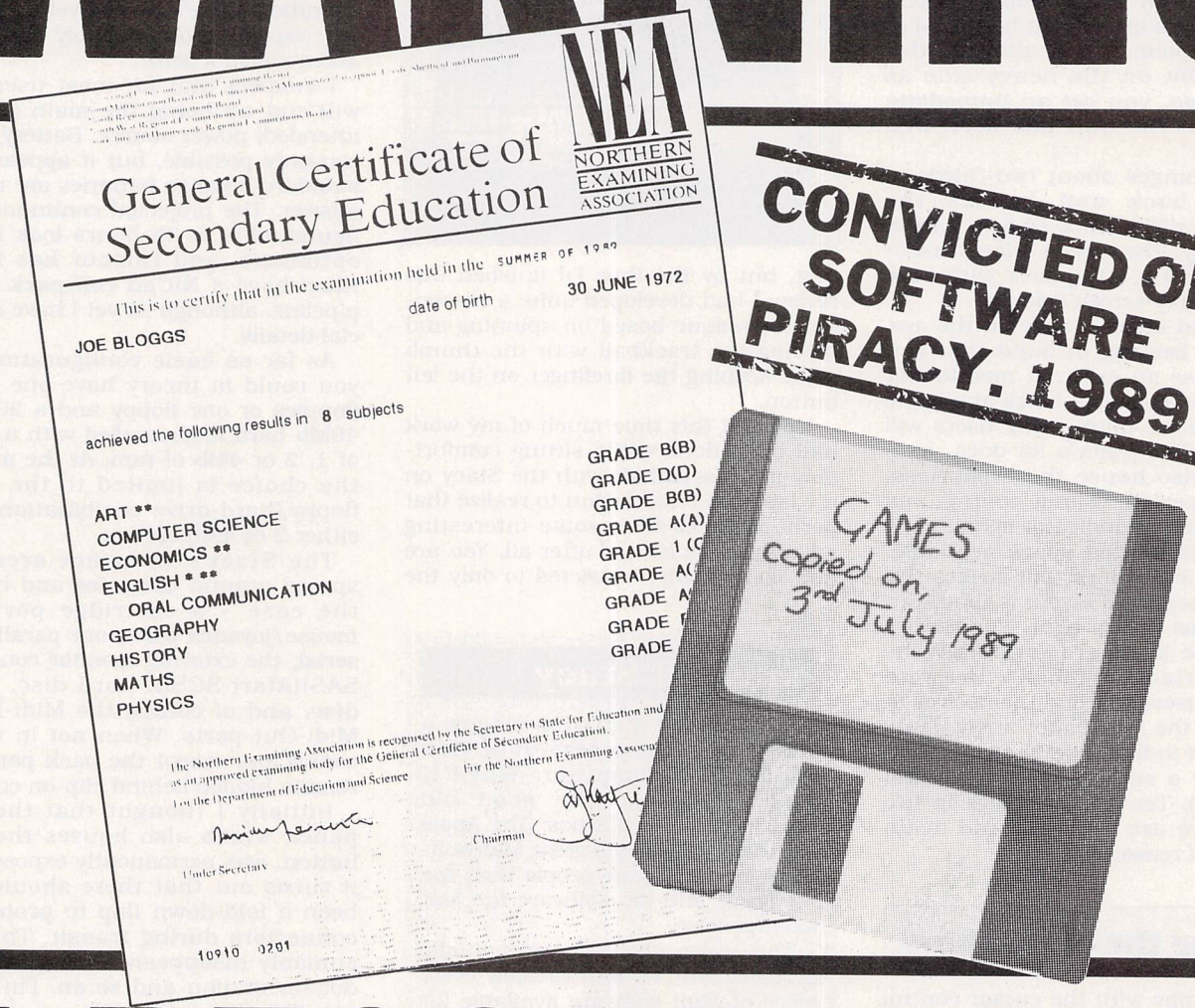

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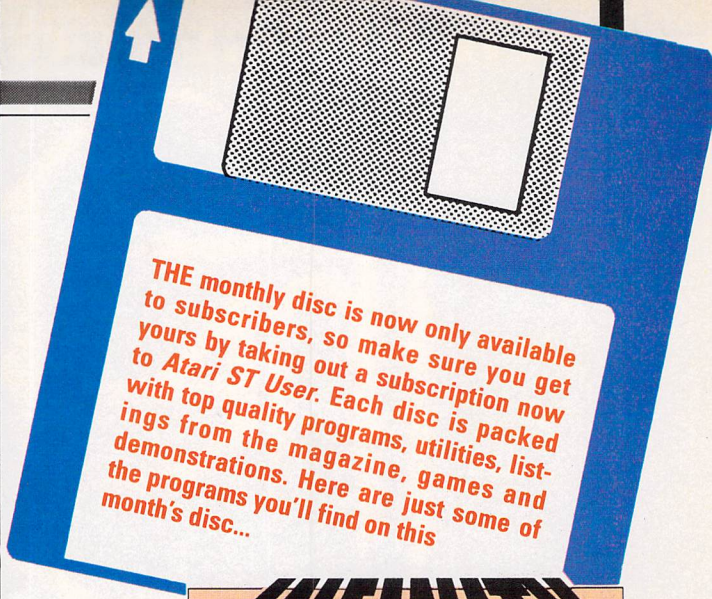

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Sound sampler

LOAD and replay sampled sounds through the ST's monitor or TV speaker with this demonstration replay/editor from 2-Bit Systems. Press L to bring up the Gem file selector and then load the sample on the disc. Function keys f1 to f5 set the speed and f10 replays the sample. To select a small portion of the sample use the left and right cursor keys to move the left pointer and up and down cursor keys to move the right pointer.

The keys 1, 2 and 3 alter their speed. Press f7 to magnify the selection portion or f10 to replay it.

Infinity

IN this arcade adventure from White Panther you have crash landed on the planet Infinity. Your aim is to summon help by repairing a disused radio telescope to send a message back to Earth.

You control an athletic character dressed in a green suit, siver boots and peaked cap. He can walk left or right, jump and climb trees – all under joystick control.

A variety of useful objects can be found if you search hard enough – you'll discover a pickaxe on the first screen. Press the Return key to pick it up then travel East as far as you can, until you come to a rockface. Standing just in front of it, Press Return again and your man will use the pickaxe to hack through the rock.

This is the procedure for all the objects: Use Return to pick it up and Return again to use it. However, unless you are standing in the right position on the right screen the object will have no effect.

Crisslefridge

ON side two of the disc is a superb arcade game written in STOS by A.J. Cook. The most undemanding job in Crisslefridge, a solar system somewhere on the edge of the universe, was nuclear waste disposal. That was until the Cribblewerts invaded with the intention of dumping all their nuclear waste.

You must dispose of the radiation canisters by pushing them into man-eating plants, clear all the radioactive earth, collect the anti-radiation crystals and defuse the time bomb.

The bars up the sides of the screen represent your energy and the time left until the bomb explodes. You can only push one boulder at a time, but can manage to move several radiation canisters. The spinning anti-radiation crystals give you more energy.

A Cribblewert is killed by exposing it to excessive radiation, achieved by surrounding it with four radiation canisters. The time bomb is made safe by surrounding it with four boulders.

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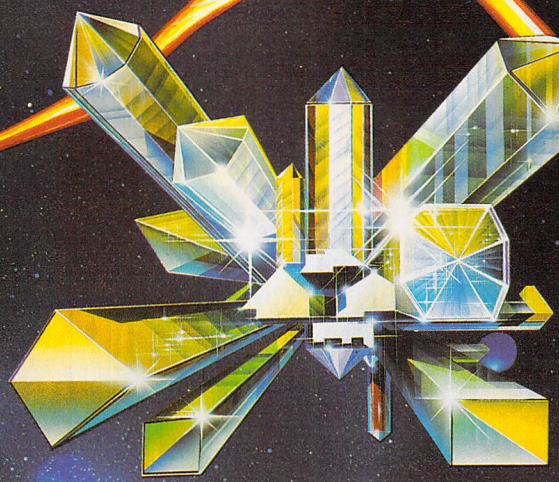

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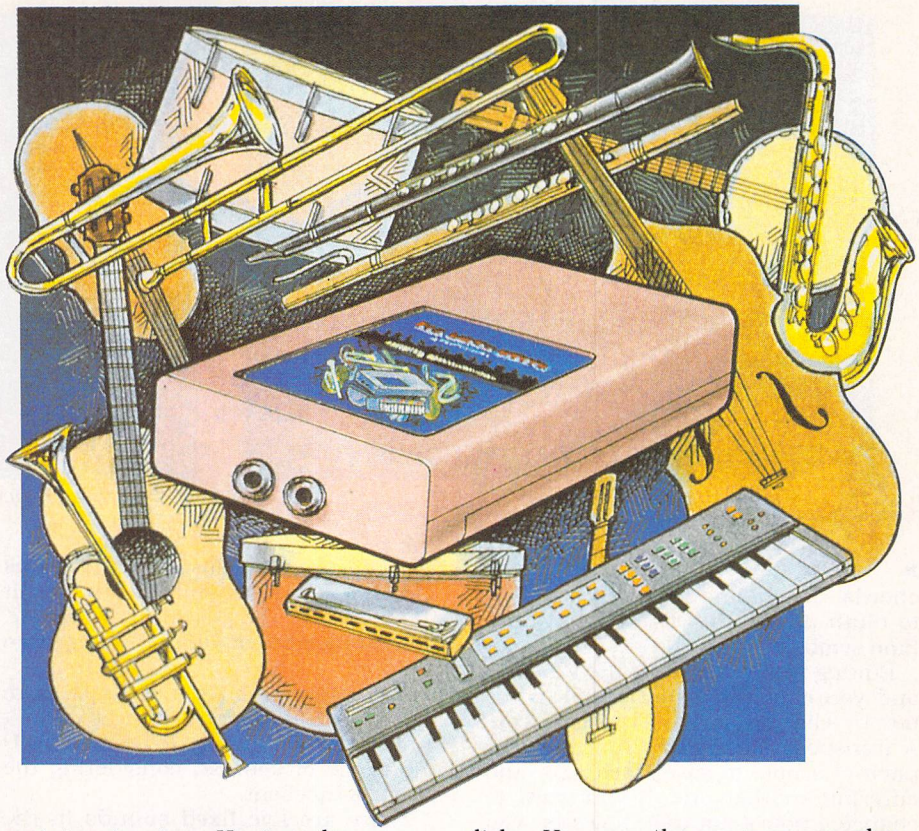
MUSIC ON THE ST

By Ian Waugh



Easy as doh, ray, me

Ian Waugh conducts a tour of a package that lets you make music without Midi

THE trouble with making music on your ST is that it can be so expensive. You need a Midi keyboard costing a few hundred pounds to put the music in and/or a Midi sound expander, costing several hundred more, to play it back.

If cost has prevented you from making ST music then take a look at FM Melody Maker, an all-in-one music package. It contains an FM sound chip plus sequencing software.

You don't have to be a musical whizz to use it, as the program will relieve you of many awkward musical decisions. All you have to do is enter a melody line and chord names and the program will respond with a full accompaniment including bass, chords and drum track.

The sounds come from an FM sound chip housed in a cartridge which plugs into the ST's cartridge port. It has two phono sockets which you connect to an amplifier and speaker or a hi-fi system. The program will run with a colour or monochrome monitor.

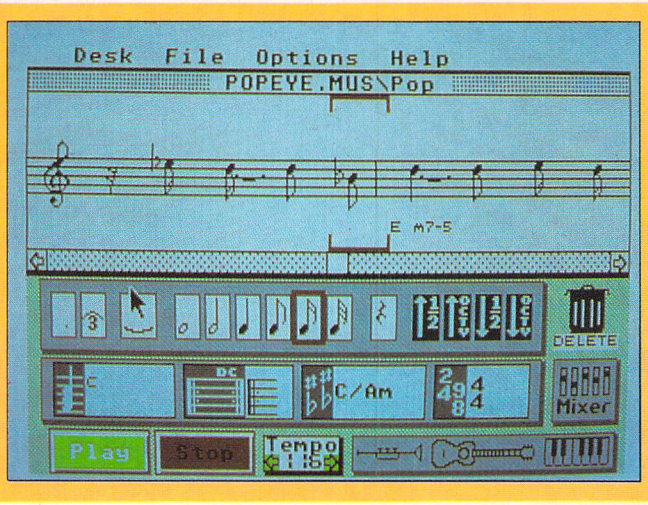
The main composition screen shows a music stave in the upper half while the lower half is used to select note durations, chords and a variety of other musical functions. To enter music you simply click on the required note, move to the Edit Box on the stave and click it into place. The note name is shown in the Edit Box. After entry, the stave scrolls ready for the next note. Easy.

Even the bar lines are plonked in for you automatically, although it won't split a note which is too long for a bar into the following bar, it simply draws three bar lines – new musical notation? – and ignores the discrepancy.

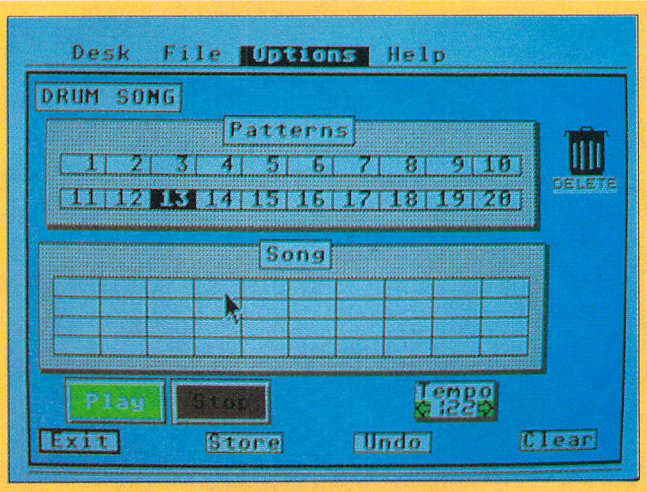
Chords are selected from a separate screen or half screen, the stave always remaining in view. Having chosen a chord you place it by clicking on the unshaded section of the chord box. This inserts it into the music at the position of the Edit Box.

Selecting a new chord and placing in the stave can require up to five mouse clicks. However, the program can play 13 different chord types, which is enough to satisfy all but the most ardent jazz fan.

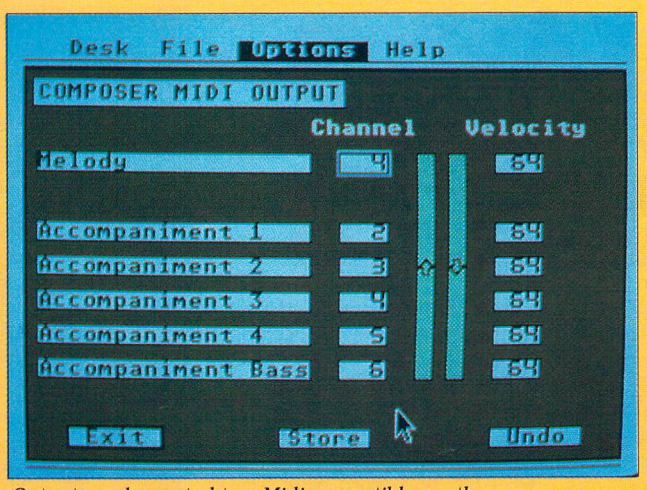
New time and key signatures can inserted at any point in the music. These are selected in a similar way to chords – from a half-screen – and inserted in a similar way at the Edit Box. There are many repeat options – again, selected and inserted like the ➤



Enter a melody line and chord names and the program will respond with a full accompanyment



You can create 20 drum patterns



Output can be routed to a Midi-compatible synth

➤
chords – including repeat signs, first to ninth time bars, DC, DS, Coda and Fine symbols.

Editing revolves around the Edit Box and you can trash the symbol in the box by clicking on the Trashcan icon. A transpose facility lets you alter the pitch of a note to save trashing it and entering another one. If you want to change a note's duration however, you have to trash and replace it.

There are no cut, copy or paste operations, so if you can't do it with repeat bars, DC and DS signs you may have to enter a repetitive section of music more than once. However, there is nothing confusing about the editing procedure, so that has to be a plus.

After entering some music and chords, the next step is to select an accompaniment pattern, of which there are 16 ranging from pop, disco, soul and rock to Latin, swing, big band and bluegrass. Each has six parts – four accompaniment sections, bass and drums.

You can alter the volume of each section, including the melody line, in the Mixer half-screen and you can assign each section its own sounds in the Voice Selector (half) screen.

There are 78 presets for the melody line and 15 to choose from for the four accompaniment parts and the bass. You can change volume and voices as the piece is playing and hear the result immediately. You cannot, however, program a voice or volume change into a piece.

The sound chip uses a simple form of FM synthesis, so while you don't quite get DX7 quality (or even DX21) the range of sounds, considering the price, is excellent.

There are five fixed sounds in the drum section. This is probably the weakest area of the program sonically, although when the accompaniments are playing the overall effect is quite impressive. Six demonstration tunes on the disc show off the unit very well indeed.

The features discussed so far can all be programmed and played using just the program and cartridge. If you also have a Midi-compatible synth or expander you can route the sounds to it by assigning them their own Midi channel number and velocity (volume) value. You can also assign the five drums to an external instrument, thereby greatly improving the quality of the rhythm track.

You can also create your own drum patterns but unfortunately they can not be accessed from the sequencer part of the program. Composition takes place on a grid and is very easy – simply a matter of clicking hits into a box. You can also create 20 patterns and chain up to 20 of them together to form a song.

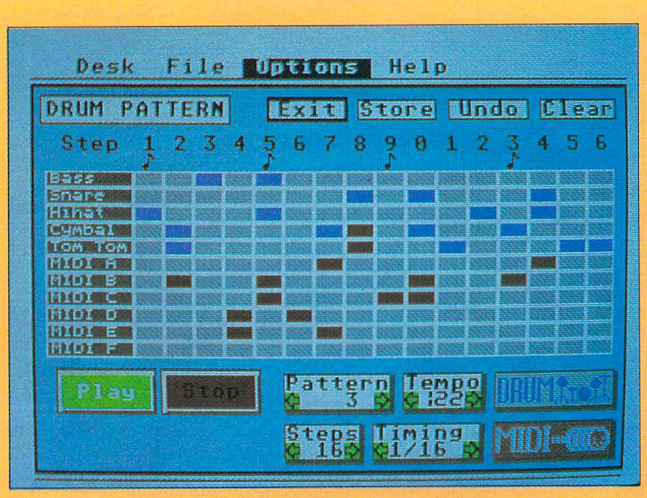
This will repeat on playback but the 20 patterns – effectively bars – is a pretty severe limitation. The drum grid also allows another six drums to be programmed which will only play via Midi.

If you have external Midi equipment you can also make use of the one-track Midi recorder to record and play back from an external keyboard, although this can't be transferred to the sequencer part of the program.

You can also play the Melody Maker's sounds from an external Midi keyboard, effectively turning it into an expander, although this does tie up your ST in the process.

Hybrid Arts want game developers to include Melody Maker music routines in their programs to add a new dimension to those zap-'n'-blast shoot-'em-ups.

Quibbles aside, the program is fun. It is powerful and easy enough to use to allow a musical novice to produce impressive results. Enter your favourite pieces from sheet music, or let the program play your own compositions. FM Melody Maker is an excellent introduction to computer-assisted music making for ST owners on a budget.



Creating a drum pattern is simply a matter of clicking on the boxes in the grid

FACT FILE

Product: FM Melody Maker
Price £69.95
Supplier: Hybrid Arts (UK) Ltd., 24/26 Avenue Mews, Muswell Hill, London N10 3NP
Tel: 01-444 9126/7

POINTS FOR:
Self-contained music system. Produces auto accompaniments for your tunes. Easy to use. May be compatible with some games software. Fun.

AGAINST:
Basic music and editing facilities. Real-time input and drum grid patterns not integrated with the sequencer.

