

ATARI ST USER

The
top-selling
Atari ST
magazine

Volume 3
Number 7
September 1988
£1.75

LASER C

An in-depth look at
this fast, powerful
development system

REVIEWS

*Signum 2, Spell-Book,
Ten, Protext Office,*

GAMES

*Virus, Sundog, Arcade
Force 4, Mindfighter,
Helter Skelter, Bomb
Disposal, Gauntlet II,
Peter Beardsley's
International Football,
Captain America,
Pandora, Quadralien,
Alien Syndrome,
Football Manager 2
and Shackled*

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of the big
fact-packed
guide to the
Atari ST



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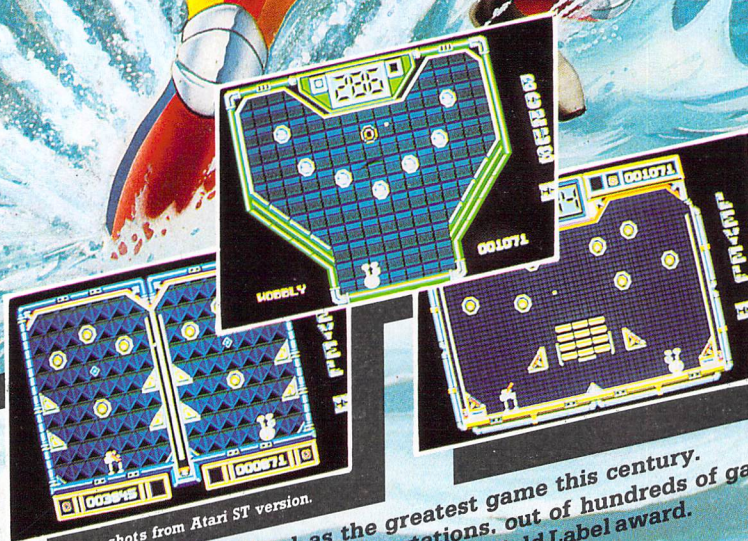
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No.1

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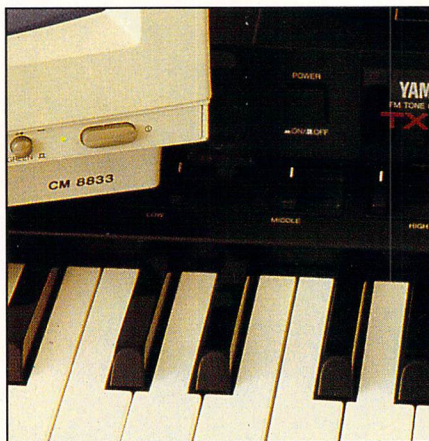
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News

All the latest stories and events from the ever-expanding world of the Atari ST, including the latest Gallup Chart of top-selling games software.

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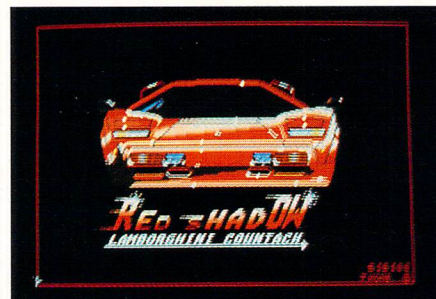
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AND THERE'S MORE!

Part 2 of The Complete Atari ST. In future months this illustrated pull-out, which comes free with Atari ST User, will build up into the definitive guide to the workings and uses of this powerful micro - starting with beginners' basics and eventually progressing to cover the most advanced concepts and applications.

Continuing this month with:

- Exploring the Mega ST's hardware.
- First steps in ST Basic maths.
- See how to paint a seascape.
- Creating atmosphere in adventures.
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- Learning to program in C.



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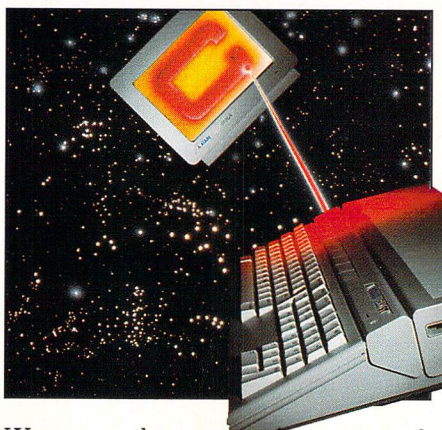
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CHRISTMAS JUST WOULDN'T BE CHRISTMAS WITHOUT THE **ATARI USER SHOW**

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DATABASE EXHIBITIONS

R162

It really IS desktop publishing

ARMED with a Mega ST and a selection of desktop publishing software, young entrepreneur Gary Robertson has embarked on a career as a jobbing printer in Wellingborough.

A loan from his friendly Barclays Bank manager set 19-year-old Gary on the road to independence earlier this year.

He has since built up a thriving firm called Swift Publishing Services, supplying business cards and letterheads, company reports, small magazines and newsletters produced on a Mega ST with an Atari SLM804 laser printer.

"I first got into DTP with a 520ST and Publishing Partner and quickly realised its potential as a business venture", Gary told Atari ST User. "Since then I've added Fleet Street Publisher, Signum 2 and Timeworks DTP and I'm eagerly waiting for the arrival of Publishing Partner Professional and Atari Desk Set".

His latest venture is organising half-day seminars to introduce local businessmen to the benefits of desktop publishing.

"My aim is to spread the word around and dispel some of the myths about DTP", said Gary. "Even though I realise some businesses will go off and do their own printing, I think enough of them will bring their jobs to me".



Jobbing printer Gary Robertson in his works

£100 ST Christmas present coming?

STAND by for another round of ST re-pricing, possibly taking place as early as this month. Industry observers expect Atari to knock £100 off the price of the 520ST before the Christmas sales period. And a similar drop in price for the 1040ST is also forecast.

Everything depends on how ST sales have held up during the summer, when the marketplace traditionally becomes sluggish.

Despite a price increase to £399 and a corresponding drop in the cost of the Commodore Amiga, ST sales have been buoyant during June and July. If the final

accounting shows that trend continuing through August Atari may hold off the ST price cuts.

"If the ST continues to sell well at £399, I don't know what we'll do", said Atari spokesman Peter Walker, "but we are looking at ways to bring down ST prices in the interests of our customers.

"So it wouldn't be the biggest of surprises if we did cut it by £100 in September or shortly thereafter".

Any price cut on the 520ST would also affect the 1040ST. Walker said Atari would maintain the price differential between the two systems.

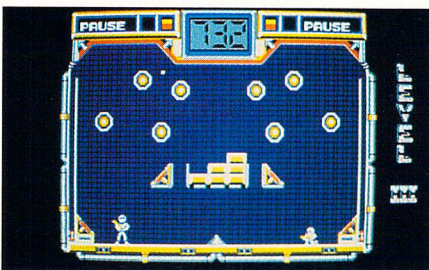
Big push by Prism

AFTER achieving much success in the entertainment market with its games software, music cassettes and CDs, Prism Leisure went public last year.

To date Football Manager has been the company's biggest hit, and the soccer theme is continuing with the ST version of Football Manager II already heading the charts.