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Model of a program

Bob Sidwick looks at a flight simulator with a difference

RC AEROCHOPPER from RC Simulations should not be confused with other flight simulators which appear with constant regularity. This one is unique in that it simulates the flying of radio controlled model aircraft, both fixed wing and helicopters. More importantly, it does it very accurately. Not many programs have grabbed me in the way this one has, it's so much like the real thing that it's all but impossible to stop.

It is well known in the aviation world that helicopters are more difficult to fly than fixed wing aircraft. This is also true of the model variety, and what Aerochopper does is help the budding model flyer to come to grips with his hobby that much quicker. Learning to fly a model can be a very expensive pastime, particularly if – or more likely when – you crash. Not so with this program. When you crash, you wait a couple of seconds and begin again.

As a long time model helicopter flyer I was particularly interested in the helicopter options built into the program, and after about five minutes "on the sticks" I placed my order and awaited delivery impatiently. It isn't cheap, but one crash with my model can cost that much in repair bills, so in relative terms it isn't expensive either.

What you get for your money is a thick manual to delve into when you want to change the flight characteristics of your chosen model and a Futaba radio control transmitter which plugs directly into the program cartridge, which in turn sits in the cartridge slot of the micro.

You can save all altered parameters to disc so the next time you want to fly a particular model it's a simple procedure to load up and take off.

That's the hardware side of things, now all you have to do is sit down, plug in and learn.

When the simulation is up and running you are presented with a model, in my case helicopter, in front of you facing north, with rotors turning waiting for you to do something. Increase the power and the chopper lifts off.

Hovering a model chopper is not the easiest thing in the world, as the program demonstrates. As this is a simulation, there is little gameplay, the fun comes from a constant battle trying to keep the chopper in one place.

As you progress it is possible to fly around the field, around yourself, shoot missiles at the target, drop bombs on the bomb target and if you're really good you can even fly into yourself. Progress further and you can try aerobatics, with loops, rolls, inverted flight and autorotation (engine off) landings.

Gaining experience

Those without model flying experience will not be able to buy the program and be able to fly all the manoeuvres with all the planes within the first few hours – that takes lots of practice. Model flying is a skill which has to be learnt, usually the hard way, which can be very expensive, so be prepared to crash more than you fly, at least for a while.

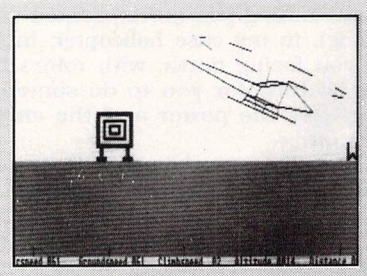
The program allows for novices and you can choose a block of parameters which slow everything down to give you time to figure out what the differ- ➤

➤ ent stick movements on the transmitter do to the models.

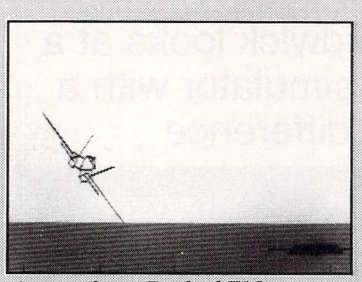
Three different choppers and four different airplanes are selectable along with 131 adjustable parameters for model, wind and weather, so you can tailor the model or the conditions to suit your style of flying, from mild to wild. The aircraft are all depicted as line drawings and the scenery is basic indeed, consisting of a plain green field with the four points of the compass to show you which direction you're heading. That said, the artistic quality isn't important, but the simulated flying is.

There is an element of gameplay in the program which comes as you progress up the learning curve. Apart from the fixed missile and bomb targets, there is a tower which ejects moving targets which you have to shoot. Not easy, but good fun and this exercise serves to relieve the pressure of trying to get a particular manoeuvre right.

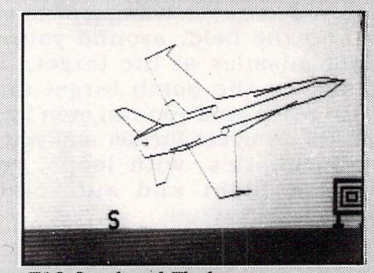
I've always been more happy with a simulator than with a pure game, although I still enjoy a good shoot-'em-up. I have not been impressed by the majority of simulators currently on the market, not that is, until Aerochopper came along. Even seasoned model helicopter flyers have sat in front of the screen shaking with concentration.



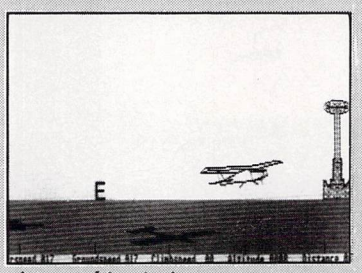
Helicopter Fly-by



Approaching, Banked F18



F18 Overhead Fly-by



Approaching trainer

FACT FILE

Product: RC Aerochopper
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VISA Access

The mains way to communicate

Grahame Cohen goes live wire with the Verran AC Datalink

COMMUNICATING through the mains is nothing new. For a number of years now, intercoms have been available which plug into ordinary three pin wall sockets using the AC ring main to transmit information. However, this was only possible because the signal was clear enough for us humans to understand, even if a little interference was encountered.

Computers require more accuracy and the ring main is hardly an ideal environment, although convenient, to send data as it is prone to voltage spikes, surges, fluctuations and interference.

The Verran AC Datalink has been designed to cope with all these problems by transmitting packets of information using frequency modulation (FM) which is bandwidth efficient and resistant to noise. This, combined with error detection of each packet of data, prevents almost all errors.

The AC Datalink cuts out the need for extensive cabling. It can transmit and receive either parallel Centronics or serial RS232 standards, which means it is compatible with nearly all computers and can be used for shared connection to printers, plotters, modems or other computers with appropriate communications software.

The Datalink is solidly constructed in black plastic, with 11 LEDs vertically aligned on the semi-circular front. Lifting a flap at the rear reveals a power socket, a thoughtful inclusion to reduce the need for mains adaptors. Below the socket are two rows of DIP switches, to allow configuration of the unit to most peripherals.

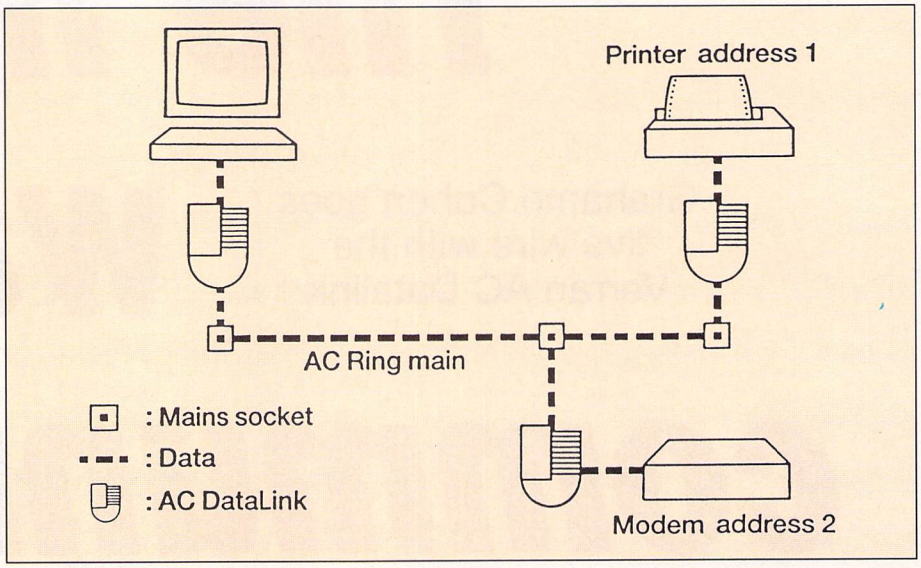
Two cables of generous length run from the back of the unit, one plugs into a wall socket for power and data transmission, the other has a male RS232 connector. Also supplied are an RS232 gender changer, Datalink to Centronics and Datalink to parallel port. These connect to the male RS232 ➤

lead and between them will allow connection to most peripherals and computers. The unit itself is fairly small and will sit neatly on the floor beside the peripheral.

Each Datalink is individually boxed with its own well written and concise manual. Two are required, one unit to connect to the computer and the other to the peripheral. As you increase the number of Datalinks on a single ring main a fall off in performance is experienced. Verran recommends up to five pairs per ring main.

In practice it is possible to have many more, as a fall off in performance only occurs when all five are transmitting at the same time, which is unlikely, especially if you are sharing less than five peripherals.

For instance, 10 STs can share one printer and modem. In this situation the printer and modem would each be given a separate address by use of the DIP switches. In order to send data to the printer or modem you must select its address on the Datalink attached to the computer. This means that switching from one peripheral to another involves fiddling with DIP switches – tedious if you often swap over.



AC Datalinks in action

Another problem is that of queueing. If two computer operators send data to the printer at the same time, out will come garbage – you must check that the printer is not in use before printing. The more machines connected in the network, the more confusing this can become.

Setting up the Datalink is quick and easy – it took me under 15 minutes. First I moved my printer to another room and attached an AC Datalink to both my ST and printer, configured the DIP switches and then sent a screen

dump across the ring main.

It was exciting hearing the printer jump into action as I remotely controlled it. The screen dump was perfect – the Datalink certainly works well. Information is transmitted at about 800 characters per second (16,000 Baud) which is roughly an A4 page every three seconds – certainly fast enough for any printer.

If the Datalink is used in an office where confidential information may be transmitted, it could be easy for unauthorised persons to tap into it with a similar Datalink. To stop this you can set a security code of up to four million combinations using the DIP switches; only Datalinks using this code can transmit and receive from each other.

Another very useful function is that of standards conversion. Say you had a serial printer and want to control it from your Centronics port. No problem, simply configure the Datalink on the printer end to transmit to the printer in serial standard. This has great advantages, as it ensures compatibility between almost any pair of machines you have or are likely to aquire.

For ad-hoc cabling Datalink certainly captures the market. Just imagine how much easier it makes exhibitions and demonstrations – no need for expensive temporary cabling. It is also much more flexible, letting you change a display without rewiring. When the exhibition is over simply unplug and go.

The Datalink has been primarily designed for office and business use. Despite its high price of £201.25 I am sure some will find their way into homes and schools, especially if there is little space or more than one computer, or if the lady of the house banishes a noisy printer to the cupboard under the stairs.

The AC Datalink cannot replace traditional cabling, particularly when it involves a large number of permanent machines, but if you require a network set up quickly, or if office moves are expected, it would no doubt be a cost effective and convenient solution.

> "It was exciting hearing the printer jump into action as I remotely controlled it"

FACT FILE

Product: AC Datalink
Price: £201.25
Supplier: Verran Electronics, Cedarwood, Chineham Business Park, Basingstoke, Hampshire RG24 OWD.
Tel: 0256 816555

POINTS FOR:
Well constructed and innovative British made and designed product. Excellent for quick installation of ad-hoc cabling using the ring main. Allows compatibility between machines with different connection standards.

AGAINST:
Fiddly DIP switches when changing from one peripheral to another. Can become confusing when too many users are sharing the same peripheral. Price quite high.

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Into the goblin zone

Phil Lawson continues his tutorial on how to write games in STOS

AFTER sorting out some of your programming problems this regular STOS column is now exploring the different effects and techniques used in writing whizz-bang arcade games. STOS is an ideal language for this task and has a whole host of essential commands and functions. The hard part is not coming up with the game idea, it's stringing together those commands to make the sprites and graphics mesh to make the game work.

Last month we wrote the basics of a Bomber game and the program was included on the cover disc. I challenged you to find a way of detecting when a goblin caught an egg. Extra brownie points if you thought about using zones to solve this problem.

Zones are a simple way of detecting when a sprite enters a pre-selected area of the screen. They let us check for collisions with stationary objects without having to know the sprite's coordinates. Up to 128 separate zones can be created, each identified by a number in the range 1 to 128.

To check if the egg has been caught we have to place a zone around each goblin and use the command:

```
t=ZONE(sprite)
```

The variable *sprite* can range from 0 to 15, with the mouse being indicated by zero. If a sprite is in a particular zone, the returned value of *t* is that zone's number. Otherwise, the sprite is not in a zone and *t* will be zero. That's got the theory out of the way, so lets get down to programming.

Every time a goblin catches an egg, it has to vanish from the screen, taking the egg with it. Therefore when they have all gone, the screen is empty and that level has been finished. The simplest way to check if all the goblins have gone is to use a variable which holds the number of goblins on the screen. It should come as no surprise that this variable is called *goblins*.

Change line 9010 and add line 9025:

```
9010 goblins=0 : FOR a=1 TO 6 : b=RND
(lev+1)+1 : FOR c=1 to b : scr(a,c)=1
9025 INC goblins : SET ZONE goblins,3
2*a+32,180-(26*c) to 32*a+64,206-(26*
c)
```

Initially we set *goblins* to zero and every time a goblin is drawn on the screen (line 9020) the variable is increased by one and a zone is set up around it. The syntax of the SET ZONE command is:

```
SET ZONE n,x1,y1 TO x2,y2
```

The zone number to be created is given by *n* and the rectangular screen area covered by the zone is defined by the top left and bottom right coordinates *x1,y1* and *x2,y2*.

We have now achieved two objectives – setting a rectangular zone around each goblin, and calculating the number of goblins.

Last month we set up the variable *egg*, which has three possible values:

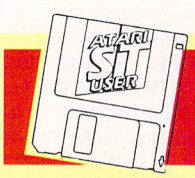
```
egg=0 - No egg dropped
egg=1 - Egg dropped on target
egg=2 - Egg dropped but not on target
```

Add the following lines to last month's program to make sure the egg is on target before branching to the routine where the goblin catches it:

```
1056 IF egg=1 THEN GOSUB 3000
3000 REM Check if egg hits goblin
3001 REM ************************
```

Before we write the routine we'd bet-

➤



MONTHLY DISC SIDE 1

ON the monthly disc available to subscribers you'll find the program we developed last month, so all you have to do is enter the lines given here. As the object of this series is to help you become more confident at programming, feel free to alter any of the graphics and screen effect routines, but do keep a backup copy or you won't be able to follow these articles.

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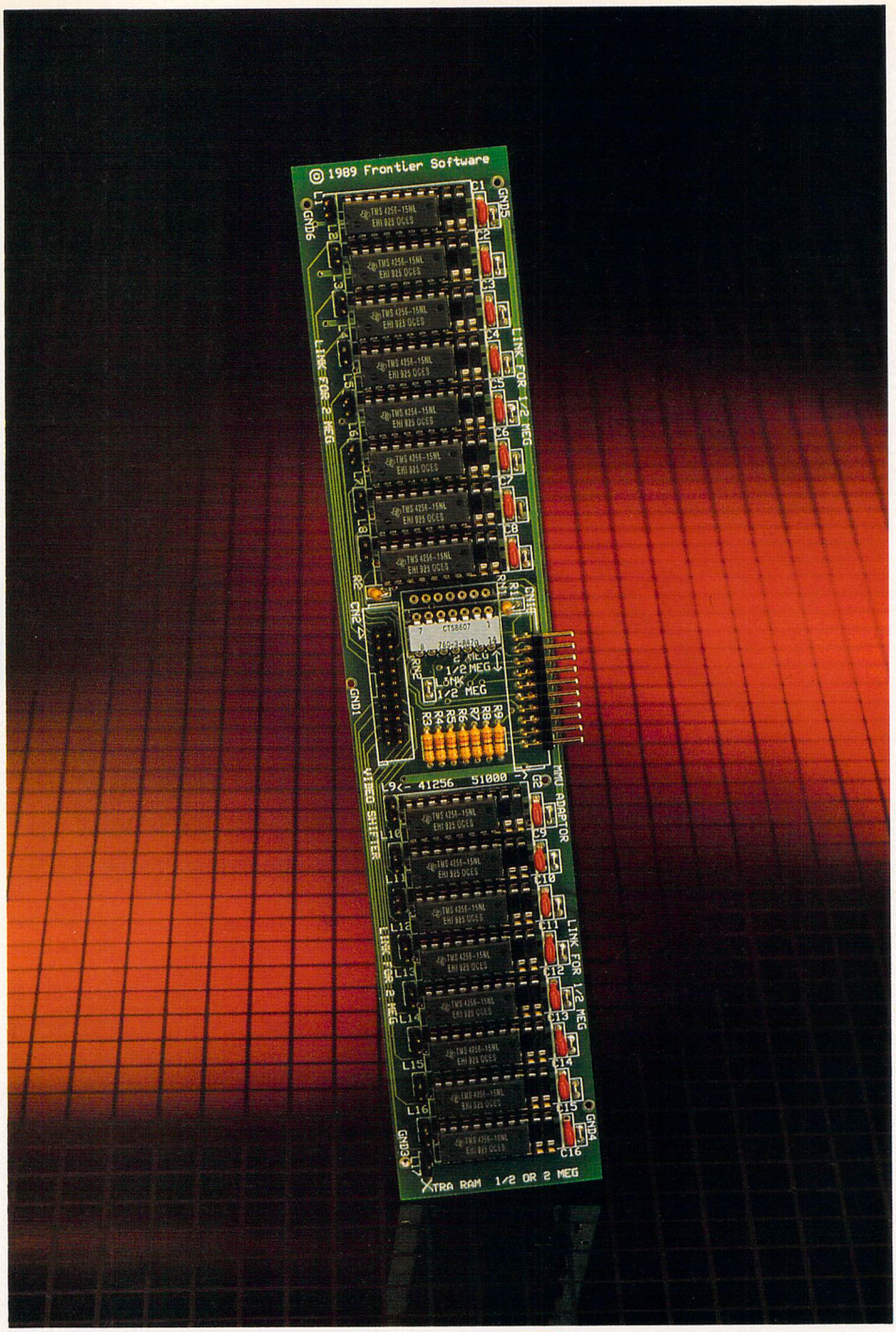

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ter decide exactly what it has to do.

```
1) Check if egg has been caught
2) Remove the egg and goblin from the
   screen
3) Decrease the number of goblins
4) Update the scr(x,y) array
5) Set the variable 'egg' to zero
```

Enter the following lines and try to match the various commands with the five points above:

```
3010 z=ZONE(2) : IF z=0 THEN RETURN
3020 yb=(200-YSPRITE(2))/26 : SPRITE
OFF 2
3030 SCREEN COPY 6,xb*32+32,180-(26*y
b),xb*32+64,206-(26*yb) to PHYSIC,xb*
32+32,180-(26*yb)
3040 SCREEN COPY 6,xb*32+32,180-(26*y
b),xb*32+64,206-(26*yb) to BACK,xb*32
+32,180-(26*yb)
3050 DEC goblins
3060 BELL : WAIT VBL : scr(xb,yb)=0 :
 egg=0
3070 RESET ZONE z:RETURN
```

Line 3010 checks if the egg is in a zone and has therefore been caught. If it isn't the program returns to line 1060.

When we wrote the "drop egg" routine last month, the variable *xb* was set as the column number. We now need to find the row number of the goblin surrounded by zone z, so we can use both values to remove the goblin from the screen. Line 3020 puts this number into *yb* and turns off the egg sprite.

According to point two, the next stage is to remove the goblin. Since the game has a background picture, it would seem reasonable to copy part of this image, stored in bank six, to the physical and background screens as done in lines 3030 and 3040.

Decreasing the number of goblins and reseting the values of *egg* and *scr(x,y)* is accomplished with lines 3050 and 3060, with a little sound effect thrown in for good measure. As the goblin has been removed, there's no need to have its zone still functioning, so line 3070 resets it and returns back to line 1060.

Bug hunting

Check everything works OK by running the program. You should find that several goblins are drawn, the plane moves from left to right and pressing the spacebar will drop an egg. If the egg is on target, when it reaches a goblin both should disappear from the screen, otherwise it will continue until it reaches the bottom.

When the egg misses the goblins and falls to the bottom of the screen the program doesn't allow any more eggs to be dropped from the plane, because the value of *egg* is still two. When we first set the egg sprite falling, we specified the sprite should stop moving when it reached Y coordinate 200. Break into the program and add the following line:

```
1057 IF MOVON(2)=0 AND egg=2 THEN egg =0
: BOOM
```

If *egg* is two, the dropped egg will miss the goblins and eventually stop moving when it goes off the bottom of the screen. The command MOVON tests the state of a given sprite, in this case number two and reports whether it is moving or not. If the returned value is -1 the sprite is still moving, but a value of zero means it has stopped so we can now reset the value of *egg* and produce an appropriate sound effect.