No laurel-resting for Prism however, as the release schedule to Christmas looks very impressive.

Next out will be Hotshot – a variant on the breakout/pinball theme. Though it looks simple, don't be fooled. Armed with a graviton gun which pulls the ball toward you, you must release the fire button and the ball is freed. From Maxwell Tech-



Hotshot – tough pinball variant

nology – led by programmer-of-the-year David Jones – Hotshot allows you a choice of seven characters with different abilities and appearance. Don't be hit by the ball

Turn to Page 9 ►

POLL SUCCESS

ATARI ST software continues to hit new heights in the Gallup polls.

Entertainment software for the machine has recorded its biggest market share to date – 6.2 per cent of all units sold in one week.

Gallup spokesman Matthew Brown told Atari ST User: "Whereas in the past ST success was due to one or two titles selling well in isolation, this week sees no less than five titles from this format in the Top 30 of the Chartalk 50".

The Atari ST share of the total amount spent by software purchasers in a week reached an unprecedented 20 per cent – pushing ahead of Commodore 64 and Amstrad and gaining on Spectrum.

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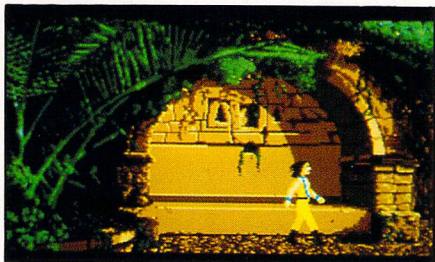
though – it is deadly. Price £19.99.

Artificial Dreams is only £12.99 for a vertically scrolling shoot-'em-up. You are trapped 94 lunar miles from the safety of your mother ship. There is a maze of fields which will stop you, speed up your enemies, but may give you more lives or allow you to enter danger zones. One word of advice: Be prepared for the speed trap.

Legend of the Kristal is the most impressive of the new releases and is scheduled for an October launch. The Kristal of Konos was first written as a stage musical in 1976, and though voice-overs were recorded by Patrick Moore and songs recorded by Elaine Paige it was never actually performed.

But Mike Sutin was unwilling to allow his work and that of Rodney Wyatt and Micky Keen to die, so after a 12-year gap he set about redesigning the stage play for the Atari ST under the name of Fissionchips Software.

Professional artists Michael Haigh and David Hardy have created 60 beautiful and original backgrounds. Their newness to the medium of computer graphics has worked to an advantage, with the scenes



Legend of the Kristal...impressive new release

having a depth and style not often seen. Add to this the work of Chris Petts and Julian Edkins and you have over 75 animated sprites – including a parrot with a wooden leg!

Though much of the basic design and programming has now been done – using the talents of Alex Mills, Giulio Ziccho, John Edwards and Justin Javanovic – the actual gameplay has yet to be completed.

Mike Sutin describes Legend of the Kristal as an odyssey – though he takes the place of Homer, and Odysseus is played by you as Dancis, a fairly reputable space pirate.

Your quest is to travel the uncharted Kreema system – described as you go by Patrick Moore – in the search for the mystical lost Kristal.

You are not alone in your search – Red Head once held the Kristal and desires it too. You travel between stars in a space galleon, the oars of this man-of-war powering your search.

Animation, authentic sword fights, beautiful digitised speech, an original soundtrack, interaction with everything from a king to a plant – Legend of the Kristal has the feel of a professional and successful stage production.

EUROPE IS WRITING AMERICA'S SOFTWARE

Boris Schneider reports on a visit to the USA

VISITORS to this year's Summer CES in Chicago had it brought home to them that America is definitely not yet the promised land of the Atari ST.

Here MSdos PCs are the absolute bestsellers – even as home computers – and all the other 16 bit machines are having a hard time.

Atari's stand concentrated on video games. Atari 2600, 7800 and XL systems were given away as prizes in a big game played all day long. New video game software was also shown.

In a remote corner of the booth, two Atari STs displayed musical applications – as a Midi machine and as a DAT (Digital Audio Tape) editor. For those who searched long enough there were some games to see. But most of them looked quite familiar to the European eye.

Much American ST software appears to have been written in Europe. For example the new Epyx titles for the ST, like Iron Lord – a mediaeval adventure in the style of Defender of the Crown – and Skate Ball – a futuristic sports game – programmed by the French software house UbiSoft. Other Epyx titles are licensed from Palace Software, Gremlin Graphics and First Star.

Some companies showed conversions of their arcade games like Buggy Boy, Sidearms or Arkanoid, which were developed by British programmers.

New and original titles were hard to

find. At the Epyx booth Technocop was spotted, some sort of Roadblasters clone where you play a futuristic cop searching for criminals. Technocop is developed by Gremlin Graphics.

While nearly no original ST software is produced in the States, conversions of popular titles are coming along. And again it must be said that most development for the conversions is taking place in the UK.

So American companies are looking to Europe for their ST software. And here lies a danger for every European software buyer.

When ordering ST software from the USA, make sure you know what you are buying. Epyx's Death Sword is nothing else than Barbarian from Palace; Sports-A-Roni is Alternative World Games from Gremlin; Speed Buggy is Buggy Boy from Elite; and Tower Toppler is Nebulus from Hewson.

By looking into the catalogues of some American software houses you get the impression that they change all the product names so that they can sell the old software back to Europe under a brand new title.

Boris Schneider, Atari ST User special correspondent, lives in Germany and edits the best-selling magazine Happy Computers.

Stos boost for ST

A NEW Basic language for the ST is currently riding high on the most wanted list for both professional and amateur programmers alike.

They have all hailed Stos – The Games Creator as a revolutionary breakthrough in entertainment software writing. From the crack French programming team Jawx International, Stos is marketed by Mandarin Software (0625 878888).

Leading French software house UbiSoft blazed the trail for Stos. The company endorsed the breakthrough Basic as a winner by using the innovative language to develop its latest mega title – Skate Ball – and has two further Stos-based games in the pipeline.

New British software houses are lining up to jump on the bandwagon, with several UK companies having already acquired the package as a development tool.

"We are about to see a whole new

generation of Stos-inspired mega games from well known software houses", says Mandarin's Chris Payne.

But the interest in the new language is certainly not confined to professional programmers.

Demand from amateur games writers for the product is reported to be unusually high even though it doesn't go on sale until the beginning of September.

"When we first announced Stos, we said it would set the ST market alight", added Payne, "but even we have been surprised by the response".

Stos has 320 commands designed to simplify the creation of fast, action-packed mega games with sound, and provides writers with a vast range of facilities.

The three-disc package includes three games, an icon editor, sprite editor, character set editor, music editor and a room designer. Price £29.95.

FOUR big names in UK entertainment software have announced a massive output of titles for the ST in the run-up to Christmas.

Most impressive of all is the product that would-be role-playing members of the ST fraternity have been eagerly awaiting – a version of the legendary Dragonlance game.

This is the first ST offering to emerge from the collaboration between US Gold (021-356 3388) and Strategic Simulations – a partnership which promises a range of products over the next five years based on the popular advanced dungeons and dragons games system.

Heroes of the Lance marks the first computer action game recreating the epic battle between good and evil on the world of Krynn.

The player controls eight companions, each with different specialised attributes and skills, and must guide them deep into the treacherous ruins of the temple Xak Tsaroth to retrieve the precious Discs of Mishakal.

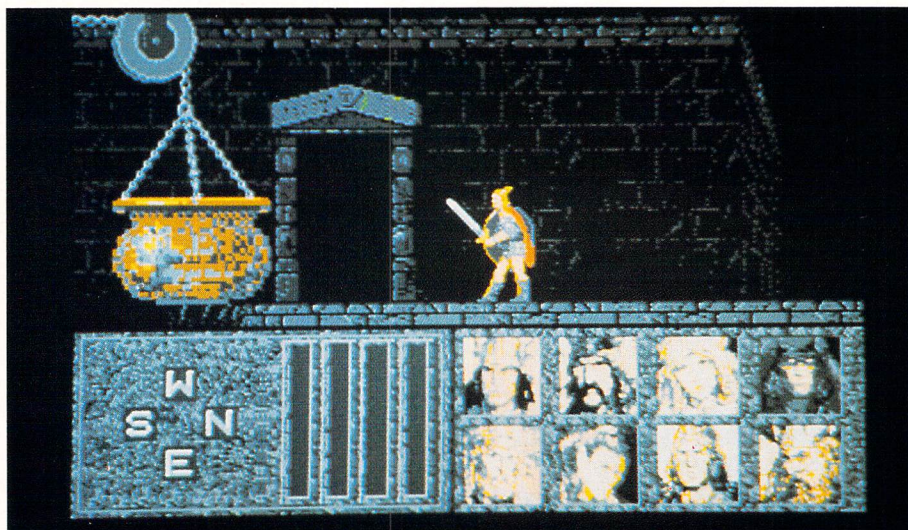
Descending into the Abyss, the companions must defeat the hordes of monstrous Draconians in hand-to-hand combat, deal with powerful magic and survive the onslaught of giant spiders, skeletal undead and other terrors.

Finally you must confront Khisanth, the fearsome black dragon who must be destroyed if your quest is not to end in failure. Price to be announced.

Mirrorsoft (01-377 4645) has launched a new entertainment software label – Imageworks – with no fewer than five titles for the ST.

Speedball from Xenon authors the Bitmap Brothers is a futuristic sports strategy game, combining stunning graphics and digitised sounds with fast and furious play. Price £24.99.

Air combat simulator Sky Chase is modelled on Air Force and Navy flight school training competitions and has been developed for speed of flight and accurate performance capabilities. The



Heroes of the Lance...battle between good and evil

GAMES GALORE FROM BIG FOUR

jets are wire frame 3D images and the ground is a grid pattern giving perspective to this mortal combat with a strong element of gameplay. Price £19.99.

Fernandez Must Die invites you to ride your freedom-loving country from the tyranny of an evil despot. There's wall-to-wall action as you battle your way across the landscape encountering troops, planes, trains, jeeps and ammunition dumps. Price £24.99.

Bamboozal is an abstract puzzle game – with an option of either isometric 3D or plan view – in which the player has to negotiate a series of complex levels. The object is to blow up all the bombs and mines before progressing to the next level. Price £19.99.

Still under development with a working title of Mainframe is a product Mirrorsoft

says will "revolutionise industry expectations of filled 3D vector graphics".

There are plans to issue a minimum of 18 Imageworks titles in its first year of operation, most of them available to ST users.

Ocean Software (061-832 6633) has begun a major campaign to woo ST users by trebling the number of its leisure titles available for the machine.

Sales manager Paul Patterson said: "I'll be disappointed if we don't have 50 per cent of the ST market by Christmas – we're not going to mess around".

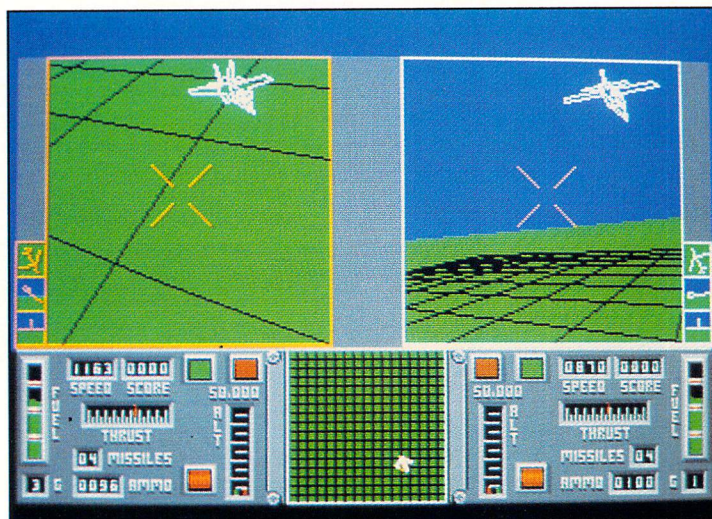
First to reach the shelves will be Arkanoid II – otherwise called Revenge of Doh. Based on the famous Taito coin-op arcade game, it covers the aftermath of the Arkanoid space wars, 40,000 years on when history begins to repeat itself. Price £19.95.

Forthcoming ST titles from Ocean include Army Moves, Where Time Stood Still and Daly Thompson's Olympics. Also promised is an ST compilation including Wizball, Barbarian, Crazy Cars, Enduro Racer and Supersprint.

Another major publisher to suddenly realise the potential of the ST market is Hewson (0235 832939).

The company is releasing a redesigned ST version of its 8 bit best-seller Cybernoid – plus the brand new sequel Cybernoid II – The Revenge. Price £19.99 each.

Also for the ST from Hewson will come a mixture of new titles and conversions including Netherworld Planet of Purgatory, Zynaps, Nebulus, Roadstar XRi, Exolon, Astaroth and Stormlord. Price £19.99 each.



Sky Chase offers exciting game play plus a chance to have flight combat skills

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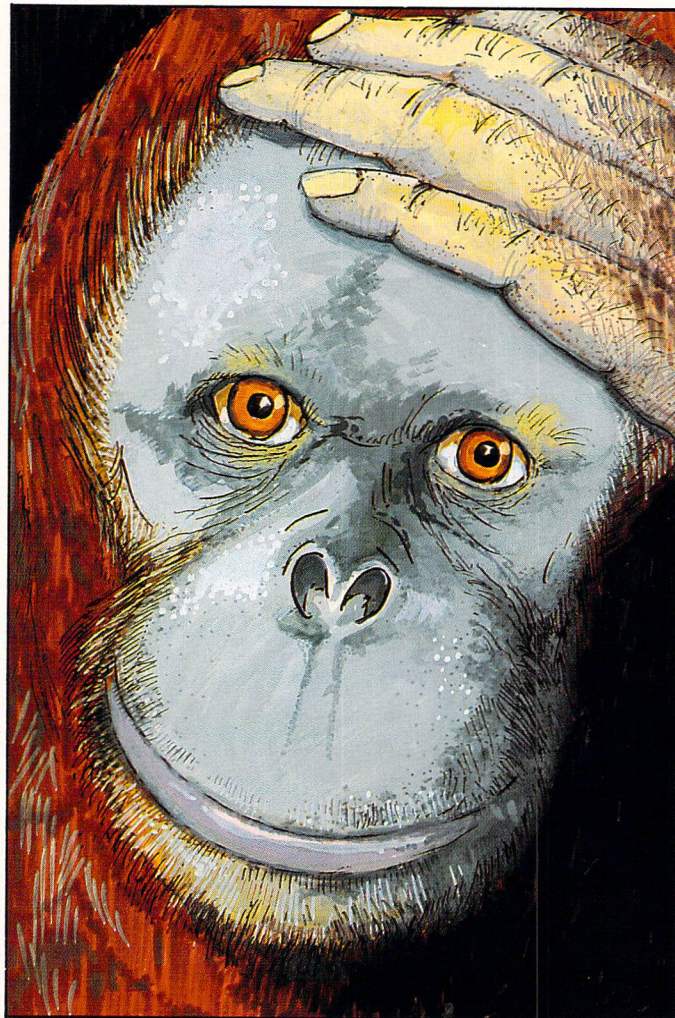
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Gallup Software Chart