You may have spotted another slight bug when playing the game. If you clear a column of goblins and drop an egg in this column, the value of *egg* will be set to one, meaning that it is on target. However, as there are no goblins in this column, it is definitely not on target and *egg* should be two instead.

If we alter the minimum X coordinate for a column once it has been emptied, any egg dropped in that column will be outside the maximum and minimum values, and so set to a type two egg rather than type one.

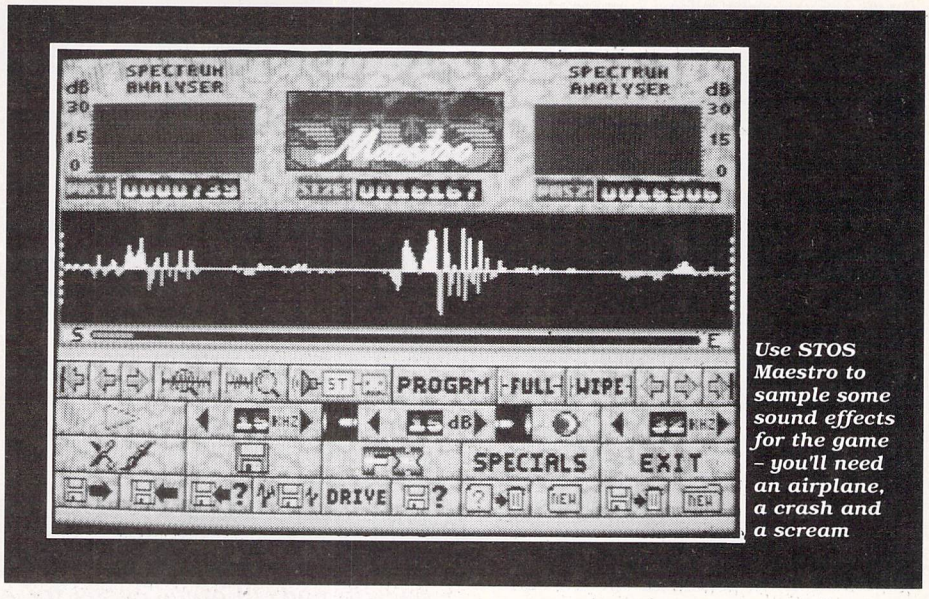
To do this alter line 3060 to:

```
3060 BELL : WAIT VBL : scr(xb,yb)=0 :
egg=0 : IF yb=1 THEN mi(xb)=260
```

The final bug only appears when a level is finished and you start the next one. The *scr(x,y)* array and the value of egg aren't reset between levels, so may not be able to drop any bombs, and even if you did the zones and array indicate the goblins are in different positions.

Add the following lines to get around these irritating problems:

```
70 GOSUB 540
9002 FOR a=1 TO 6 : FOR b=1 TO 6 : scr
(a,b)=0 : NEXT b : NEXT a
9003 RESET ZONE : SPRITE OFF
```



Use STOS Maestro to sample some sound effects for the game – you'll need an airplane, a crash and a scream

End games

We have now written all the routines to handle the flying plane, falling eggs and removing the goblins. All that remains for this month is to add the different levels and lives. To do this make the following changes:

```
45 WHILE livesgtr0
90 WEND
99 STOP
520 lev=1 : lives=3
1005 done=0
1010 WHILE done=0
1058 IF ZONE(1)ltngtr0 THEN done=2 :
ANIM OFF : MOVE OFF : DEC lives
3050 DEC goblins : IF goblins=0 THEN
done=1
```

In the above lines you'll see the variable *done* which can be one of three values:

```
done=0 Still playing the game
done=1 Every goblin has been removed
done=2 The plane crashed into a goblin
```

In the original program line 1010 used the plane's Y position to control the WHILE...WEND loop. We have now changed this so the loop will continue until either the plane crashes or all the goblins have gone.

Line 1058 uses the ZONE command to see if the plane has hit a goblin. If it has, the variable *done* is set to 2 and the number of lives is decreased. The program will now return to line 90 and if the player has any remaining lives the game will start again at the current level, otherwise it's "Game Over" time.

The actual crashing and Game Over messages will be tackled next month, but when a level has been completed we'll make the plane land on the runway. This is simply achieved by putting the plane at the bottom-left side of the screen, make it fly right for a bit and then gently lower it onto the

tarmac. Since this routine will only be used when a level has been completed, it's a good idea to include the section of code which increases the level number, as done in line 1570.

```
1080 IF done=1 THEN GOSUB 1500 ELSE DE
C lives
1090 RETURN
1500 REM Land the plane
1501 REM ***************
1510 ypos=170 : SPRITE 1,0,ypos : MOV
E X 1,"(1,1,100)" : MOVE ON 1
1520 WHILE MOVON(1) : WEND
1530 MOVE X 1,"(1,1,50)" : MOVE Y 1,"
(2,1,25)" : MOVE ON 1
1540 WHILE MOVON(1) : WEND
1550 MOVE X 1,"(1,1,50)" : MOVE ON 1
1560 WHILE MOVON(1) : WEND : ANIM OFF
1570 IF levltn4 THEN INC lev
1580 RETURN
```

To finish off this month we'll include a few commands to make the screen fade in and out.

```
1580 FADE 5 : WAIT 35 : CLW : SPRITE
OFF
1590 RETURN
9001 FADE 5 : WAIT 35 : CLW : SPRITE
OFF
9005 SCREEN COPY 6,0,0,320,200 TO PHY
SIC,0,0 : WAIT VBL : SCREEN COPY PHYS
IC TO BACK : WAIT VBL
9030 NEXT c : NEXT a : WAIT 50 : FADE
5 TO 6 : WAIT 35 : RETURN
```

Hints and tips

This month's selection of hints and tips comes from Ian Hayes.

After using the Play command to produce a sound, the note can often still be heard even when the program has finished. To get around this slight irritation, issue the command PLAY 0,0 to stop the sound.

When building screens out of sprites with the PUT SPRITE command, occasionally it wouldn't work even when preceeded it with plenty of WAIT VBL statements. If the X coordinate of the sprite is zero you'll need to copy the sprites area from the physical screen to the background. In other cases try using the UPDATE command, especially if you intend to compile the program at a later date.

After changing the mouse and defining a menu, the mouse is reset to the normal arrow pointer. I have found no answer to this problem except to define the menus before changing the mouse.

The last tip also concerns menus. Turning them on and off is easily achieved with the MENU FREEZE and MENU ON commands, but freezing a menu often leaves the menu bars at the top. To get rid of this try the line:

```
INK 0 : BAR 0,0 TO 319,7
```

If you're working with a detailed screen you could always use the SCREEN COPY function.

● If you'd like to see your name in print drop me a line. Each month the sender of the best tips will receive a top quality game.

● Next month we'll write the crashing and music routines and also put the score, level and lives at the top of the screen.

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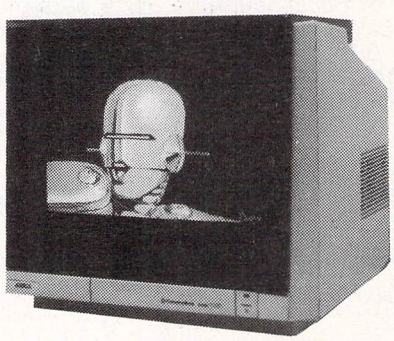

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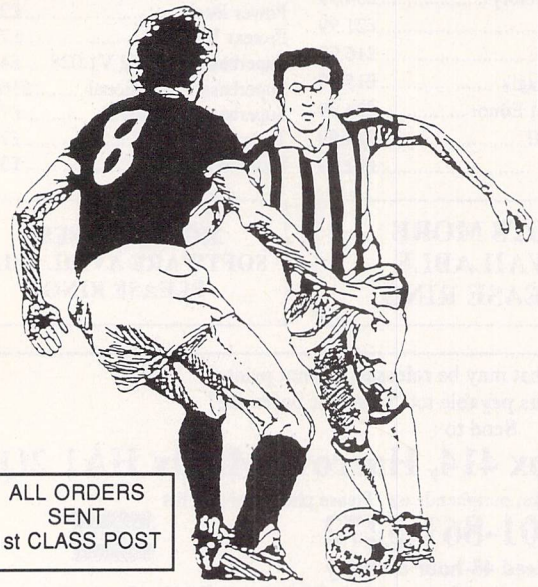

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The making of a muncher

John Gundry shows how good games graphics are produced from ST Basic

ONE common factor running throughout games software is the fact that all use sprites – characters or shapes made up of a close packed group of coloured pixels that glide smoothly across the screen over the background. In most games you control one sprite and the aim is to destroy all the other sprites that appear.

ST Basic has been criticised for many things, bugs, lack of speed, no sprites and so on. The criticism has been harsh, perhaps unduly so, because here is a demonstration program that shows how smoothly moving sprites can be created and manipulated from ST Basic.

Sprites, a demonstration program is intended to show how to use sprites in ST Basic programs. The program mainly centres around three short machine code routines. Each calls one of the Line-A (sometimes called A-line) graphics routines which are a group of 14 graphic functions found at a low level of the operating system.

These Line-A routines are primitive VDI functions that allow you to plot pixels, draw lines, rectangles and other polygons, print text and – most important to us – draw and erase sprites. The machine code routines are poked into string variables and a pointer is set to their start for use by the Basic CALL function.

In the Basic program these routines are:

DRAW: Draws a sprite on the screen

UNDRAW: Erases a sprite and restores the original background

POINT: Determines the colour of a point on the screen – useful for collision detection

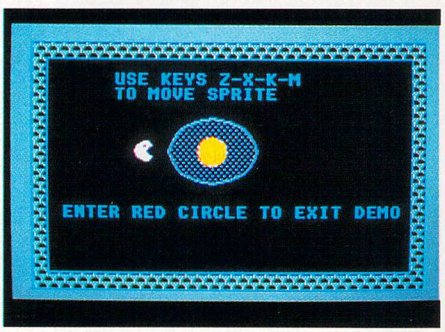
The sprites can be used in any of the three screen resolutions with very little modification. All that needs to be altered is the size of the buffer required to store the background temporarily. This needs to be 32 words long for each plane, plus a further five words. Thus in monochrome (one plane) 37 words are required, in medium resolution (two planes) 69 are used and in low resolution (four planes) 133 words are needed.

A sprite definition block must be created for each sprite required and this consists of 37 words. It is constructed like this:

Word	Meaning
1	X offset to hotspot
2	Y offset to hotspot
3	Format flag
4	Background colour of sprite
5	Foreground colour of sprite

The remaining 32 words alternately describe the background and foreground bit pattern of the sprite:

Word	Meaning
6	Line 1 background
7	Line 2 foreground
.	
.	
.	
36	Line 16 background
37	Line 16 foreground



The hotspot is the coordinates of the point within the sprite around which it will be drawn. That is, if the hotspot is 0,0 the sprite will be drawn relative to its top left hand corner, if the hotspot is 7,7 the sprite will be drawn ➤

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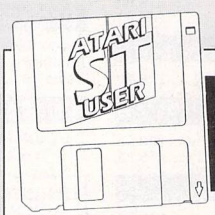
```
 10 REM ****************************
 20 REM * Atari Basic Sprites Demo *
 30 REM *      By  John Gundry     *
 40 REM *    (c) Atari ST User     *
 50 REM ****************************
 60 REM DIM INTEGER VARIABLES FOR
 65 REM SPRITE DEFINITION BLOCKS +
 70 REM DECLARE STRING VARIABLES TO
 75 REM HOLD M/C ROUTINES + DECLARE
 80 REM A FEW OTHER VARIABLES
 86 REM ALL REM STATEMENTS MAY BE
 87 REM OMITTED
 88 REM *** DECLARE VARIABLES ***
 90 dim sp1%(170),sp2%(170) :sp1=varp
tr(sp1%(0)) :sp2=varptr(sp2%(0))
 100 draw$=space$(30) :draw =varptr(dr
aw$)
 110 undraw$=space$(20) :undraw=varptr
(undraw$)
 120 point$=space$(34) :point=varptr(p
oint$)
 130 p%=255 :ptr=varptr(p%) :x=40 :y=8
0
 140 fullw 2 :clearw 2 :poke 1155,252
:REM * KEYCLICK + REPEAT OFF
 147 REM
 148 REM * CHECK SCREEN RESOLUTION *
 150 if peek(systab)<>4 then 580
 158 REM * POKE M/C DATA + SPRITE DATA
 INTO MEMORY *
 160 gosub mcode
 168 REM * DRAW A SIMPLE BACKGROUND *
 170 gosub background
 178 REM *** MAIN LOOP ***
 180 call draw(x,y,sp1) :REM * DRAW SP
RITE IN INITIAL POSITION
 188 REM * &HFFFC02 = 8 BIT KEYBOARD A
CIA DATA PORT
 189 REM * JOYSTICK MOVEMENTS ARE ALSO
 RETURNED, BUT NOT FIRE BUTTON
 190 key=int(peek(&hfffc02)/256) :REM
* SCAN CODE OF PRESSED KEY
 200 if key<>44 and key<>45 and key<>3
7 and key<>50 then 190
 210 x=x+8*(key=44 and x>40)-8*(key=45
 and x<264)
 220 y=y+6*(key=37 and y>50)-6*(key=50
 and y<164)
 230 call undraw(sp1) :call point(x,y,
ptr) :REM * COLOUR IN P%
 240 if p%=1 then goto exitdemo :REM *
 SPRITE IN RED CIRCLE
 250 call draw(x,y,sp1) :sound 1,8,4,6
,1 :sound 1,0,0,0,0
 260 for l=0 to 36 :temp%=sp1%(l) :sp1
%(l)=sp2%(l)
 270 sp2%(l)=temp% :next l :REM * SWAP
 SPRITES
 280 goto 190 :REM * LOOP BACK FOR ANO
THER KEYPRESS
 287 REM
 288 REM *** MCODE SUB ROUTINE ***
 290 mcode :
 300 place=draw :num=14 :gosub enter :
REM * SELECT APPROPRIATE
 310 restore 720 :REM * BLOCK OF DATA
 320 place=undraw :num=9 :gosub enter
:REM * STATEMENTS FOR EACH
 330 restore 740 :REM * ROUTINE. PASS
THE
 340 place=point :num=16 :gosub enter
:REM * NUMBER OF DATA ITEMS
 350 restore 770 :REM AND THE ADDRESS
 360 place=sp1 :num=36 :gosub enter :R
EM * WHERE THEY WILL BE
 370 restore 820 :REM * STORED TO THE
ENTER
 380 place=sp2 :num=36 :gosub enter :R
EM * SUB ROUTINE FOR POKING.
 390 return
 398 REM *** ENTER SUB ROUTINE ***
 400 enter :
 410 for l=0 to num :read h$
 420 v=val("&h"+h$) :poke place+2*l,v
:next l
 430 return
 438 REM * BACKGROUND SUB ROUTINE *
 440 background :
 450 poke &hff8240,0 :REM * COLOUR REG
ISTER 0 TO BLACK
 460 color 1,6,5,21,2
 470 linef 15,10,285,10 :linef 15,10,1
5,160
 480 linef 285,10,285,160 :linef 15,16
0,285,160
 490 linef 25,20,275,20 :linef 25,20,2
5,150
 500 linef 275,20,275,150 :linef 25,15
0,275,150
 510 color 1,11,3,12,2 :fill 20,20 :co
lor 1,9,1,1,1 :fill 5,5
 520 color 1,4,1,21,2 :pellipse 140,76
,30,20
 530 color 5,2,1,1,1 :pcircle 140,76,1
0
 540 gotoxy 8,3 :?"USE KEYS Z-X-K-M"
 550 gotoxy 8,4 :?"TO MOVE SPRITE"
 560 gotoxy 4,12 :?"ENTER RED CIRCLE T
O EXIT DEMO"
 570 return
 578 REM *** DISPLAY AN ALERT BOX ***
 580 sound 1,15,2,6,40 :sound 1,0,0,0,
0
 590 a#=gb :control=peek(a#) :global=p
eek(a#+4)
 600 gintin=peek(a#+8) :gintout=peek(a
#+12)
 610 addrin=peek(a#+16) :addrout=peek(
a#+20)
 620 a$="[3][ SORRY!! | | THIS PROGRAM
 | REQUIRES A | LO-REZ"
 630 a$=a$+" DISPLAY ][ OK ]"
 640 a=varptr(a$) :a1=int(a/65536) :a2
=a-(a1*65536)
 650 poke addrin,a1 :poke addrin+2,a2
:poke gintin,1
 660 gemsys(52) :poke 1155,255 :end
 668 REM *** EXIT FROM DEMO ***
 670 exitdemo :
 680 poke &hff8240,&h777 :sound 1,0,0,
0,0 :REM * BACKGROUND WHITE
 690 poke 1155,255 :color 1,1 :end :RE
M * CLICK + REPEAT ON
 698 REM * M/C DATA FOR DRAW ROUTINE *
 700 data 2c0e,2a6f,0006,2015,222d,000
4,206d,0008
 710 data 2448,d5fc,0000,004a,a00d,2c4
6,4e75
 718 REM * M/C DATA FOR UNDRAW ROUTINE
 719 REM
 720 data 2c0e,246f,0006,2452,d5fc,000
0,004a,a00c
 730 data 2c46,4e75
 738 REM * M/C DATA FOR POINT ROUTINE
 740 data 2c0e,2c6f,0006,a000,2868,000
c,38ae,0002
 750 data 396e,0006,0002,a002,2c6e,000
8,3c80,2c46
 760 data 4e75
 768 REM * SP1 - SPRITE 1 DATA. (GOBBL
ER - MOUTH CLOSED) *
 770 data 0008,0008,0000,000f,000c
 780 data 0000,0000,0000,0000,0000,03c
0,0000,0ff8
 790 data 0000,3f3c,00c0,7f3e,00c0,7ff
f,0000,ff33
 800 data 0000,ffcc,0000,7fff,0000,7ff
e,0000,3ffc
 810 data 0000,0ff8,0000,03c0,0000,000
0,0000,0000
 818 REM * SP2 - SPRITE 2 DATA. (GOBBL
ER - MOUTH OPEN) *
 820 data 0008,0008,0000,000f,000c
 830 data 0000,0000,0000,0000,0000,03c
0,0000,0fe0
 840 data 0300,3cf0,0300,7cc0,0000,7f8
0,0000,ff00
 850 data 0000,ff00,0000,7f80,0000,7fc
0,0000,3ff0
 860 data 0000,0fe0,0000,03c0,0000,000
0,0000,0000
```



MONTHLY DISC SIDE 1

This program can be found in the LISTINGS folder on the Monthly Disc.

➤ relative to its centre (the sprite is 16 x 16 pixels).

The format flag controls the interaction between sprite and the screen information where it will be drawn. You can print the sprite on top of the background using a value of zero, or XOR it with the screen by setting the formay flag to one.

An integer array is dimensioned to hold the sprite definition block and background buffer for each sprite. The integer variable *P%* is used by the POINT routine. Unfortunately, the number of the colour register returned in *P%* and the number of the colour register referred to by the Basic COLOR command do not correspond. The table opposite shows the actual relationship.

The program is fairly well commented so a careful study of it plus the above information, should enable you to use the routines in your own programs.

Colour	Number returned	Colour	Number returned
0	0	8	7
1	15	9	8
2	1	10	9
3	2	11	10
4	4	12	12
5	6	13	14
6	3	14	11
7	5	15	13

The relationship between the colour registers and Basic's COLOR command

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Seuck it and shoot

Jeff Walker previews a DIY shoot-'em-up game creator

PROGRAMMERS are often a lazy bunch who naturally won't do things the hard way if they can think their way out of it. Following this philosophy leads them to create tools and utilities that help to write programs – sprite editors, sound handlers and the like.