This month	Last month	Title (Software House)	Price	Month reviewed in Atari ST User	Comments	Marks from 10
1	1	OUT RUN <i>US Gold</i>	19.99	July	After nine months wait here is one of the best car simulations for the ST, and a great improvement on versions released for other home micros.	9
2	3	GAUNTLET 2 <i>US Gold</i>	19.99	Sept	Now transferred from the arcades to an ST near you – new potions, amulets and characters invade your computer to hinder your quest.	10
3	4	DUNGEON MASTER <i>Mirrorsoft</i>	24.99	May	Animated graphics and spot sampling effects make this quest worth dusting your codpiece off for. A superb role-playing adventure.	9
4	•	FOOTBALL MANAGER 2 <i>Addictive</i>	19.99	Sept	Sequels are good sellers, and football games are always popular. Can't wait for the new season? Start now by managing your favourites.	9
5	5	CARRIER COMMAND <i>Rainbird</i>	24.95	June	The action is brilliantly executed using solid 3D graphics. Combine this with the complex strategy and you have a real winner.	10
6	6	BUGGY BOY <i>Elite</i>	19.95	July	Delivers in the enjoyment stakes and has enough to stimulate one more go. Concentrates more on entertainment than realism.	8
7	2	CAPTAIN BLOOD <i>Infogrames</i>	24.95	April	An excellent game in its original French form. The English conversion has been significantly improved.	10
8	7	IKARI WARRIORS <i>Elite</i>	14.95	June	If you're the type of guy or gal who thrives on danger and surmounts insurmountable odds this is for you. The ultimate combat game.	9
9	•	PETER BEARDSLEY'S FOOTBALL <i>GSE</i>	19.99	Sept	The second new football game to make an appearance. Different enough to make you buy it, too. Read our reviewer's thoughts in this issue.	9
10	•	ALIEN SYNDROME <i>Ace</i>	19.99	Sept	If you feel your goal in life is to zap alien creepy crawlies while at the same time rescuing blighted humans this is for you.	8
11	9	OBLITERATOR <i>Psygnosis</i>	24.99	August	Just didn't spark any great excitement, partly because the alien spaceship scenario has just about been done to death.	5
12	8	FOUNDATIONS WASTE <i>Exocet</i>	24.95	July	Has all you could want in an arcade game – superb graphics, lots of action, and sufficient variety to keep you playing for weeks.	9
13	•	BIONIC COMMANDOS <i>US Gold</i>	19.99	*	With telescopic limbs, the very latest weapons and your bionic powers you must regain your home planet. Originally a Capcom arcade game.	*
14	11	GUNSHIP <i>Microprose</i>	24.95	May	Gird you loins for the ultimate flying combat experience. There is only one word for the ST version of Gunship: Awesome.	9
15	17	OIDS <i>Mirrorsoft</i>	19.95	June	At first sight a simple budget-quality offering, but it grows on you the more you play this update on the older lunar lander type game.	8
16	•	PLATOON <i>Ocean</i>	19.95	*	Comes on the heels of the film and complete with the soundtrack – but basically a Vietnam shoot'em before they shoot you.	*
17	•	PANDORA <i>Firebird</i>	9.95	Sept	Your future in the ship's brig looks bleak – but it is due to get worse. Can you solve the mystery of Pandora and avoid droids and punks?	8
18	•	LEGEND OF THE SWORD <i>Rainbird</i>	24.95	August	First rate and innovative, entertainingly written, superbly programmed and presented – a pleasure to play.	8
19	•	SIDEWINDER <i>Mastertronic</i>	9.95	Sept	Shoot to kill in this new one from Mastertronic, making only the second budget game in the charts. Will price be that important on the ST?	8
20	•	FIRE AND FORGET <i>Titus</i>	24.99	*	If you have ever wanted a tank styled like a Ferrari here's your chance. Watch out for Better Dead than Alien, also from Titus.	*

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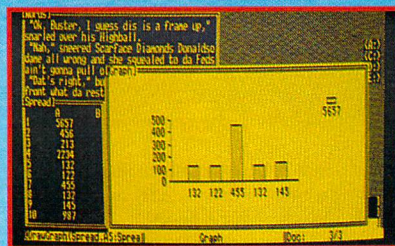
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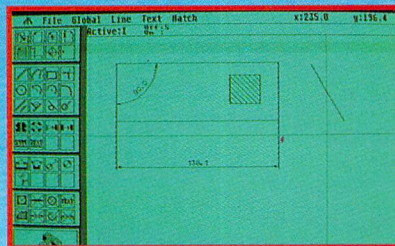
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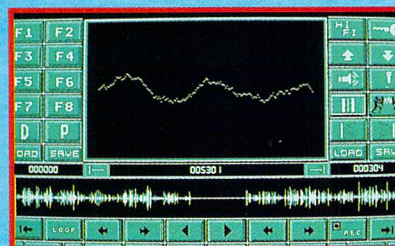
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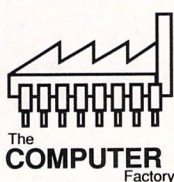
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Your ST's eye on the world's weather

Robin Nixon takes a look at the latest high resolution satellite maps

WEATHERLINK is a unique service for subscribers to Micro-Link. Using state-of-the-art technology it provides detailed maps of the world's weather taken directly from orbiting satellites. Recently the service has been enhanced to include very high resolution maps in up to 16 different colours or shades of grey on a colour or monochrome monitor.

It offers daily updates on the weather over Britain and Western Europe and brief summaries of each map.

There are also a number of demonstration maps covering the Mediterranean, North and South Africa, France

and Spain. Shortly it is hoped that a regular weekly update of holiday spots will be made available, so you can see exactly what sort of weather to look forward to.

For anyone not familiar with Micro-Link or the WeatherLink section, extensive help is available. Setting up your micro to receive the maps is a very easy process which you are guided through step by step, while downloading the maps themselves consists of merely typing the name of the day for the map you wish to receive.

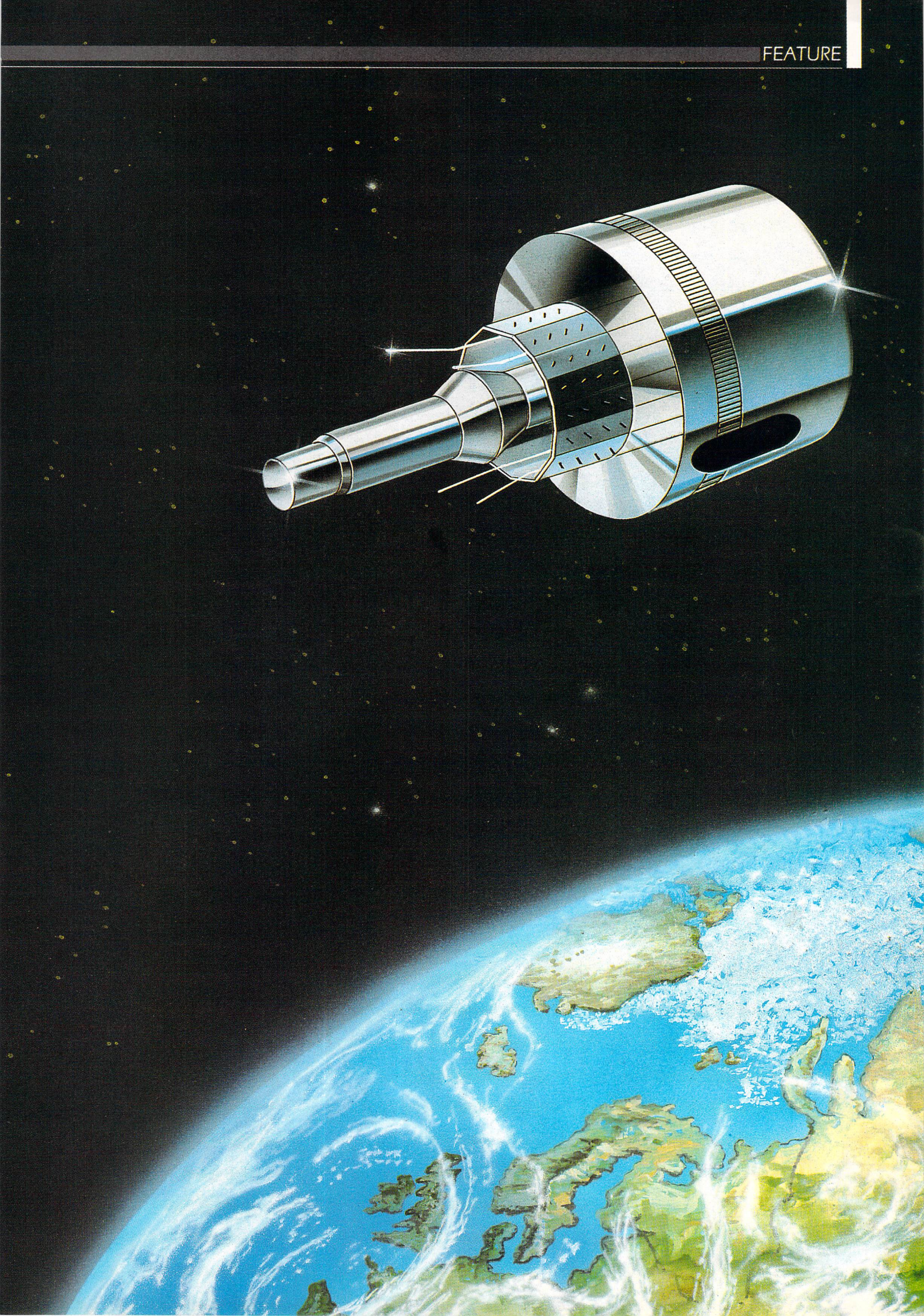
There are two types of weather satellite, polar orbital and geostationary. Examples of the polar satellites are the North American NOAA series and the Russian Meteor and Cosmos satellites. As the name suggests, they orbit the Earth passing over the North and South Poles with an orbital period of around 100 minutes, and are between 600 and 800 kilometers – 400 to 500 miles – above the Earth's surface.

The European geostationary satellite, Meteosat, circles the globe around the equator. However, it has an orbital period of 24 hours and so appears to Earth observers to be stationary – over the Greenwich meridian. It is about 36,000 kilometers – 24,000 miles – above the equator.

The NOAA series of satellites transmits visible light and infra red images, while Meteosat has a timetable of four minute slots for visible light, infra red and water vapour images.

Normally to receive these pictures you need some very expensive equipment, including aerials, decoders, computers and display units. However, with the help of WeatherLink, all you need to view the maps is your Atari ST, a modem and a subscription to Micro-Link. At 1200/1200 baud each map only takes between four and five minutes to download – costing less than 20p at cheap rate for a satellite's view of earth.





◀ From Page 17

Downloading the maps and software

TO view the weather maps you need to first download the software used to display them, followed by the maps themselves – one for each day of the week bar Sunday. There are also several demonstration maps. The daily maps are updated at 5pm, and more demonstration maps are being added all the time.

Here's how to download the maps and software: First log on to MicroLink and type WL to go to the WeatherLink section, where you'll be presented with a menu:

```
>WL
*****
*          *
*  WEATHER LINK  *
*          *
* (c) Database Publications *
*****

Satellite weather maps are updated at
5pm Monday to Saturday

----- Maps -----
MON    Monday
TUE    Tuesday
WED    Wednesday
THU    Thursday
FRI    Friday
SAT    Saturday

DEM    Demo Maps

-----
SET     Setup, programs and help
W       What is WeatherLink?

Selection or Q to quit?
```

Several options are available to you here. To download a map enter the first three letters of the day:

```
Selection or Q to quit? TUE

July 5th
Meteosat segment C2
12:39hrs

Continue with MAP download Y/n?
```

Now press Y at this prompt to move on to receiving the map:

```
Continue with MAP download Y/n? Y

-----
Now prepare to receive MAP
and press RETURN when ready

>>> When the MAP download is <<<
>>> complete. Close your MAP <<<
>>> file and press RETURN again <<<
-----
```

You should now open a file to capture the map on to disc. Using K-Comm II supplied with the MicroLink modems you would select Open Log File from the File menu. Press Return and the map will be

downloaded. Close the file when it has finished, and hit Return again to inform the MicroLink computer you have got it.

At the first menu displayed on entering WeatherLink you can type SET to bring up the Setup menu:

```
Selection or Q to quit? SET

*****
*          *
*  WEATHER LINK  *
*          *
* (c) Database Publications *
*****

Setup Menu

INFO    Details of programs etc

ST      Atari ST
BBC     BBC Micro
AMSPC   Amstrad PC (Basic 2)
PCW     Amstrad PCW

MAIN    Main Menu

Selection or Q to quit?
```

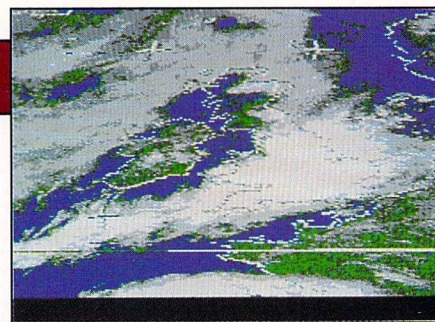
The only program of interest to us is the one for the ST, so enter ST at the prompt:

```
Selection or Q to quit? ST

D(etails P(rogram or Q(uit: P

-----
Now prepare to receive PROGRAM
and press RETURN when ready

>>> When the program transfer is <<<
>>> complete. Close your program <<<
>>> file and press RETURN again <<<
-----
```



A typical British summer?