A long time ago, some bright chap decided that if programmers had already developed the tools that make creating a game easy, then using them, real people could write games too. All that was needed was to put the creation utilities into one package and do a bit of cunning coding to string it all together.

The original Shoot-'em-up Construction Kit (Seuck) was released by Palace long ago on the Commodore C64. It has spawned many versions and imitators, the latest of which is Seuck for the ST. This closely resembles the hugely successful Amiga version, the only major difference being slightly simpler sound.

As ease of use is the main concern, the whole system is operated from a friendly mouse driven menu tree. Access to all the different editors is via this simple front end, including all the file handling, which will allow you to load or save complete sets of data, just one specific part or to transform all your work into a stand-alone game.

The basic components of Seuck are a sprite editor for initial sprite design, an object editor to relate these images to a particular object and a background editor for all the backdrops.

All will run in 16 colours chosen from 512. Added to that are the areas for defining sounds, creating motion paths for the baddies and general information like how many lives the player gets and how large is the play area.

Different types of scrolling can be selected from the Levels menu – none, normal, or push scrolling where the screen only scrolls when the player gets to the top.

One of the limitations of Seuck is that only vertical scrolling is allowed. An important point to note is that these types of scrolling apply to only one level, so it will be easy to mix different types of scrolling into the same game. For example, if you want a static bonus level in between two levels of scrolling destruction.

If the construction set was completely open ended it would be harder to use and almost impossible to link together. For this reason some restrictions, which may seem harsh at first glance, will be placed on the way in which games can be put together.

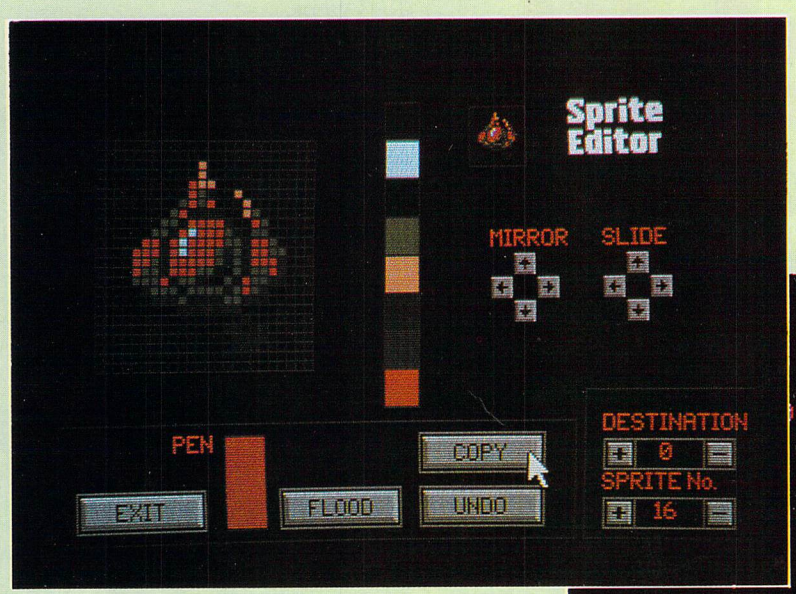
This is not as harsh as it sounds. It will be very easy to produce enjoyable and original games, not only shoot-'em-ups, by using a little imagination. The sample games – a Commando clone and a strange but original game called Psychoblast – will give you some idea of just what's possible.

FACT FILE

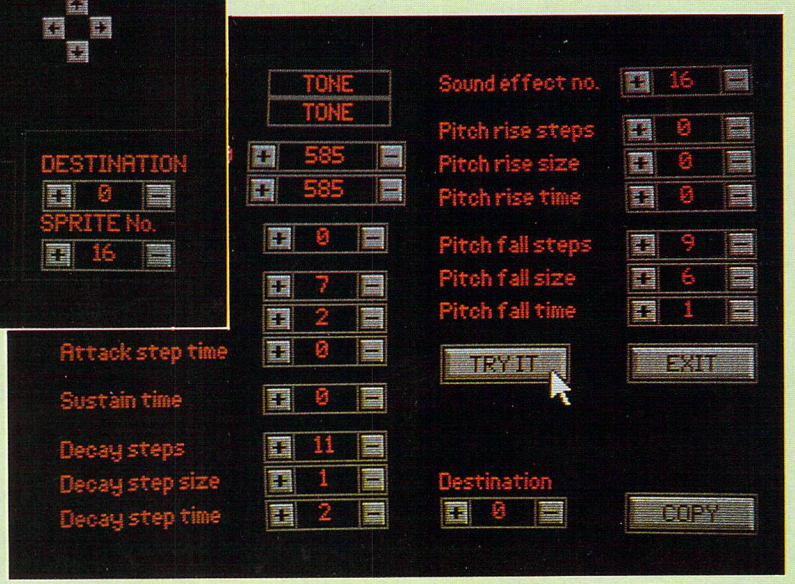
Product: Shoot-'em-up Construction Kit
Price: £29.99
Supplier: Palace, The Old Forge, 7 Caledonian Road, London N1 9DX
Tel: 01-728 0751

POINTS FOR:
Easy to use. Excellent sprite designer.

AGAINST:
Can only produce vertically scrolling games.



Creating graphics with the sprite editor



Experiment with sound in the effects generator

ADVENTURES

Warming news banishes the chill

THE snow continues to fall and the castle is freezing. Which wise guy cracked the joke about global warming? No doubt you are all much warmer than I, and delighting in at least one of the wonderous new adventure releases for the ST.

Since last month's column we have seen the release of one of the most enlightened and original adventures – Infogrames' Murders in Venice. You will probably have read my gushing review of this game. Needless to say I am still hooked, and now well on my way to completing every aspect of this taxing quest in detection.

Another superb adventure to come my way is an RPG spectacular from Electronic Arts entitled The Hound of Death. This game more than meets the pedigree set by The Bard's Tale and is a feast of all that is best in role playing.

The Hound of Death is a direct adaptation of the TSR Cthulhu Mythos role-playing game inspired by the work of H.P. Lovecraft.

Continuing in the RPG genre, I have received The Dungeon Master Editor from Softex. It is promoted as the "ultimate Dungeon Master cheat routine", and as such will be a boon to any owner of that definitive computer RPG game.

The editor resides on one disc and comes with an informative booklet which includes hints, tips and maps to all 14 levels of Dungeon Master. I have

Murder in Venice is currently one of the best adventures available

yet to use this excellent utility extensively, but intend to do so very soon and will report back with my findings.

Also dropped in the courtyard by a passing Softel carrier pigeon is an official release of Whiplash and Wagonwheel. This game has been like a phantom with rumours and pre-production copies circulating for at least six months. Now at last Whiplash is a commercial reality.

The adventure occupies two single-sided discs and is moulded firmly into the gothic horror variety of text/graphic fantasy. It features high quality digitised pictures at each location, full sentence analysis and character interaction.

It is good to see a well constructed escapade from a new and totally independent company, and at only £8.95 is an absolute must for any self-respecting ST adventurer.

On the release schedule for the next month or two are extra data disc packs for Bloodwych. This thoughtful extension by Imageworks will enable you to extend the dungeons in the game, thereby creating whole new areas to explore and conquer. Lords of the Rising Sun – previewed in the July 1989 issue of *Atari ST User* – is also due for imminent release from Cinemaware. An interactive wargame/adventure, it has been almost a year in development and promises to be a blockbuster.

News has also reached me that Fission Chip's The Krystal is due for immediate launch on the ST. This graphical jaunt has also been long in development and won rave reviews from our critic when it was previewed way back in November 1988.

Magnetic adventure

Last month I commented on the sad absence of Magnetic Scrolls for most of 1989, due primarily to the sale of British Telecom Software and the subsequent loss of the Rainbird label.

I recently spoke at length with Anita Sinclair who is the heart and soul of Magnetic Scrolls. She excitedly informed me that far from floundering in the wilderness, her company has been busy coding and testing a major new adventure release for the ST.

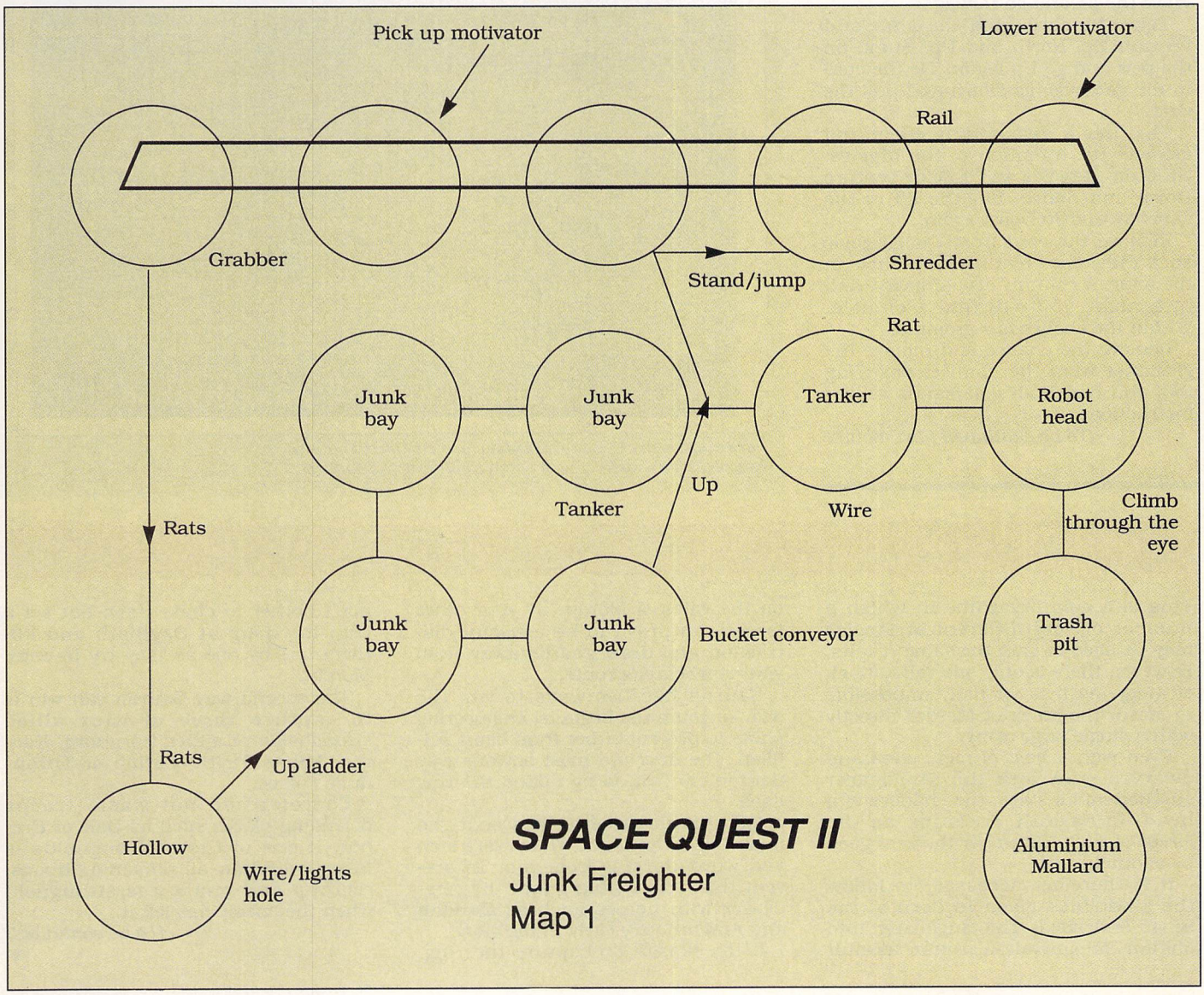
This game, which saw its inception at the time of Guild of Thieves, has been three years in development and the staff at Magnetic Scrolls believe it is their best adventure to date. Due for March release and published by a new parent company, the game is as yet untitled but is sure to be a blockbuster.

Anita went on to say that Magnetic Scrolls will aim for two ST adventure releases per year. But during 1990 it will also be involved in the development of a unique role-playing game and a versatile and flexible wargame.

She finished by promising that she would give me priority information on the new adventure and the RPG and wargame developments very soon. So watch this space for more news.

This month I begin a series of maps to help wayfarers who may be stuck in some of the classic adventures on the ST. I start with the openings to Sierra On-Line's superb Space Quest III, and will continue next month with more plans of this game.

● *So until the winding road runs straight, happy adventuring.*



Problems solved

THIS month I am beginning a serialisation of audit trails to three of the most popular and, judging by my mailbag, most difficult of ST adventures.

If you wish to keep your self-respect and not indulge in a bit of cheating, read no further.

Otherwise, everything you ever wanted to know about Fish, War in Middle Earth and Manhunter New York, begins here.

Fish – *The Boss*

Enter the jagged warp and you will find yourself in the back of a van where you will find a pair of jeans. Put them on and immediately travel south. Now read the note and search the rubbish to find the torch, before going East, East, East and South.

Switch on the torch, take the pew and switch the torch off again. Now journey North, North and drop the pew. Go Down and South and search the debris to find the sarcophagus lid. Move the lid and go Down.

Take the cord from the altar and venture Up, North and Up. Stand on the pew and go Up again. Tie the cord to the gargoyle, go Down and pull the cord.

This has a dismantling effect and attracts the attention of the hippies. Grab the gargoyle and quickly venture Down and South. Put the lid in the doorway and go Down again.

Remove the cord from the gargoyle stick the stone creature in the hole in the altar. A column now appears, and in a niche you will find a chalice. Within the chalice is a grommet.

Remove the chalice and remove the grommet from the chalice, ensuring that you type both commands as one instruction.

(To be continued next month)

Manhunter – New York – *R.G.B. Marshall*

Your first assignment is to investigate an explosion at the Bellevue Hospital. Access MAD and note that the suspect goes to the hospital, then to Trinity Church, then to a bar in North Brooklyn, and finally to a rest room in Prospect Park.

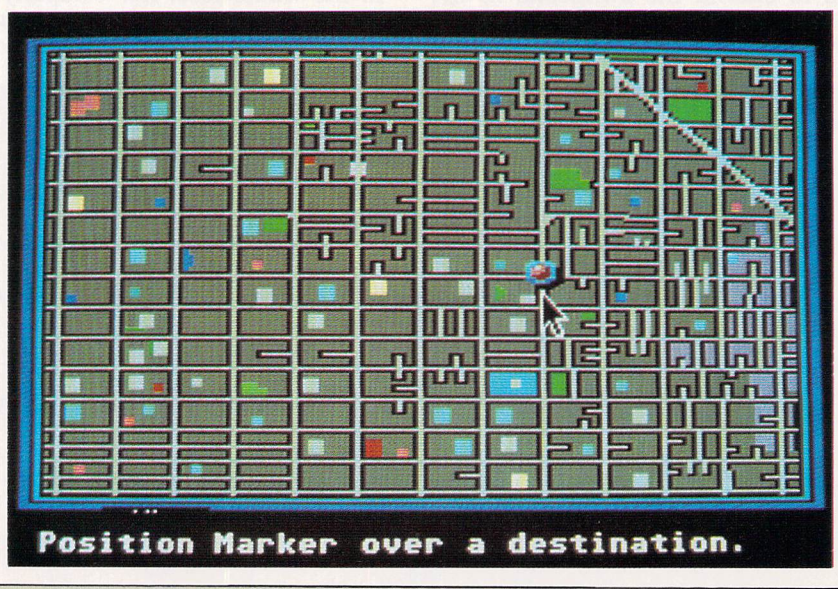
The suspect's signal is lost after this last location. Now select Travel, go to Bellevue Hospital and examine the corpse on the table.

The tag on its foot reads Reno Davis. Access MAD, and you will discover that he was a manhunter who was transferred to Chicago. Examining his body reveals that it is being consumed by baby Orbs.

Now go to Trinity and place yourself at the left side of the church. There are three rows of five candles and a box of matches. You will have no idea what to do at this stage, so go to the bar and when prompted, play the knives game with the bartender. If successful, you can then play the video game in peace. This game involves negotiating a maze where at certain points you land on red squares and can throw balls at three rows of four Kewpie dolls. Make a note of which dolls are dislodged, the squares which cannot be avoided and compare with the map of the maze which you will find in the game's packaging.

There are three dolls worth noting – the third from left on the top row, the second from left on the middle row, and the bottom right-hand one.

(To be continued)



At certain points in this video game you can throw balls at Kewpie dolls – make a note of which ones are dislodged

War in Middle Earth– *Steve Peiris*

This is a complex game in which a number of very different strategies may be used to gain the same results. However, there is only one valid attack strategy, as it is virtually impossible to storm the gates of Mordor directly with a single large army.

Even with a host of men, elves and dwarves, and with the Ringbearer guarded on all sides, the chances of a head-on assault are slim, as the forces of evil outnumber those of good by about 10 to 1.

It is therefore necessary to follow the guidelines given in Lord of the Rings and sneak the ringbearer into Mordor. Meanwhile a frontal assault on the gates of Mordor by your other forces can prove to be a useful distraction and draw guards away from your ringbearer's route.

Sauron has two ways to win the war, so you must begin by engineering plans to prevent either from being fulfilled. The first and most obvious way Sauron can win is by taking the ring itself.

For this purpose he has sent the nine Nazgul to hound your every step and wrest the ring from you. To prevent this, you should guard the ringbearer with heroes such as Gandalf and Aragorn very early in the game.

If the Nazgul do capture the ring, don't bother to chase them but set a trap for them at Osgiliath and kill them one by one as they try to enter Mordor.

The second way Sauron can win is to capture three of your allied strongholds at either Hornburg, Edoras, Minas Tirith, Lorien or Thranduils Palace.

Therefore do not waste troops defending places such as Dale or Erebor. If one of these strongholds is taken, withdraw all remaining troops, regroup and retake the stronghold when the enemy has left it.

(To be continued)

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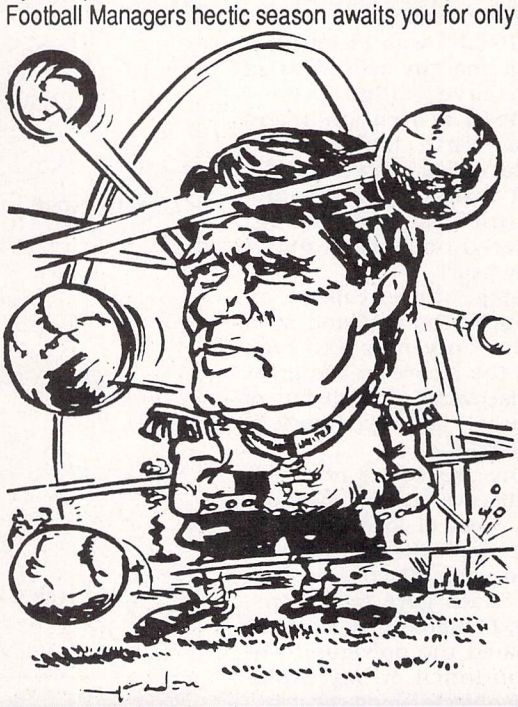

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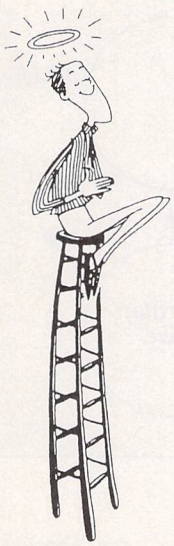

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Overture and beginners

THERE can be nothing quite so daunting for the beginner than a seemingly complex maze in what may be his first or second escapade into adventureland. Indeed, as an experienced adventurer I am often flummoxed by a maze which, on first inspection, seems unmappable.

However, the good news is that every adventure maze which I have so far come across on my ST can be mapped or solved using one of the techniques I am going to cover during the next few articles.

Perhaps the most common type is that where each location description appears identical and all of the exits muddled, with some doing no more than re-entering the same location. This maze can be mapped fairly successfully by the dropping method.

Providing you are carrying enough artifacts you can drop a different one in each room and so substantially alter the location description from the others.

The tiny passage complex in Level 9's Red Moon – available in The Time and Magik trilogy – is a prime example of this type of maze. Before embarking upon maze exploration it is essential that you save your position to disc so that should you become lost you can start again at the entrance.