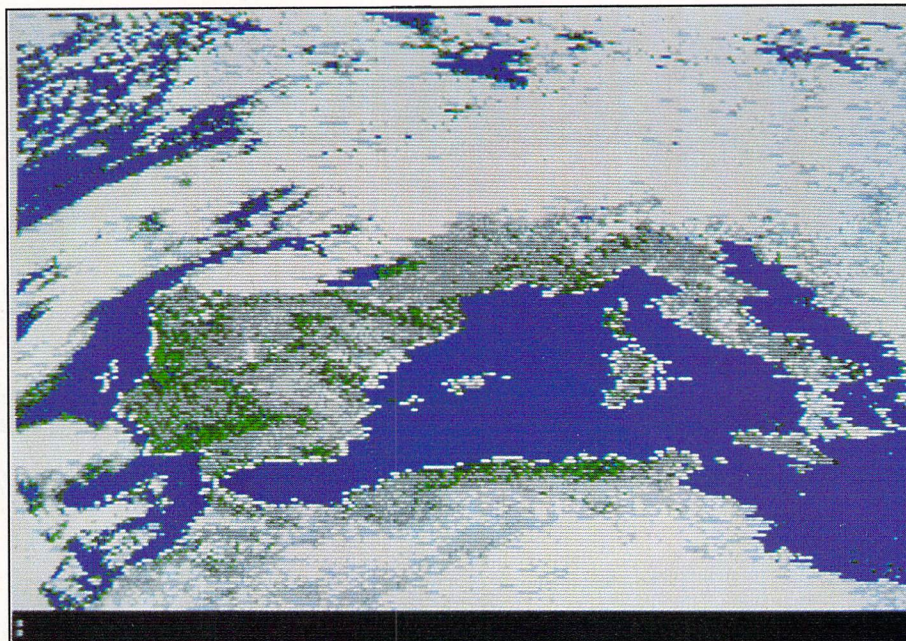
At this point you must open a file again to capture the program when it is downloaded. Open a log file as before and press Return to download the program. Close the file when it has finished and press Return to tell the MicroLink computer you have got it.

Now log off MicroLink and boot up ST Basic. Load the program you downloaded – it must have a .BAS file extension so rename it if necessary – and run it to create a file called DISPLAY.PRGM on disc.

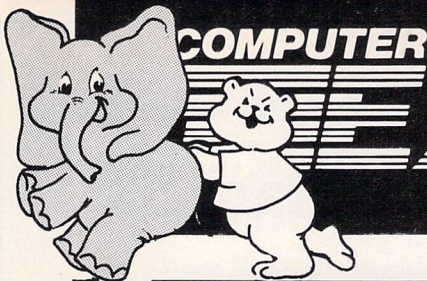
If an error message is displayed at this point, it means that the file is corrupted due to line noise when it was being downloaded. Fortunately, this doesn't happen too often and the solution is to download the program again.

Quit ST Basic and double click on DISPLAY.PRGM from the desktop. When the file selector appears enter the name of the map file you downloaded and the weather map will be drawn on the screen.

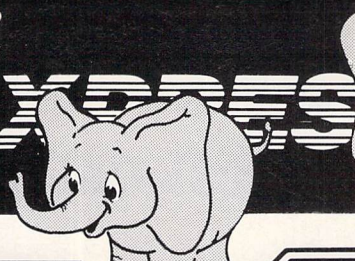
At any point you can hit the spacebar and either redefine the colour palette – of course, this won't have any effect on a monochrome monitor – or save the low resolution 16-colour picture to disc in Degas or Neochrome format.



If you can't beat them... join them



COMPUTER



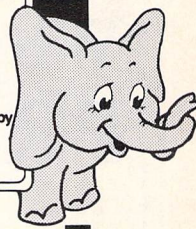
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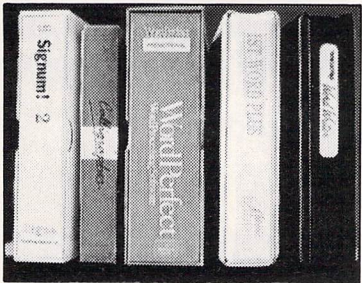


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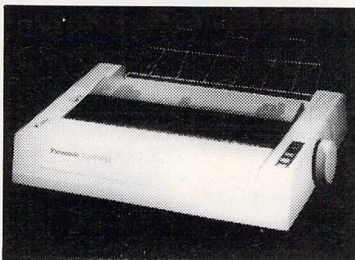
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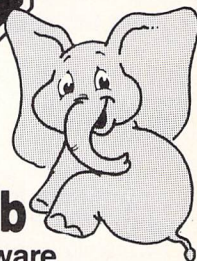
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ATARI ST USER April 1988

Box manipulation	move, copy, or delete any box as well as blocks
Command recall	commands are stored and can be recalled and edited with cursor keys
Configuration	configure most features to your own preferences of line, delete line, block or box
Dictionaries	add/delete words to/from supplied dictionary. Create additional specialised dictionaries.
Disc utilities	copy files, erase, rename, type, create directory, change directory, remove directory, catalogue files
Exec files	store sequences of commands in files for easy use
File conversion	flexible file conversion utility for other WP files
Find & replace	very powerful and fast with many options. All or part of text, forwards/backwards, whole word or part, wildcards, case specific or not, nth occurrence, find control codes, single key for next find/reverse direction
Foreign languages	accented characters can easily be used à æ ç ö ü è é ß à ù ô ê ñ etc. German dictionary available separately
Formatting	format paragraph, block or whole text, centre line, word wrap on/off, right justify on/off
Headers & footers	up to 9 lines of text, different even/odd headers and footers possible, automatic page numbering
Help	edit and command help available on-screen
Hyphens	soft hyphens and non-break hyphens
Keyboard macros	string any sequence of letters together on a single key e.g. "Yours sincerely"
Line spacing	variable in half lines, including 0, ½, 1, 1½, 2, 2½, 3
Margins	all margin sizes variable, different even and odd
Markers	block markers, 10 place markers, multiple markers
Preview	print to screen to check layout

Printer support	works with any parallel or serial printer. Wide range of printer drivers supplied, incl. lasers and 24-pin printers. Drivers may be edited, or new ones created
Printing styles	bold, condensed, double strike, elite, italics, enlarged, pica, NLQ, subscript, superscript, microspacing, proportional spacing, any other printer fonts
Program mode	program editing mode suppresses formatting
Proportional text	will print proportionally spaced, right justified text
Quick dictionary	dictionary held in memory is very fast
Ruler lines	any number of ruler lines to define document layout. unlimited line width. define left/right margins and any number of normal/decimal tab stops
Spelling checker	check from disc or current text. Suggests alternative spellings. Works with foreign languages
Time and date	set time and date, use within document
Tutorial files	help you to start using Prottext
Two file editing	two documents in memory, copy text between them
Typewriter mode	direct printing for envelopes etc.
Undelete	retrieve text deleted in error
Word count	quick count at any time, whole text or just a block
Word puzzles	anagram and crossword solving features
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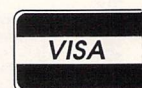
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**Stephen Hill enthuses
over Megamax's new
upgraded C compiler**

TO many ST users Megamax is probably best known for its Megaroids game which was distributed free with early ST systems. This program provided an impressive demonstration of its Megamax C compiler, and quickly established it as a leading contender.