When I realised I was entering a maze through a one-way door North of the guardian cave – Figure I – I dropped the pearl at location 1 and ventured further North. However, as a pearl re-appeared at my seemingly new location I realised that I hadn't moved. I then tried each exit in turn until I discovered one which didn't lead back to my pearl.

At the next stop, which I called 2 on my map, I dropped the axe, and soon found that the only new exit was South East to the alcove in the great hall. Having discovered an exit out of the maze so early, I journeyed back to location 1 by going East.

I repeated my procedure of exploration until I discovered new location, 3, lying North West of location 1. At point 3 I dropped the sword and after much trial and error discovered that going East or South gave repetitions, but going West, I entered new location, 4. Here I repeated the previous techniques and continued on my exploration dropping objects along the way.

By the time I had travelled South West from location number 8 and reached new location number 9, I made two new discoveries. The first was that I had run out of objects to drop, and the second was that by going North West from my new point I had found another exit from the maze to the stairway.

In order to continue mapping the maze I had to have complete faith in the map I had thus far constructed, and returned to pick up the pearl and the axe. I retraced my steps back to location number 9, where I dropped the pearl once again, labelling this location, Pearl 2. Venturing West I discovered point 10 where I dropped the axe again (axe 2) and going South-West from 9 found a valuable medallion at the final location, number 11.

Convinced that I hadn't missed any room, I wandered carefully back through each of the tiny passages picking up all the dropped articles before continuing on my quest beyond the maze.

I have used this technique in many adventures and more often than not it has proved successful. With perseverance you, too, will find the method helpful – and it may even save your sanity.

Next month I will look at mapping more devious and less logical mazes.

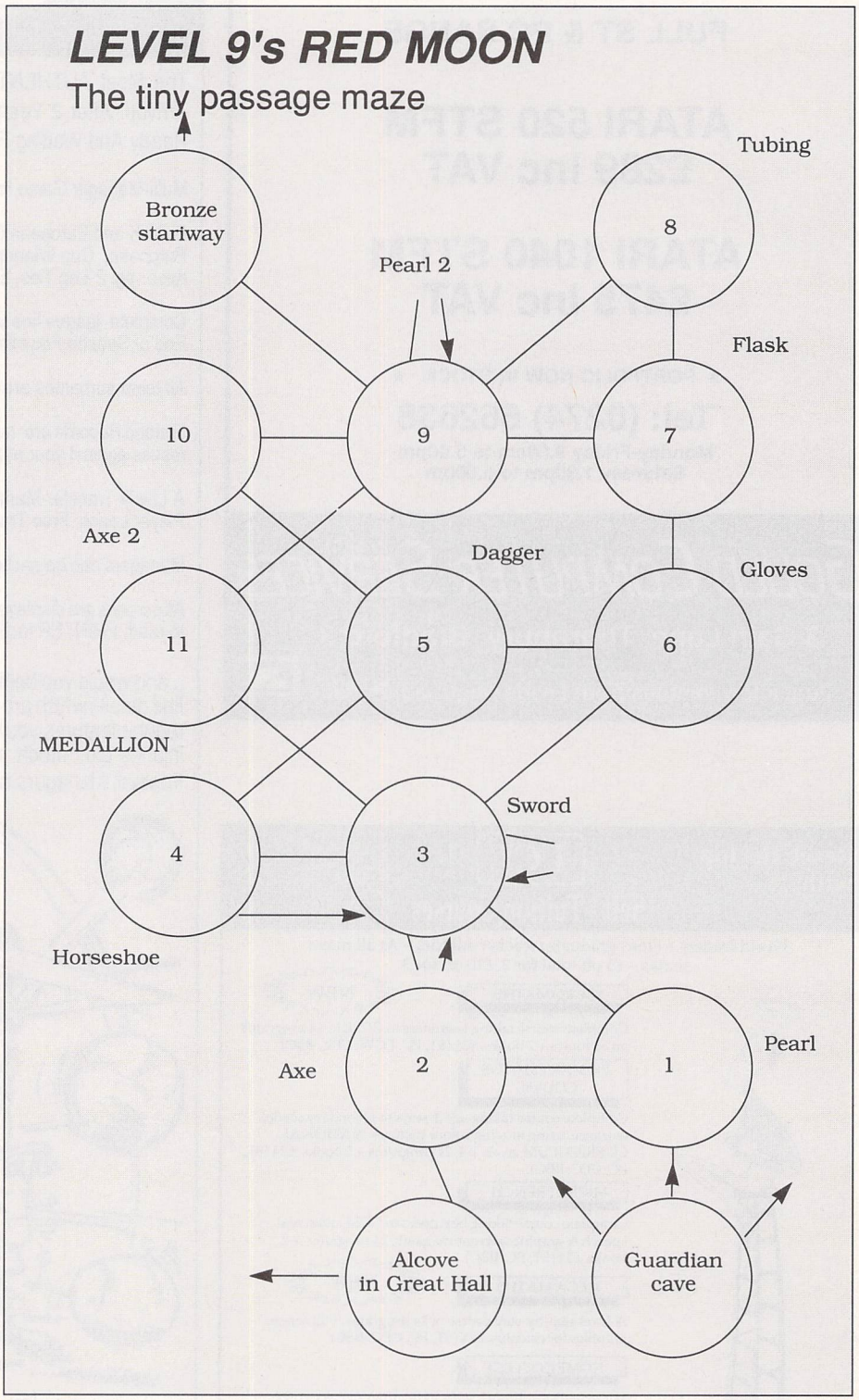

Figure I

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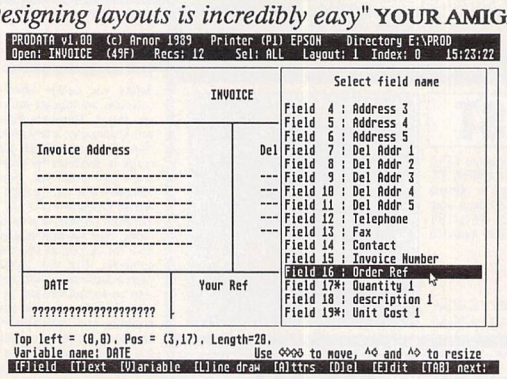

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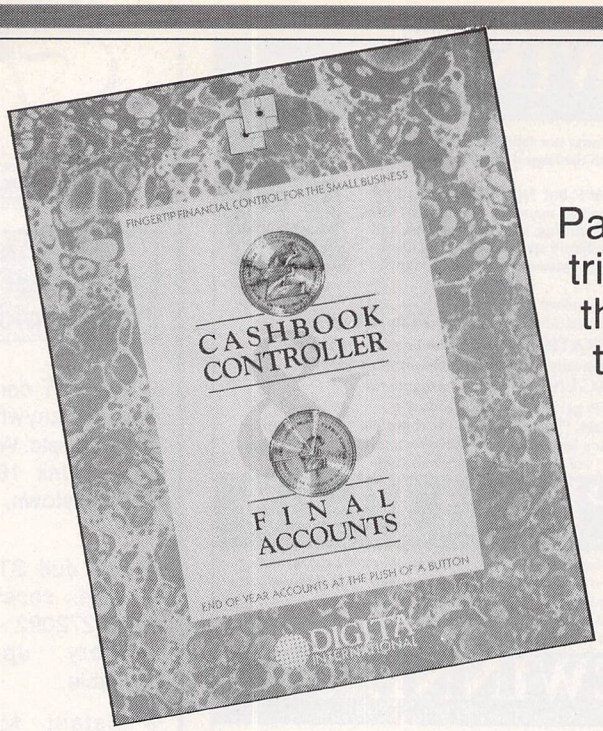


Pat Winstanley tries a package that aims to take the drudgery out of book-keeping

Keeping

CHANGING trends in employment are motivating many people to consider setting up their own small businesses. But for the garage mechanic who contemplates mobile engine tuning or the shop assistant thinking of running a newsagent, the last thing they want is the hassle of keeping the books balanced.

Cashbook Controller and Final Accounts takes the drudgery out of book keeping from the smallest one-man operation to fairly complex limited companies. The program operates on a full double entry system which includes both control and memo accounts, handling credit sales, purchases and the dreaded world of VAT.

The package consists of a single disc together with a 50 plus page manual neatly packed in a video cassette case. The program is entirely menu driven from the keyboard and contains many helpful prompts regarding the syntax required for various entries.

On setting up for the first time you are offered a selection of configuration options which are used to set up the name of your business and accounting period, together with printer control codes for hard copy presentation. Then it's straight down to business.

A default set of nominal accounts is provided covering most of the basic headings needed by a business. You can add more of your own to suit. The titles are subdivided into sections relating to various accounting functions such as sales, purchases and stock in the profit and loss area, while fixed assets are found in the section dealing with the balance sheet.

Certain accounts functions are predefined and should not be changed as they are used in the automatic posting system, but there is plenty of scope for tailoring the system to suit your own needs. Once your accounts are defined you can print out a list of all code numbers and titles for reference.

Opening balances in accounts such as stock, prepayments and accruals are entered using the journal. This is the one part of the system where you need to be familiar with debits and credits, as here you must perform the double entry for yourself.

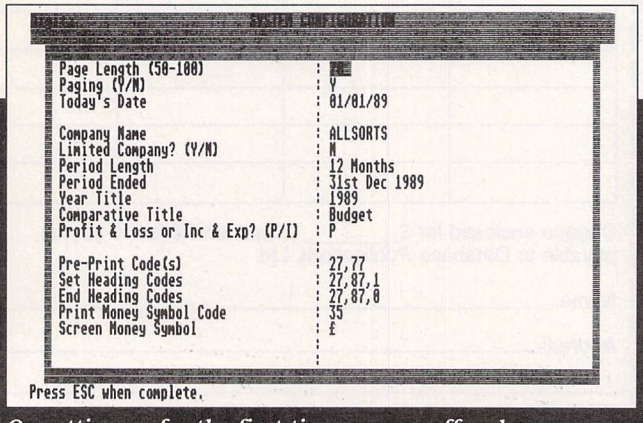
The manual gives a short summary of how various amounts should be entered such as sales revenue being a credit to the sales account and a debit to the bank account (the opposite way round from your bank statement, which shows debits and credits from the bank's point of view).

A sore point about the journal system is a bug which doesn't affect the operation of the program but caused me immense headaches until I realised what was happening. Once you have entered your posting, and whether it is a debit or credit, the system automatically calculates the new balance on that account and prints it on screen. Unfortunately it is shown as a credit balance whether or not it actually is. The posting is still made correctly to the rest of the data, but for anyone struggling with the double entry concept this can be very offputting. However, Digita has assured me the problem will be looked into.

Once the journal entries are complete it is time to start using the system for day to day entries. Transactions such as sales and purchase invoices, receipts and payments are dealt with in batches of from 1 to 100 separate items.

The manual recommends a simple system for organising and labelling each batch, which will then correspond with the program's own numbering system.

This batch numbering is used later for the audit trail, so it makes sense to fit in with the program now rather



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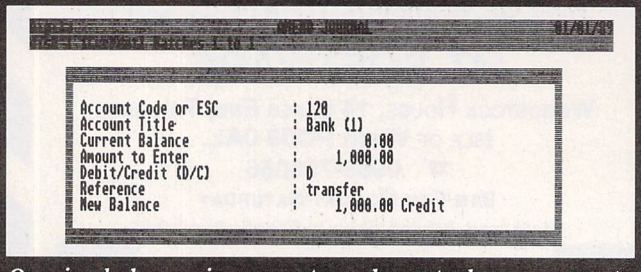
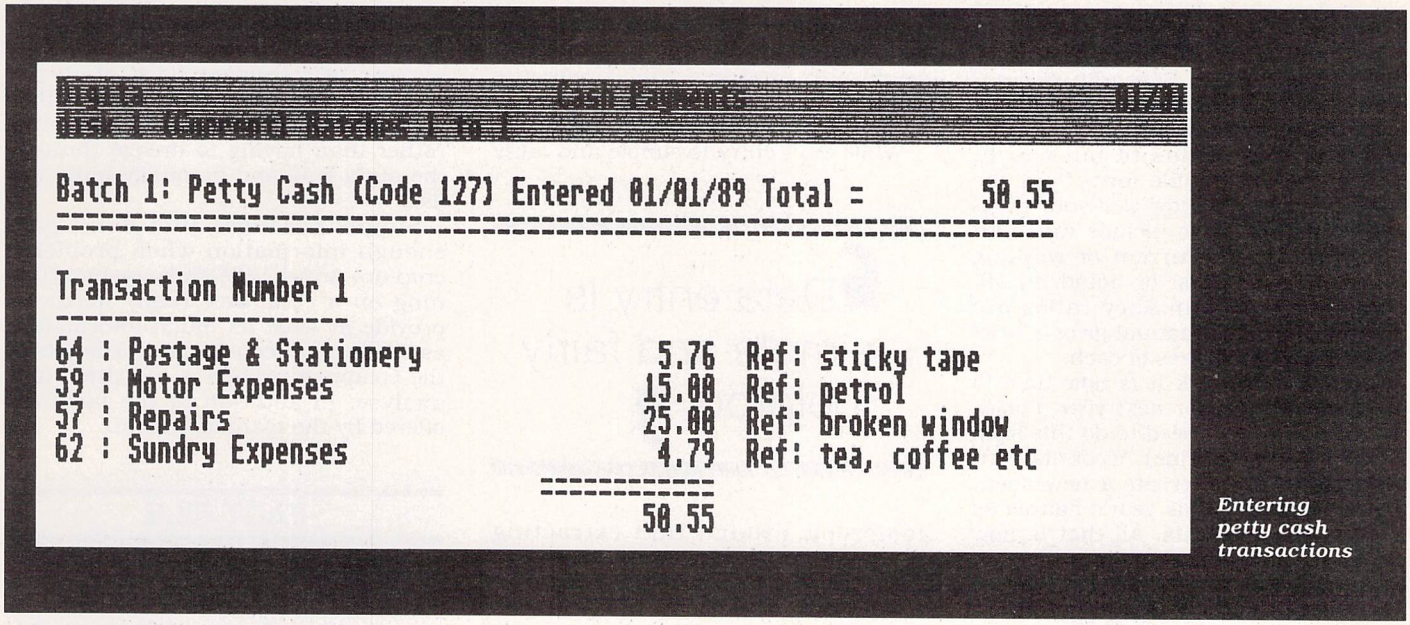


Opening balances in accounts such as stock, prepayments and accruals are entered using the journal



Entering petty cash transactions

control

than becoming hopelessly confused later or running up large accountancy bills because the auditor has to spend extra time unravelling everything.

After selecting the transaction type, such as purchase invoices, you are asked to enter the number of transactions in the batch and are given an opportunity to split the posting of each between up to five different nominal accounts. Thus an invoice from a supplier who bills you for different types of stock at once can be correctly analysed at this stage if required, saving time, mistakes and energy later.

The audit trail

Once the batch is complete the system will check that the totals correspond and will not allow you to exit except by abandoning the batch altogether until they are – a useful safeguard. All entries for posting to nominal accounts also have an optional note attached so you can tag entries with a reference number, name or description.

This tag appears on the audit trail, which is an enormous help when trying to trace transactions which have been mis-posted.

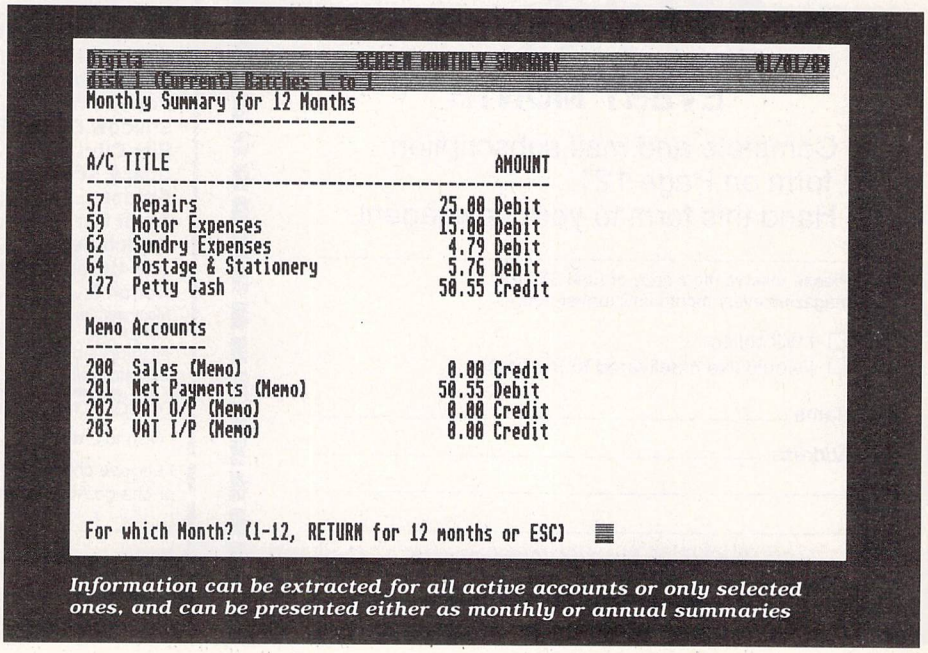
During a transaction VAT can also be analysed by making use of the function keys which can be predefined to hold a string such as *15% VAT*. Then when a sales invoice is posted the VAT element can be analysed out simply by pressing the minus or plus keys followed by the function key.

In this way both net and gross amounts can be easily and simply managed during normal operation. A running total is also kept of the amount of VAT analysed in this way and is shown on screen until the end of the transaction session.

Now all your data has been entered it is possible to summarise the information in a variety of ways either to the screen or printer. Information can be extracted for all active accounts or only selected ones and can be presented either as monthly or annual summaries. However extracting detailed information about a particular nominal account is more difficult.

The audit trail keeps a record of every transaction and groups the information under the categories bank/cash receipts/payments, sales and purchase ledgers and journal activity. Permanent hardcopy of the trail to date can be extracted with later transactions automatically printed from where the last print-out finished.

All the options described so far belong to the Cashbook Controller side of things. For producing Profit and Loss accounts and balance sheets you need Final Accounts. This program works by taking the data built up using the Cashbook Controller and offers options for loading comparative data from a previous year or budget, ➤



Information can be extracted for all active accounts or only selected ones, and can be presented either as monthly or annual summaries

producing a trial balance, printing P&L or Income and Expenditure summaries and the final balance sheet.

Also available in this section is a list of accounting ratios to tell you in rather more digestible form than the balance sheet just how well your business is doing. These include ratios for solvency, equity, current or working capital and acid test or liquid. In all, 14 different accountancy ratios are produced and the manual gives a brief description of the uses of each.

After all this work it is now time to set up a new file for next year. Fortunately, there is no need to do this from scratch again, as Final Accounts contains an option to create a new opening balance from this year's figures as used in the accounts. All that is now required is posting of debtors and creditors to the relevant nominal accounts via the journal to ensure that these balances are acted upon by transaction during the year.

On the whole the manual is well presented, with plenty of clear examples. Though getting started can be rather confusing as some topics which are needed early on are relegated to the appendices, entailing rather a lot of hopping around.

This is partly compensated for by a fairly comprehensive index. Perhaps a tutorial file with one month's entries to study and analyse would also help with the initial wandering around. It would also provide a useful reference when trying to decide whether a journal entry should be a credit or debit.

While data entry is simple and fairly foolproof, I found that extracting information or following the progress of a posting took a lot of time and effort. The main menu holds all the options available, such as transactions, audit trail, journal and so on, and each selection appears to either load a new part of the program, save your data or both.

> "Data entry is simple and fairly foolproof"

This leads to long delays when trying to hop between the monthly summary, the account summary and the audit trail in order to figure out how a silly balance has come about. Similarly, choosing an option by mistake leads to a delay while the relevant section is entered and exited.

I would also like to have had a simple way of extracting a list of all the entries together with the current balance on a particular nominal account, rather than having to dredge through the audit trail and manually build the list.

Simple balances just don't give enough information when problems crop up. Any double-entry system running on a computer really needs to provide at least as much information as its manual counterpart. The job of the computer system is to extract and analyse, in addition to the facilities offered by the manual system.

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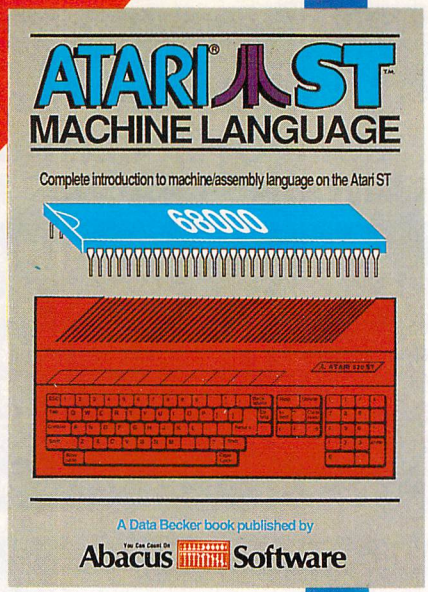

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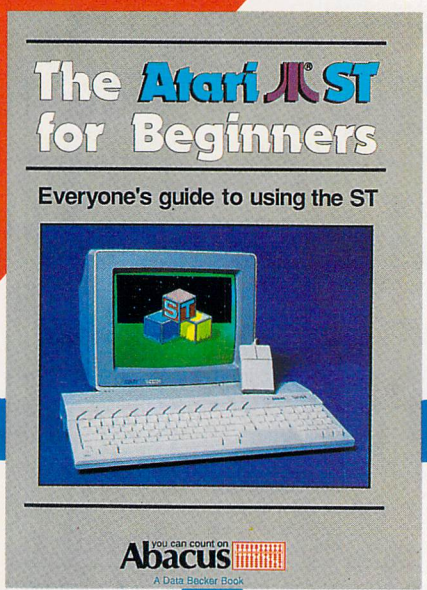

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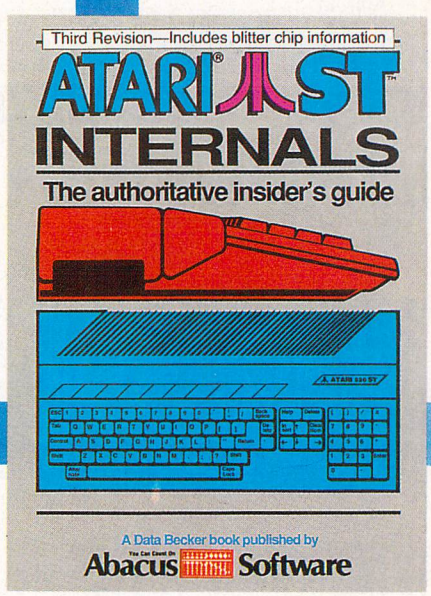

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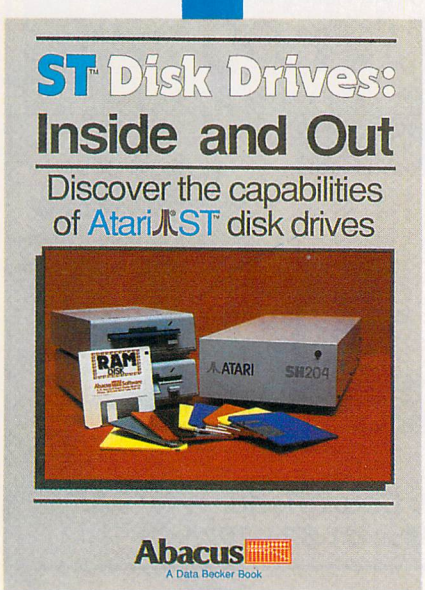

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Drive that gets its skates on

Roland Waddilove tries a new hard disc

IT is a difficult task reviewing hard disc drives these days. They are all so similar that to criticise one might well be construed as nit-picking. However, Gasteiner's 40Mb hard disc drive – imported from Full Circle Technologies in The Netherlands and made in Germany – rates as one of the best I have tested over the past year.

It is only about two inches high, but its flat square shape spreads over a large area of the desk. Mega ST owners will be able to stack the drive either under or over the main processor unit so its size isn't a problem there.

The case is strongly constructed, looks attractive and almost matches the ST's grey so it looks as if it belongs to the system.

The connecting cable is rather short, making it difficult to fit on shallow desks if you have a 520ST or 1040ST. If your desk is at least two feet deep or three feet wide you'll be OK. Mega ST owners won't experience this problem.

The power lead had a European plug and was replaced by a standard three pin one.

Why do so many manufacturers put such loud, noisy fans in hard disc drives? It is totally unnecessary, as this drive proves, being almost silent and can't be heard above the roar of the Mega ST's fan. It is unobtrusive even in a quite room with a 520ST. Full marks here.

On booting up, the drive was found to be formatted and partitioned (it can be set up to auto-boot from drive C). The partitions selected didn't suit me, but using the software supplied it was a simple matter to trash the three existing partitions and set up four new ones.

The formatting/partitioning software runs best in monochrome, but it can be run in medium resolution if you don't mind a little bit of on screen corruption. This shouldn't happen on a piece of kit costing over £500 and should either be fixed or replaced with someone elses debugged software.

In use the Gasteiner drive seemed very quick indeed, with files loading and saving in a flash. The fastest drive tested over the past year was Third Coast Technologies' Quantum Pro-Drive (May 1989), but this one just gets its nose in front in a straight race to boot up a program.

The speed advantage over floppy discs is enormous, and if your applications make heavy use of discs, or if you chop and change between applications, a hard drive can save a lot of wasted time.

Protext for instance, normally takes 30 seconds to boot up from floppy disc using a 520ST. However, this can be reduced to about 18 seconds using a fast format disc created using one of the formatters on the Cover Disc. But even this is slow compared to the 4.8 seconds taken by this hard disc drive – that's how long it takes to load a 271k file.

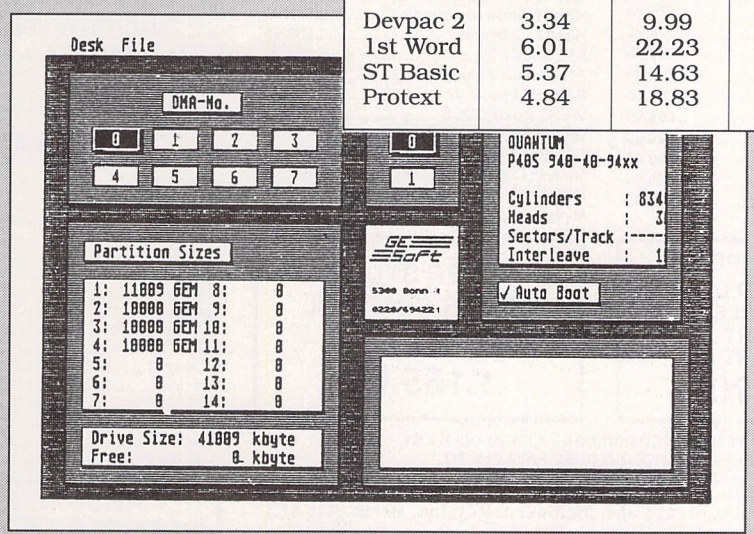
The adjoining table shows the timings for Gasteiner's hard disc drive, a Mega ST and an old 520ST using normal and fast format floppy discs. Notice how much faster the hard drive is, but also note that the Mega ST creates much faster floppies than an old 520ST, but 520ST disc access times can be significantly reduced using a fast floppy disc format.

The hard disc drive's heads are automatically parked when you switch off the power so there's no worry about knocking or moving the unit. This is a welcome bonus, but it's not quite as good as the Vortex unit tested in our August 1989 issue which automatically parked the heads after a set period.

Gasteiner's drive is strongly constructed, attractive, very quiet and very fast. Moans about the short cable, large desk space and wrong plug are minor and apply to most hard disc drives, not just this one. It is quite expensive, costing about £50 more than a couple of its competitors and as there is little difference between models it is best to shop around for the best price combined with quality service.

Software	Hard drive	Fast floppy		Normal floppy	
		Mega ST	520ST	Mega ST	520ST
Devpac 2	3.34	9.99	10.54	11.20	13.86
1st Word	6.01	22.23	22.76	25.38	30.34
ST Basic	5.37	14.63	15.48	16.32	20.62
Protext	4.84	18.83	18.57	22.53	30.32

The time taken to boot up common software packages using Gasteiner's hard drive, a Mega ST and 520ST using fast and normal format floppies



FACT FILE

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POINTS FOR:
Very fast and very quite. Auto-parking and auto-booting.

AGAINST:
Software could be better. A longer lead would make positioning the unit easier.

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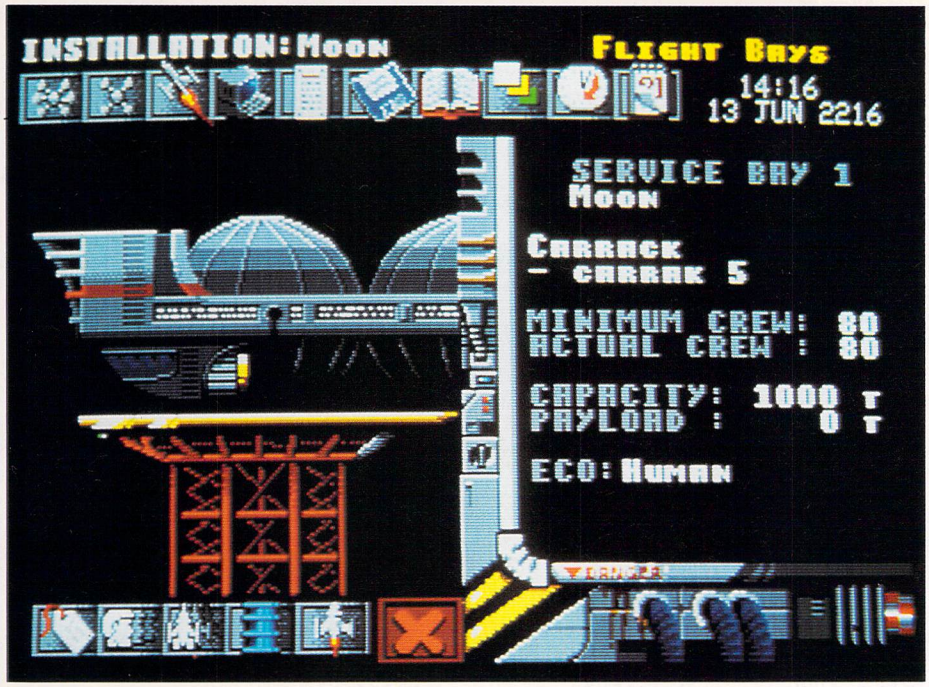

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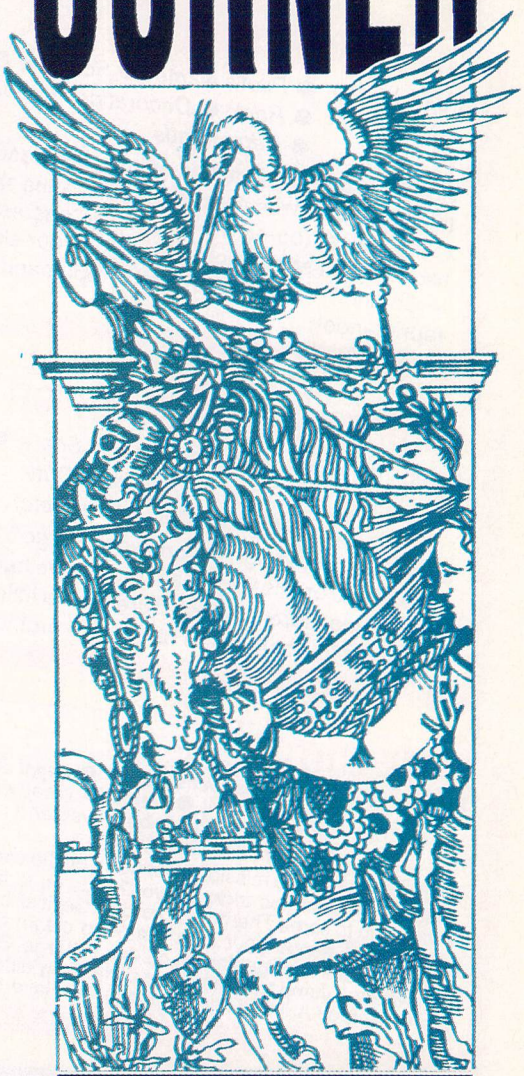

Steve Murgan provides a multitude of tips for the strategy game Millennium 2.2

Interplanetary rescue

SET more than 200 years in to the future, Millennium 2.2 is a strategy/management simulation in which you are the commander of a small moonbase faced with the task of recolonising the Earth. Regular attacks from Martians put your survival in peril.

The game is quite well thought out, but falls down in one or two places. Firstly there's no sound on/off control – I found the background effects irritating after a while. Secondly, and most importantly, the game lacks a pause facility. Admittedly it can be left for hours if nothing is happening, but Murphys' Law states the telephone will start ringing in the middle of a battle with the Martians.

Moonbase consists of six modules, Life Support, Energy, Research, Resource, Production and the Landing Bay. To last for any length of time you'll have to colonise some of the solar system's planets and moons. These colonies are similar to the moonbase, except they have no research or production facilities.

When you first start playing, get the research department working on the SolaGen Mk II energy unit, put the Mk I on line and turn on the Resource mining equipment. At the top of the screen is a clock, and clicking on it will advance the time. After a short while the research lab will report that they have finished, and you should have enough materials to start building the energy unit.

Sometimes it may be necessary to switch off the mining complex, as the production section may not have enough power to build equipment. When the MkII has been completed and installed, turn Resource back on again and start building probes and new energy units alternately.

As soon as a probe is finished send it to a planet or moon to find out whether it is inhabitable and has rare minerals. It is best to start with the outermost planets, as travelling to them will take a long time.

Eventually you should have around 30 probes, either travelling or landing on various planets. Once a probe reaches its destination, tell it to land and get the research department to check it out.

By this time you may find the mines are unable to produce enough raw materials, or in some cases not the right ones, to allow construction of large colonising ships. You should now concentrate on researching every type of ship available, the defensive weapons and all 10 SolaGen units. ➤

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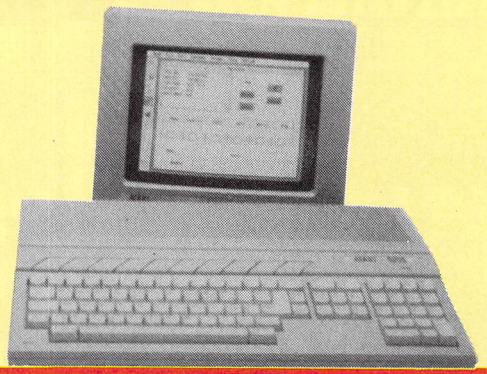

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➤
Continue to build Grazers while the research department is busy and each time one is finished send it to the asteroids.

After four or five have been produced and sent off, the first one should have reached the asteroids and will probably find one it can mine, so collect the minerals and bring it back to the moon. When the research department has completed everything, start examining the planets where probes have landed.

Continue producing Grazers, collecting minerals and bringing them back, until the first one reaches the moon again. You will now have a continual stream of mining ships travelling between the asteriods and the moon.

Now build an additional Life Support Nodule or two, allowing your personnel to increase in numbers. If you haven't already been attacked by Martians, you probably will be quite soon. Your only defence is to build fighters and orbital lasers. The lasers can only be used once each, but they do wipe out up to half the attacking enemy in one go, so they are very useful.

Colonisation

By now the research department will have discovered several planets and moons that can be colonised. Again you should choose the furthest away, with the rarest minerals and build an SIOS and send it off. This will set up a self-supporting colony, complete with a SolaGen Mk I.

When it is safely on its way, build a Carrack, load it with the items in Table I, and send it to the same planet as the SIOS. Follow this procedure for each inhabitable planet and moon, not forgetting to keep the boys in research occupied.

When the SIOS arrives at its destination it will automatically set up a colony ready for the incoming Carrack. Chances are that the population of the new base is too low to get the mines working, so after the Carrack has landed and off-loaded its cargo, scrap it. This will release 80 people who immediately get busy with picks and shovels.

You should now concentrate on building more Grazers and sending them from the moon to the new colonies. When they get there start shuttling them between their new base and the asteroids, and begin to produce Carracks on moonbase. These should be despatched to each of the new colonies until a steady stream of ships are travelling between the Moon and planets. This will enable supplies to be taken to the new colonies and rare minerals to be shipped back.

It's a good idea to set up a colony on one of Jupiter's moons, with a fleet of Carracks shuttling equipment from the luna base and taking back minerals.

Another fleet should be taking the delivered equipment to the outer planets, and bringing materials into the Jovian system.

1 Mk X SolaGen 1 Mk V SolaGen as backup 3 Fighters 5 Lasers Plus any extra equipment you can fit in

Table I: Items for the Carrack

Probe:	An unmanned craft which can land on a planet/moon and report back on it's suitability
Grazer:	Small fast craft used for asteroid mining
Waverider:	Medium-sized fast transport. Ideal for running small items between planets
Carrack:	Massive but slow transporter
Fighter:	Remote controlled drone
Orbital laser:	Wipes out invading craft but each one can only be used once
Nodule:	Extra life support capacity for 100 people on moonbase
Bunker:	Stores reserve equipment underground away from enemy fire
Solagen:	The main source of power. Ten models are available, ranging from the humble Mk I to mighty Mk X
SIOS:	Sets up a self supporting colony complete with Solagen Mk I

Table II: The 10 most valuable pieces of equipment

Whenever you build a ship, you'll have to give it a name. These can lead to great confusion in the later stages of the game, as you'll easily forget which are mining ships, and which colony each Carrack is going to. The easy way around this is to use sensible names which remind you of the ship's function.

For instance, mining grazers should be called MINER1 to MINER30, Carracks should have the first four letters of the planet's name followed by a digit (NEPT1 to NEPT4). Waveriders are much faster than Carracks, so start their names with an F (FNEPT1 to FNEPT4). When deciding where to send a newly-completed ship, take into consideration the planetary positions, as many months can be saved by launching when the destination planet starts moving towards you.

With so many colonies around the solar system, enemy attacks will become fairly regular, so keep sending out fighters and lasers or the bases could be destroyed. As a general rule, wait until some defensive weaponary arrives before setting up new colonies, as the Martians take great pleasure in attacking recently-formed and unprotected bases.

Whenever you send a SIOS to the outermost planets and moons, closely follow it with three or four Carracks packed with Solagens, lasers, fighters and a couple of grazers. This will serve to protect the new colony and provide suitable transport for shipping back large quantities of rare materials.

If you have been playing correctly the research department will have designed just about every piece of equipment available, with the possible exception of the Bunker. Only one can be built, but as surplus equipment can be kept underground and away from enemy fire, it is invaluable.

Bear in mind that the sole purpose of a colony is to gather rare materials for shipment back to the luna base. Therefore at the beginning of the game you should choose your planets carefully as there's no point in setting up a base if its resources aren't any use. Any one mineral is only found in one place, but I'll not reveal which or where, as that would make the game too easy.

To get you started, however, both Callisto and Leda are habitable and offer a reasonable source of materials, as do a few moons of Jupiter.

Probing the planets

With several colonies on the go, and dozens of space vehicles travelling between them, you should remember to send probes out to any planets and moons you didn't bother with earlier. This is because some essential plans for the troop carrier and terraformer are scattered about and the only way to find them is eventually to colonise every possible planet and moon.

When you find the plans for the troop carrier you can launch an all-out attack on Mars, which will wipe out just about every Martian. I say just about, because towards the end of the game a small fleet of them turns up from deep space travels and promptly kills every single person on Moon base. At this point you'll need to repopulate the Moon by sending a couple of Carracks to it, landing and scrapping the ships.

Just before the terraforming is complete, each colony you've set up declares independance, so not only have you succeeded in cleaning up the Earth, but you've managed to populate most of the solar system at the same time. Well done!