Now, two years later, the company has launched a new version of the compiler which looks set to have an equally profound impact on the market. Just to confuse things, the name of this package has been inexplicably changed to Laser C.

The software comes on three single-sided discs containing a compiler, a linker and a resource construction set. It also includes a number of useful extras such as a disassembler, a Make program and a bewildering variety of other utilities.

The C shell

The main part of the development system is LASER.PRG, which combines the functions of the old shell program with a powerful text editor. On startup Laser C automatically loads both the compiler and the linker into memory. This leaves you with approximately 100k on a 520ST which should prove adequate for most programs of reasonable length.

The system really comes into its own, however, when used on a larger machine, as you can now install most of the tools and utilities directly into the ST's memory. These can then be accessed almost instantaneously from one of the many on-screen menus.

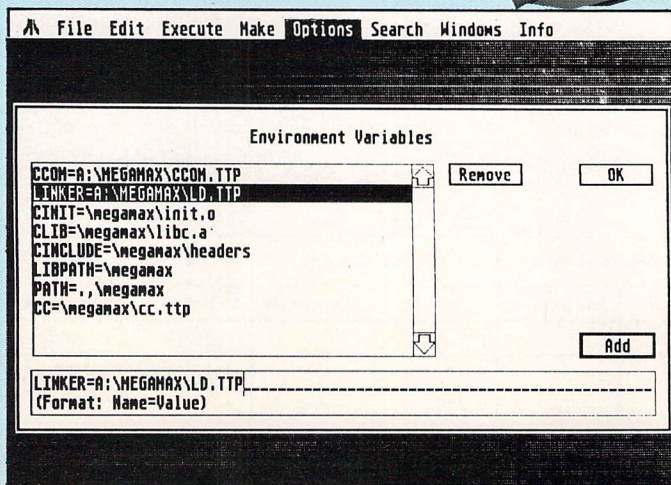
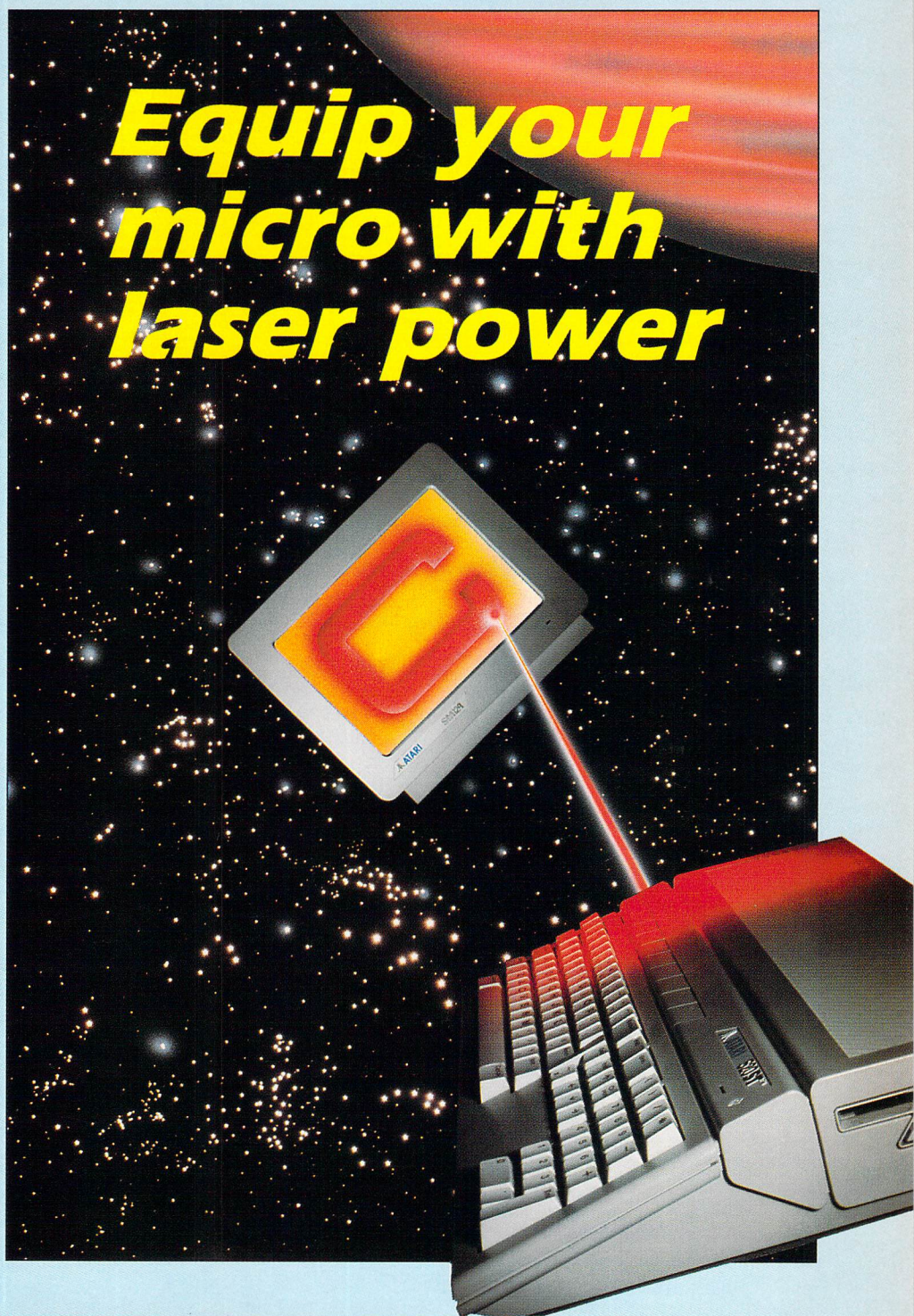
Laser C also incorporates a special disc cache. You can think of this as a sort of automatic ram disc which holds a copy of the most recently loaded parts of the disc in the computer's memory. This is used to reduce the number of accesses to the disc, speeding up the whole development cycle by several orders of magnitude. Furthermore, since even a small amount of this cache memory can lead to dramatic speed improvements, it appears to work well even on my own standard 520ST.

Megamax has taken great pains to make it as easy as possible to compile your C programs. To that end, it has provided a number of options which allow you to compile or link your routines directly from the Execute menu.