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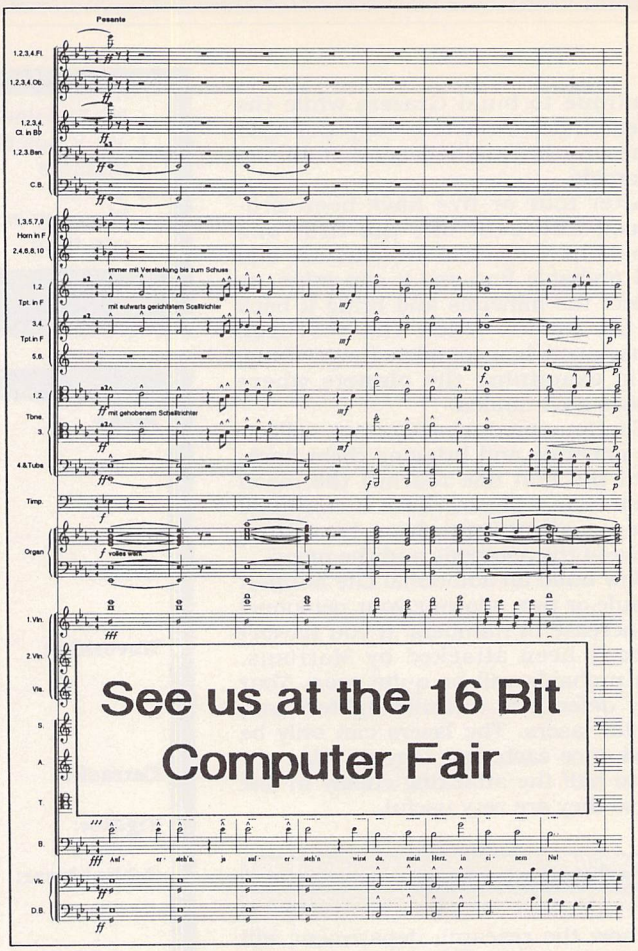

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Simply assembled procedures

Roland Waddilove examines screen and file handling routines in Part 3 of his guide round the ST's operating system

TO the novice programmer machine code, whether it be 6502, Z80 or the ST's native 68000, may seem impossibly difficult to learn. However, assembly language – let's face it, no one programs in the binary bits of true machine code – consists of a few simple instructions like MOVE, ADD and SUBtract. We have used most of the common ones in this hitch-hiker's guide to the operating system (OS).

Once these instructions are understood, assembly language programming becomes quite tiresome and almost boring – but essential for getting to grips with the power of your micro. Simple procedures that can be carried out with just a single command or two of a high level language like Basic take many lines of machine code. Take, for instance, a routine to print a number on the screen:

```
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
```

This subroutine takes two parameters; one held in the data register D0 is the number to be printed, while the second in D1 is the number base. Setting D1 to 10 will produce ordinary denary numbers, while setting it to 16 will force hexadecimal output. Other values are less useful – who wants a number to the base 13?

The reason for mentioning this *printn* subroutine is that it is required for the next series of OS functions that we are to explore. First off this month is a very simple one that supplies a random number, *_random*. This is most useful for games in which there is a random element, such as the number of attackers, or perhaps they appear after a random length of time, or a random start position and so on.

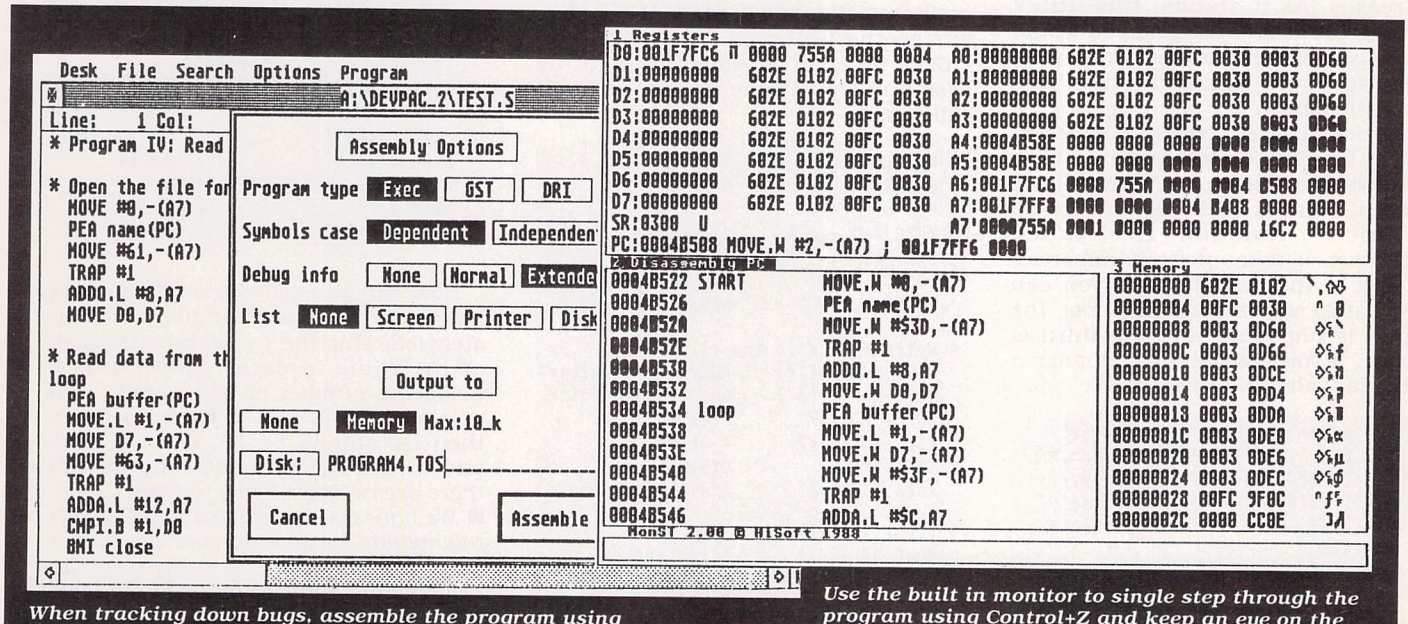
Call Xbios function 17, *_random*, to put a 24 bit random number in the D0 register. This is most likely to be too big, but you can easily reduce it by masking out the unwanted bits by ANDing it with a smaller value, like 255, 15 or 7, or dividing it and taking the modulus.

Program I is a program that uses this function to display a list of random numbers on the screen. All the values are less than 256. Load it from the Monthly Disc and run it. Here is the main OS call:

```
* Get random number
  MOVE #17,-(A7)     _random
  TRAP #14           XBIOS
  ADDQ.L #2,A7       Tidy stack
  ANDI.L #$FF,D0     Make 0-255
  MOVE.L #10,D1      Base 10
  BSR printn         Print number
```

Notice that to reduce the number to the required range – 0 to 255 – it is ANDed with $FF. A branch to the *printn* subroutine displays the random number. Negative values aren't often required, but if they are, they can be obtained by subtracting the result from zero.

How do games programmers pro ➤



When tracking down bugs, assemble the program using HiSoft's Devpac with the Debug info set to Extended

Use the built in monitor to single step through the program using Control+Z and keep an eye on the register values and memory contents

duce those fast, flicker free graphics? The answer is partly by some very fast code. It is also partly by a dual screen technique, this latter involving setting up two display screens in memory.

The idea is that you draw the display on screen two while showing a picture on screen one. The display then switches to the completed screen two while the next picture is built up on screen one, which is now hidden.

One screen one can be the default display you see on the monitor, while the other can be created by reserving a 32k block of memory. In order to make use of these we need some way of finding out where the default screen is located in memory, and this address will be different for each model of ST.

As a general rule, it is stored at the top of ram – $78000 in a 520ST – but to be certain, it is best to ask the OS using Xbios function two, *_physbase*. The result is the physical base address of the screen – the screen used to create the display.

Xbios function three finds the logical screen base, and this is the area of memory that all operating system graphics commands write to.

Program II shows Xbios functions two and three in use – load and run it from the Monthly disc. Here are the OS routines:

```
* Get physbase
  MOVE #2,-(A7)      _physbase
  TRAP #14           XBIOS
  ADDQ.L #2,A7       Tidy stack
  MOVE.L #16,D1      Base 16 = hex
  BSR printn         Print it

* Get logbase
  MOVE #3,-(A7)      _logbase
  TRAP #14           XBIOS
  ADDQ.L #2,A7       Tidy stack
  MOVE.L #16,D1      Base 16 = hex
  BSR printn         Print it
```

The program simply displays the logical and physical screen base addresses. As it stands, this utility isn't a great deal of use and you would normally store the address in a variable and use it in conjunction with screen switching.

In order to swap screens it is necessary to be able to change the logbase and physbase values. As you may have guessed, there is an Xbios function to do this – function five called *_setScreen*. It takes three parameters, the first is the screen mode (you can also change screen resolution too), the second is *physbase* and the third is *logbase*. If you don't want to change a particular value then set it to -1:

```
* Set screen physbase and logbase
  MOVE.W #-1,-(A7)        No change
  MOVE.L #$70000,-(A7)    Physbase
  MOVE.L #$78000,-(A7)    Logbase
  MOVE.W #5,-(A7)         _setScreen
  TRAP #14
  ADDA.L #12,A7           Tidy stack
```

Another useful function, which is often found at the start of a program, is Xbios four, *_getRez*. This simply asks what screen mode the ST is in and returns a value in D0 in the range zero to two. If your program only runs in monochrome say, you'll have to check that it isn't being run on a colour system – a result of zero or one would indicate this – and print a polite message on the screen.

Many programs and utilities need to either read data from disc or write data to it, and often both are required. Word processors load and save text files, art packages load and save pictures, databases load and save records and so on. We'll now take a look at the operating system commands enabling you to load and save data to disc.

To save data to disc – text, pictures, database records or whatever – first the file needs to be created with a call to Gemdos function 60, *f_create*.

This requires two parameters. The first is the file's attributes, such as read only, hidden or system file. Normally this is zero meaning that the file can be read from and written to and its name appears in disc directory windows on the desktop. The second parameter is the filename.

File facts

After the call a number is returned in the data register D0 and this is the file handle. It's the operating system's way of keeping track of a number of files at the same time, each one being given a different file handle value.

To write information to the file Gemdos 64, *f_write*, is called. Pass it the memory address of the data to be saved, the number of bytes to write and the file handle. Finally, to make the data secure on disc, the file must be closed with a call to Gemdos 62, *f_close*. All this simple routine requires is the file handle.

That's the theory, let's see how it works in practice. Program III is a short demonstration of file handling. It creates a file called ALPHABET.ASC, writes the alphabet to it and then closes it. Load it from the Monthly Disc and try it. Here are the Gemdos calls used:

```
* Create file, make it read/write
  MOVE #0,-(A7)       0=read/write
  PEA name(PC)        Filename
  MOVE #60,-(A7)      f_create
  TRAP #1             GEMDOS
  ADDQ.L #8,A7        Tidy stack
  MOVE D0,D7          Save file handle

* Write a byte to the file
  MOVE.L A6,-(A7)     Address of buffer
  MOVE.L #1,-(A7)     One byte to write
  MOVE D7,-(A7)       File handle
  MOVE #64,-(A7)      f_write
  TRAP #1             GEMDOS
  ADDA.L #12,A7       Tidy stack

* Close the file
  MOVE D7,-(A7)       File handle
  MOVE #62,-(A7)      f_close
  TRAP #1             GEMDOS
  ADDQ.L #4,A7        Tidy stack
```

When the file is created the handle is stored in D7 – data registers D4 to D7 are preserved by operating system calls. A one-byte buffer is reserved in memory and each time round the main program loop the next alphabetic letter is placed in it. The Gemdos *f_write* routine is passed the address of this buffer – it's stored in address register A6 – and is instructed to save just one byte.

How can we check that the data has been written correctly? One way would be to double click on ALPHABET.ASC from the desktop and then click on the Show button to display the contents on the screen. However, to illustrate two more Gemdos functions, we'll write a short utility to load and display it.

The first task is to open the file for reading, and this is performed by Gemdos function 61, *f_open*. It takes two parameters, one being the file mode where 0 means read only, 1 is write only and 2 is read or write; the other parameter is the filename. A file handle is returned.

Next a loop structure reads one byte at a time into a buffer using *f_read* – a very similar function to *f_write*. It requires the address of a buffer in which to store the information read, the number of bytes to read and the file handle. As each byte is read it is passed to *c_conout* for printing on the screen.

Load and run Program IV from the Monthly Disc. Here are the bare bones of the operating system routines used:

```
* Open the file for reading
  MOVE #0,-(A7)       0=read
  PEA name(PC)        Filename
  MOVE #61,-(A7)      f_open
  TRAP #1             GEMDOS
  ADDQ.L #8,A7        Tidy stack
  MOVE D0,D7          Save file handle

* Read data from the file
  PEA buffer(PC)      Buffer address
  MOVE.L #1,-(A7)     One byte to read
  MOVE D7,-(A7)       File handle
  MOVE #63,-(A7)      f_read
  TRAP #1             GEMDOS
  ADDA.L #12,A7       Tidy stack

* Close the file
  MOVE D7,-(A7)       File handle
  MOVE #62,-(A7)      f_close
  TRAP #1             GEMDOS
  ADDQ.L #4,A7        Tidy stack
```

How can you tell when all the data has been read from the file? Immediately following the *f_read* function look at the value in data register D0. It holds the number of bytes read, so if you asked the OS to read 10 bytes then D0 should be 10, if it isn't the end of the file has been found and there are no more bytes to read.

● *We have covered quite a few OS calls this month, so boot up your assembler and have a crack at adapting the example programs or writing your own. Next month I'll be continuing with some more useful OS functions.*

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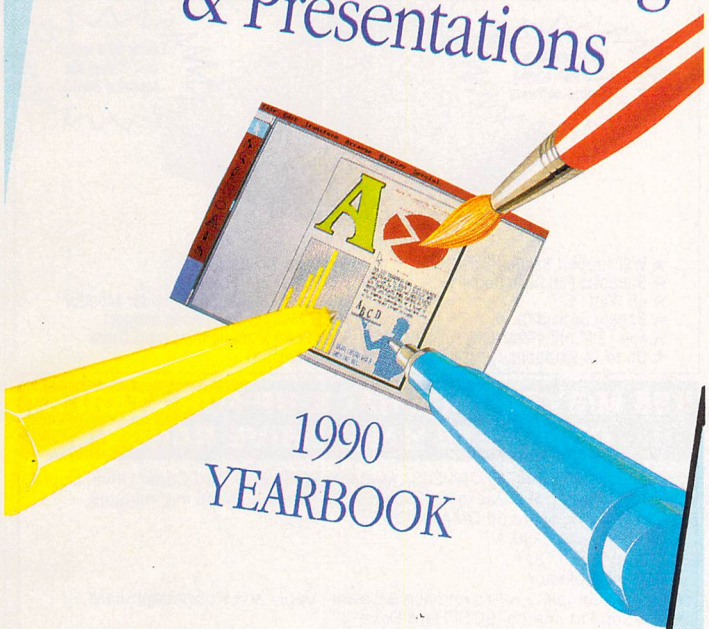

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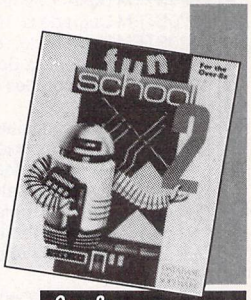

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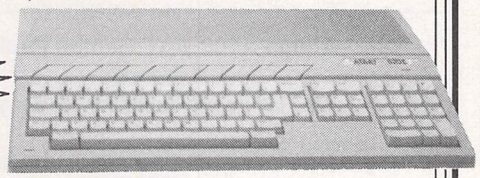

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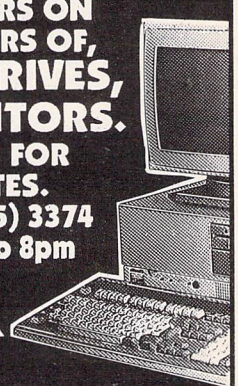

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Expert advice on STOS programs

COULD you please tell me the address of Phil Lawson, the programmer of the Atari ST version of Fun School 2. The reason I wish to get in touch is that I'm writing an educational package for my technology project and I would be very grateful for any help he could give me regarding sprite control and programming in STOS. – **Stephen Weller, Chippengham, Wiltshire.**

● Sorry, but we're unable to print Phil's address, or that of any other contributor. However, you can contact him through his regular STOS column, send your queries to us and we'll pass them on. Being a self-employed programmer/journalist, Phil's always on the lookout for new projects to become involved in, preferably ones with a cash reward.

Getting best value for money?

I AM writing to express my disappointment with your new-look Atari ST User. *It used to be so helpful and informative and the best ST magazine around, but you've ruined it by copying others with the cover disc and upping the price.*

Being asked to pay an extra pound out of my widow's pension was quite a shock, especially when I didn't want the disc in the first place. I wonder how many other readers feel the same way.

Just for the record I'm not a dodery old person and I use my ST for accounts, playing adventure games, writing a book and various other activities. My two sons both have STs and they also feel that £2.95 is too much to ask.

Couldn't you have produced two versions of the magazine, one with the disc and one without, so giving your readers the choice of paying £1.95 or £2.95 – or better still just do away with the disc completely. – **Mrs. C.M. Taylor, Kilgetty, Dyfed.**

● The great cover-disc debate continues, with the majority of readers liking the idea of a disc full of software for the same price as a blank disc. However, we at *Atari ST User* do not believe in forcing readers to pay extra for what they don't want, so just like Baldrick we've devised a cunning plan.

Starting this month the disc has been removed from the magazine and the price is back to a more affordable £1.95. But what about the army of readers who like the disc? Well, if they take out a subscription they'll be able to get the monthly disc as well. Not only that, but the cost for a year's subscription is only £29.95, which works out at £2.50 each month and is 45 pence cheaper than it would have been if buying it from a shop.

The disc will contain all the listings from the magazine, along with documented source code, fully playable games, demonstrations, utilities and professional software. Add to this the convenience of having both magazine and disc delivered to your house, and the result is a bargain not to be missed. This new system should manage to please every single reader, as they'll now get exactly what they want. Use the order form on Page 121 to take out a subscription.

Scanning the small print

I USE my Atari 1040ST with a high resolution monochrome monitor for professional word processing with Protext. The majority of my work involves copy typing, which is very time consuming for an untrained typist.

Is there a scanner, hand held or otherwise, which can be used to read text into Protext so it can be edited as though I'd typed it in. As I'm a one man band, I'm working to a tight budget and so mega-priced desktop scanners are out of the question. – **W.P. O'Neill, Macclesfield, Cheshire.**

● The best scanner is available from Signa, which although quite expensive it is also very good. The company also has software which can read scanned text and save it in an Ascii file. An average page of text would contain around 800 words made up of 26 upper and lower case letters, the numerals 0 to 9, and several punctuation marks, making around 80 different characters in all.

The program works through reading the image stored on the screen, and asks the user what character is represented by which shape. Whenever this shape is encountered again, the program automatically inserts the correct character. This way less than 100 characters need to be entered to produce a page of text. When you've finished, the allocated characters can be saved so next time you use the same sized text and fonts the program will use the stored information automatically.

In theory it is possible to take a standard scanner, read the text into a picture and write a program to recognise the various characters and save them as an Ascii file. The main problems you'll encounter are recognising the same characters in different styles, and deciding where the text starts on the screen.

Every month we have to enter more than 10,000 words by copying text from readers and contributors. These mail pages account for 3,000 words alone, so if there's a cheap scanner available we'd very much like to see it.

Gripes on games and prices

I HAVE been a subscriber to Atari ST User *for the past year and now my subscription is coming to a close, I doubt I'll renew it for the following reasons:*

1) *Even though yours is a multi-feature magazine, it doesn't contain enough coverage of games. The arcade side of computing is the most popular and therefore should be given more coverage.*

2) *There is no dedicated arcade tips section.*

3) *It is a bit childish to eliminate all mention of the Amiga.*

4) *The magazine is slightly over priced.*

I would also like to comment on the star letter in the September 1989 issue. S. Hislop said that piracy would become rare if software prices were dropped. Even if prices were lowered to £5 it would still be cheaper to obtain a cracked version for the cost of a blank disc.

Mr. Hislop also mentioned that some games are cons, and definitely not worth the asking price. If you intend buying a game for £20, you should at least read a few reviews in different magazines, and possibly try it out in the shop before parting with your cash. – **Grant Saunders, Radlett, Herts.**

● Each month *Atari ST User* contains more than 12 pages dedicated to games reviews. Compare this with

In defence of the virus writers

I FEEL compelled to write in response to the facile remarks made by Gareth Bradley in your letters column. Firstly I resent his tone. The programmers who create viruses can be seen through their work to be anything but mindless and idiotic. I would challenge him to produce a program as elegant as a boot sector virus.

I can sense you becoming enraged, but please hear me out. The usual argument cited both by the media and indignant do-gooders against viruses is that they can cause the loss of hundreds of man hours or valuable work and irreplacable information.

Any disciplined operator should be in the habit of backing up alterations every hour, coupled with a daily disc back up, so no one should ever lose more than one hour's work. Hard drive users cannot plead a special case either, as they should back up the disc anyway in case of hardware problems.

The real reason for the scare stories is that viruses provide a perfect example of the autonomous nature of computer technology. People are naturally alarmed when they realise the machine on their desk can surprise them and perform functions without direct human intervention.

It scares me too, but I don't blame the virus writers from bringing it to my attention. I blame society for misinterpreting the role of the computer and ignoring the wider implications of its use.

We are all aware of the hypothetical examples (sci-fi stories) of computers allowing the death of some "non-productive" humans, for what the operating criteria describe as the greater good of the whole. Most of us dismiss them as unrealistic, because computers don't have that degree of control. We should be discussing the questions raised by the virus issue, not slagging off the the virus writers with our heads firmly thrust in the sand.

Secondly, Gareth's vision of an anti-viral self replicating program is an ill-thought out idea. It would have to be disabled to protect games and continually updated to recognise new viruses. What he wants is already available in the form of memory-resident virus detection utilities, which can be easily installed and inform you whenever a virus is recognised. This is much more appealing than filling memory and boot sectors with virus killing code. – **The Teknosis group, address not given.**

★★★

RECENTLY I bought Forgotten Worlds which loaded perfectly. After many hours of fun I decided to try out a new virus destruction utility, checked all my discs and found them all to be clear.

A month later I did another check and found Forgotten Worlds to be infected with the Ghost Virus, even though the discs were write protected. The game didn't load and as the limited warranty had expired I tried to delete the virus. Apparently it had written over the boot sector, which leads me to believe that some programs can get around the write protect notch, as I read something about this in the Union Demo.

In total, five discs were infected, ruining them all even though they were write protected. I just wondered what type of computer pervert would write a virus to destroy someone's favourite games? – **Michael Gill, Inverkeithing, Fife.**

Star game FOR A star letter

Each month we select a letter of the month and the sender recieves the program which our reviewers have rated *Atari ST* Star game. This month Michael Gill will receive Ghostbusters, which is reviewed on Page 22. Letters on every subject are welcome. Send them to the Editor, Atari ST User, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP.

● To answer your question Michael take a look at the letter above yours. In our opinion virus writers come pretty close to primordial slime. No matter what fancy words they use, it's still an invasion of privacy and unnecessary destruction of personal property.

Programmers who write viruses are the high-tech equivalent of vandals and burglars. They break and enter private property then steal and destroy everything they find. They should be locked up and the key thrown away.

Recent news stories have disclosed that NASA's main computers have become infected by a virus from a politically active group against the use of nuclear generated electricity.

We have decided to award the prize to Michael Gill instead for suffering so much at the hands of virus writers.

number of pages put aside for each of our other regular topics, including programming, business, hardware reviews, exclusive reports and general interest articles, you can see that games take up the greatest proportion of the magazine's pages.

Arcade Corner is only an occasional column, but with readers' help in sending those cheats modes for the most popular and recent releases we could make it a regular one.

Why should we mention the Amiga? The name of the magazine is *Atari ST User* and as such caters for Atari owners only. There are plenty of magazines available for owners of both machines.

Taking a look at the front cover will show the new low cost of £1.95. Your views on prices are similar to those aired by software houses, in that lower costs would not reduce piracy. All that would happen is the software house would make even less money and probably go out of business altogether.

A few companies are starting to produce budget titles, although the majority of their finances still rest on the sales of full-priced games.

Woolly programmers spoil conversions

WHY is it that games written on older machines with no more than 64k of ram are often no different from the 16 bit versions which almost manage to fill a standard Atari?

To give an example, the original version of Elite managed to work on a 32k BBC Micro. Even when the solid graphics and improved sound effects have been taken into account, there must be at least 300k of memory still available on an Atari 520ST.

So how come the game only included the same boring five missions, when there should have been plenty of room left for dozens of extra ones to keep the player interested? The whole idea of 16 bit machines is that they're better and faster than 8 bit micros, so why don't programmers use the extra facilities and memory to their best advantage? – **Mike Browning, Thornaby, Cleveland.**

● It seems that programmers go a little barmy when faced with 500,000 bytes to play with, and don't bother compacting data, pictures or even code. This results in most of the mem- ➤

➤
ory being taken up with pure rather than compressed data.

The upshot is that no room is left for improvements or additional features. We agree with your point about 16 bit machines being superior and that programmers should produce games with more features when upgrading ancient software from the older machines.

Cricket has been hit for six

I HAVE been looking for a cricket simulation for some time and if you know of any good ones could you please give me the name and address of the distributors. – **I.M. Jeremil, Ontario, Canada.**

● This must be the only popular sport not converted for the home micro market. Over the years we've had many requests for such a game, but as of yet no software has appeared. Come on you programmers out there, get coding the Ashes and maybe England could win for once! If any reader knows of a commercial cricket game, or a good one in the public domain, let us know and we'll tell the rest of the world.

Elite mission IS possible

THERE is a bug in Elite which prevents you from completing the final mission, Destroy Thargoid Space Station, but here's a little hint on how to get out of it. After accepting the mission, every Coriolis station is captured by the Thargoids, so follow these simple steps.

Boot up Elite as usual, but when you're asked to enter the password type in SARA. Pressing Return will give the Wrong Password response, so now enter the correct one from the book and load your commander. Once you've managed to destroy the space station do the following:

1) *Press * on the number pad*
2) *The screen should now reveal HACKER*
3) *Enter 93*
4) *Enter 53*
5) *Press the Escape key*

Now save your commander on a backup disc and see if it has worked. Do take care when entering the above values, as wrong entries could seriously damage your commander. – **Jason Hird, Weston Favell, Northampton.**

● Many thanks for this tip, which should help many a stuck trader, although we should point out that only certain versions of the game were infected by this particular bug.

Several other readers have also written in about Elite asking how to complete this mission, and one or two have asked how many missions there are in all. Most have scores under 300,000 and have nearly completed this fifth and final mission which leaves a very boring time until the magic 16 million points are achieved to give Elite status.

Arnor strikes back

The Prodata review in your January issue could have been more useful to your readers. I am surprised and disappointed that you choose a reviewer who confesses that he avoids non-Gem programs like Prodata.

It is inevitable that a software publisher such as Arnor, who deliberately does not follow the crowd, will occasionally be misunderstood. It is not trying to sell to those who prefer the filly bits of Gem - it is instead producing useful business software.

"Prodata shows its IBM roots", said the reviewer. Wrong. Prodata was designed simultaneously for the ST, PC and Amiga.

"It appears like a straight conversion with little regard for how the Gem operating system could improve its operation". Wrong. We have considered Gem long and hard and deliberately decided not to use it.

"Unfortunately there is no Gem file selector ...". A matter of opinion but it's widely agreed this is one of Gem's weaker points.

"Prodata's programmers lack creativity and imagination and there is nothing new in the software". Prodata does not look as "pretty" as some programs - it is designed for efficient business use.

Prodata is indeed considerably more powerful than Superbase Personal and I hope a later review (maybe of the new version) will look at Prodata as a business program and not a plaything. We are trying to help promote the ST as a computer that can be used for business and this type of review is a kick in the eye which will not help anyone. - **Mark Tilley, Managing Director, Arnor.**

● Taking the bad points out of the context of the review does make for discouraging reading, but Elliot Stein says "I can't fault Prodata's operation. It works and performs its database functions with a high level of dependability".

His main critism was aimed at the lack of Gem functions, which the majority of ST owners are familiar with. All in all we found the review to be quite fair, but it's still one mans view. What do our readers think?

Bombed out by an AUTO folder

HAVING recently upgraded from a Sinclair Spectrum, I'm now trying to work my way through the wonderful world of 68000 programming. I've got all the books on the subject and have managed to write quite a few small but interesting programs.

The only problem I have is with AUTO folders, which are supposedly used to make a program run from disc automatically when the ST is turned on. My programs work correctly when called from the desktop by double clicking on them. But as soon as I put one into an AUTO folder and re-boot the system, they either work only up to a point or immediately bomb out.

Could you please help me as this problem is driving me up the wall. – **David Burton, Manchester.**

● The answer to you problem is quite straightforward – you cannot use Gem functions from a program within an AUTO folder. This is because Gem is only initialised when the system boots-up to the desktop, so from AUTO folders all the wonderful Gem operating system, AES and VDI calls are not available.

Many of these calls can be got around using the Bios and Xbios functions, but others may need some clever programming and resource files. In the near future we hope to run a short series of articles explaining some of Gem's difficult points, so keep your eyes open.

Fingers point way to cheaper music

AS a beginner to Midi I would like to get a software package which would use the sound chip in my Atari ST. This way I could become familiar with writing music before having to splash out for synthesisers, Midi equipment and very expensive software. With this in mind could you please advise me which software package I should buy? – **P.G. Grant, Catford, London.**

● The main package which springs to mind is Dr. T's Fingers, reviewed in the February 1989 issue of *Atari ST User*. At £79.95 this could be just what your looking for and it can be obtained from: MCMXCIX, 9 Hatton Street, London NW8. Tel 01-724 4104.

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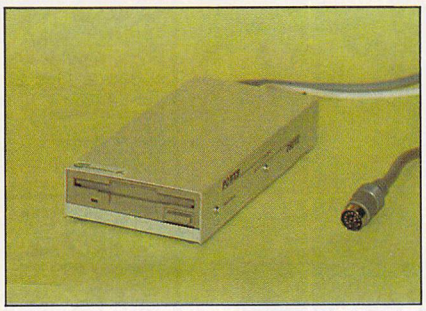

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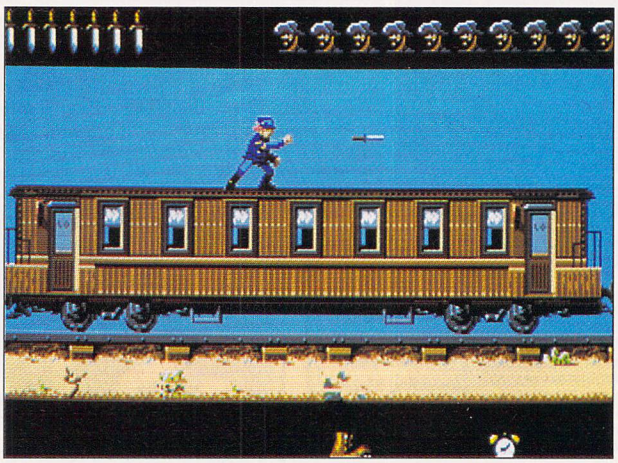

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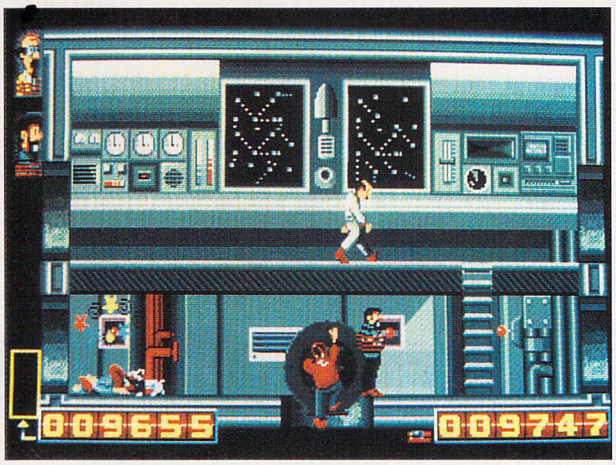

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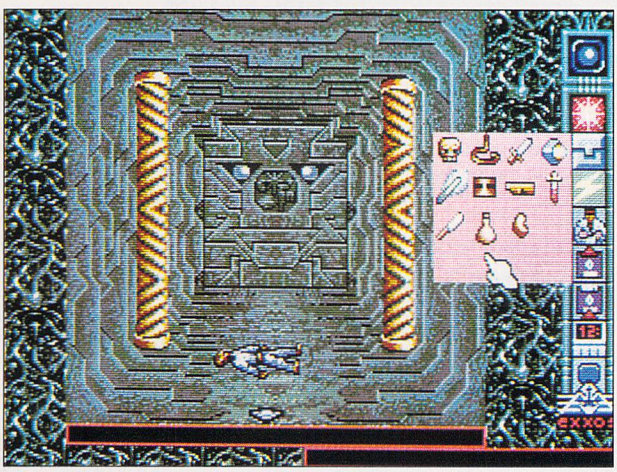

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Stage II is a versatile art package incorporating virtually all the functions you need – without the inflexibility and jumble of other packages.

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Grab graphics like never before

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... with the Vidi-ST Digitiser

Rombo's Vidi-ST is a fully featured digitiser consisting of a plug-in cartridge, sophisticated picture manipulating software and a comprehensive manual.

As well as grabbing single images from TV or Video for use with art programs or DTP packages, the Vidi can actually capture pictures and display them in real time – at up to 25 frames a second!

This is the essential package for anyone who wishes to make use of the full graphics potential of their ST. With a saving of £15 off the retail price this is an opportunity you shouldn't ignore.

Make the right impression ...with Degas Elite

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THE art package, for many the industry standard whether you are creating computer graphics for incorporating into games, galleries or just for pleasure.

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"SBA Xtra is a winner in the low-cost accounting stakes." – **What Personal Computer**

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Fun number crunching

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Home Accounts *plus* Day by Day

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Home Accounts has been designed to make full use of the Atari ST's features, giving you the widest range of home accounting facilities available at this price.

The program lets you set budgets and control up to 13 separate accounts, with optional printouts of any data. Within seconds of loading you data disc you can check your budget or any account, and even display or print the data in bar or pie charts.

Day by Day replaces your manual system for diary, business organiser, notepad, planner, reminder and so on.

It's suitable for both business and home applications, including numerous useful functions which serve every requirement.

Written in the easy-to-use Digita style, Day by Day is certainly one program that once you've bout it you'll wonder how you ever managed without it.

Among its many features are:

- ☆ Calender/diary/planner
- ☆ Categories such as bills, birthdays and letters
- ☆ Appointment sorting
- ☆ 'Urgent' notice board
- ☆ 'Overdue' notice board
- ☆ Advance notice of forthcoming events
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- ☆ Comprehensive search facility
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- ☆ At-a-glance week and month summaries
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- ☆ Grouping of related messages

Both of these powerful programs are excellent value on their own, but if you buy this exclusive combination package we'll knock £15 off the combined retail price.

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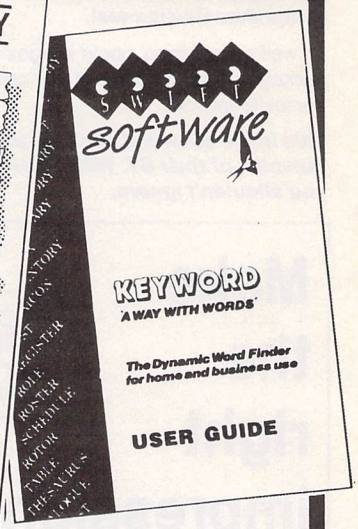

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So get yourself organised on us. Order today and we'll mail your personal organiser by return!

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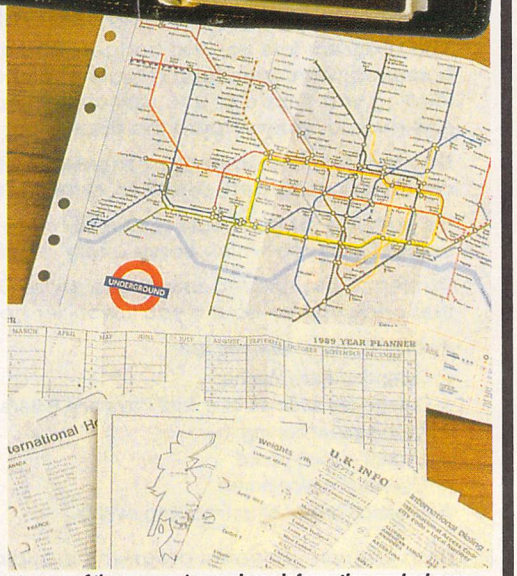

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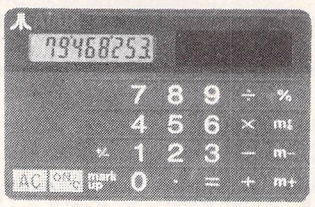

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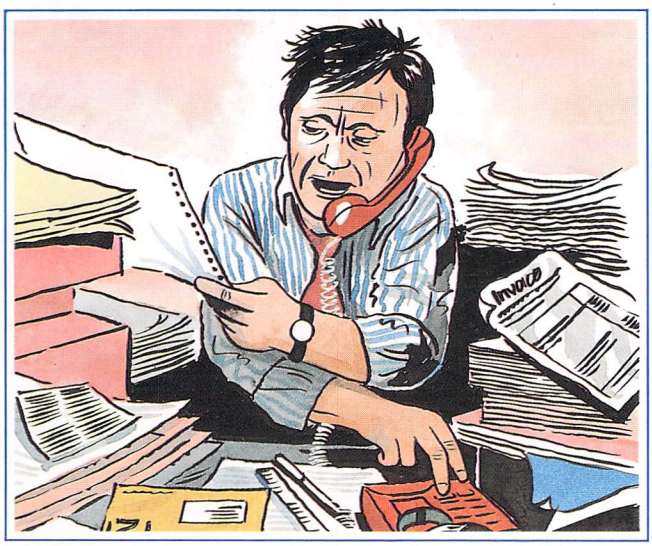

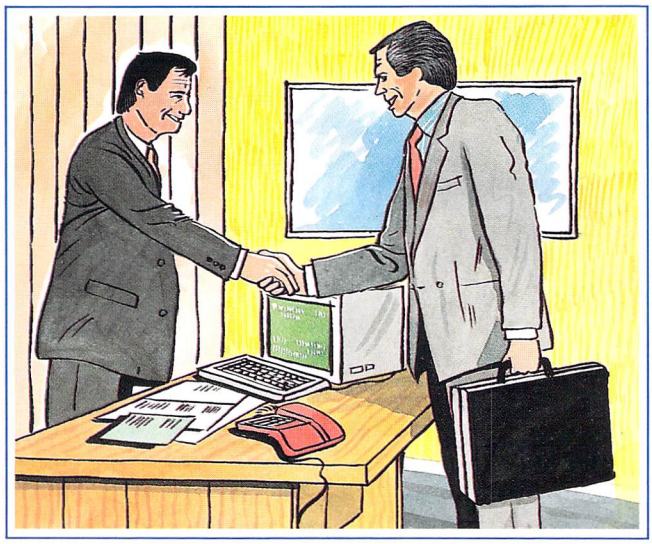

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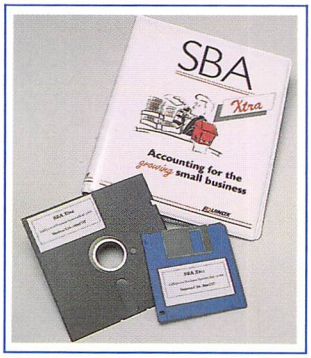

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