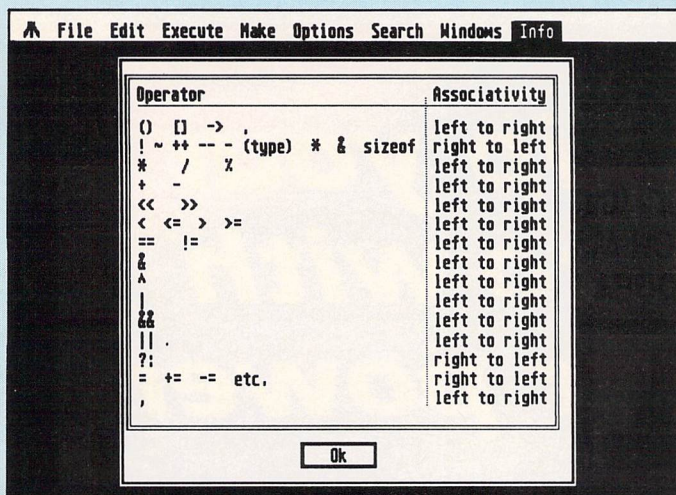
The most useful of these is RUN, which first compiles a program and then

Turn to Page 22 ►

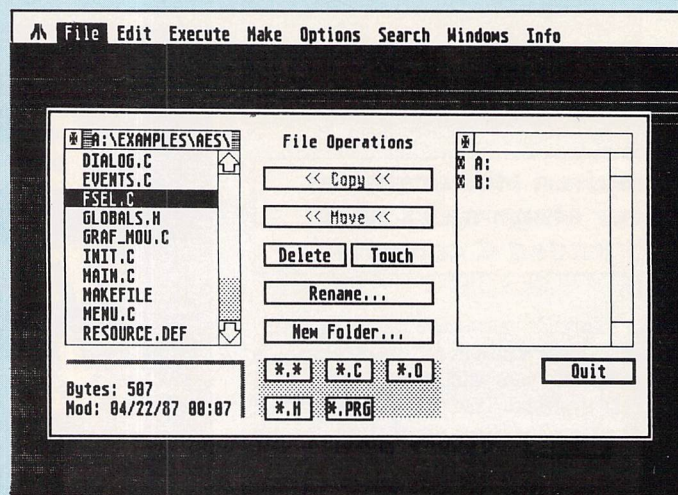
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Setting the
Laser shell's
environment
variables



The C operator help screen available from the Laser shell



The file operations available from the Laser shell

◀ From Page 21

executes it automatically. As an additional bonus, if you have split your program between a number of separate files it only recompiles those which have actually changed.

Another thing I like about this shell is that it appears to be fairly robust. Instead of simply crashing when one of your programs causes an error, Laser prints out the error type and then makes a valiant attempt to recover. In my experience the only time this process failed was when debugging Gem-based programs.

The editor

Megamax has wisely decided to integrate the editor directly into the shell. The editor's overall quality has been improved considerably since the original version, with many of the worst errors being removed completely.

The most important change has been in the editing process itself which now works in a far more intuitive way. In addition, the window management routines have also been considerably enhanced. When editing a number of files at once you are now able to neatly arrange your windows either vertically or horizontally using a simple menu command.

The biggest problem with this editor is its screen scrolling, which works in units of about half a page. This is especially noticeable when scrolling through listings, as the text seems to jerk backwards and forwards rather annoyingly.

The editor also tends to redraw an entire paragraph, even when only small

alterations are being made to a line. This generates a slight, but irritating screen flicker whenever you hit a key.

The compiler and linker

The C compiler includes many of the more modern extensions, such as void and enumerated types. Furthermore, the compilation process itself seems remarkably fast. Coupled with the built-in disc cache, many programs compile almost unbelievably quickly. So fast in fact, that I often found myself wondering whether that they had actually compiled at all.

The error checking is also outstandingly good, with helpful error messages explaining precisely where a mistake has occurred in your program. These messages are displayed on a special STUDIO window which can be accessed from the editor at any time.

Unlike the original Megamax C, which produced relative code, Laser generates programs using a different, absolute format. This means that programs compiled with this new system are now considerably larger, although this is offset to some extent by a significant speed improvement. Table I contains a set of comparative benchmarks which illustrate this effect.

As a committed assembly language programmer I was delighted to find that a 68000 assembler had been incorporated into the compiler. This includes the ability to access any C variables and procedures directly within your assembly language program. While it isn't really capable of being used as a stand-alone

system, it would undoubtedly prove a real bonus to many potential users.

The linker supplied with this package is fairly standard. Two linker formats are supported – DRI and a special Laser format. Unfortunately, because of the changes made to the code generation, any of your old object files created by Megamax C need to be completely recompiled with Laser before they can be combined with your new programs.

In addition, Laser C is also not compatible with the standard GST linker format. Even though the DRI format is now becoming increasingly common in this country, this would still make it impossible to use Laser C in conjunction with a number of popular programming languages.

The utilities

A resource construction set is an essential tool for any serious Gem programmer, and it's nice to see the inclusion of an updated version of Megamax's RCP program. This incorporates practically everything you need in order to create the fancy menus and dialogue boxes which are the hallmark of Gem programs.

Like its predecessor, there are, however, a number of minor bugs. The worst is in the menu creator which requires you to position the mouse pointer with extreme accuracy in order to perform some of the operations. I also had a couple of minor problems with the icon definer which occasionally corrupted parts of my drawings.

In my opinion RCP is undoubtedly nowhere near as good as the K-Resource program supplied with Metacomco C. It is however, perfectly usable, and has the additional advantage of being available directly from ram if you have enough memory.

As with many development systems, Laser C also comes with a number of extra utilities. Potentially the most useful of these is Make, which allows you to

Benchmark	Source size (bytes)		Object size (k)		Time taken (secs)	
	Laser	Megamax	Laser	Megamax	Laser	Megamax
Intmath	267	234	10.8	5.7	0.040	0.043
Realmath	849	519	11.0	5.9	1.121	1.431
Trilog	875	761	15.2	8.5	13.530	32.640
Textscreen	283	254	10.8	5.7	57.390	55.950

Comparison between Laser C and Megamax

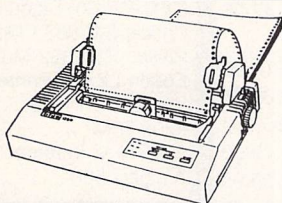
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◀ From Page 22

install a complex list of compiler commands into the shell and then perform them directly from one of the menus. Since this required rather more memory than my humble 520 ST possessed, I was unable to do more than glimpse this fascinating program.

There was also an interesting little debugger documented in one of the READ.ME files. This could be activated using the -X option from the compiler. Frustratingly, there appeared to be no easy way of setting this option directly from the shell, and I was therefore forced to type in the entire command line by hand. Once I managed to get the system working however, it appeared to be fairly powerful. Also, as it was written in C it would be quite easy to expand this program for your own requirements.

The manual

The documentation consists of a large 600 page paperback manual. In many respects its size is rather misleading, as more than 500 of these pages are given over to an examination of the various C functions supported by the compiler. This leaves a mere hundred or so pages for

the rest of the package, which is barely adequate for a system of this complexity.

In contrast, the Gem functions were very well documented indeed, with more than 200 pages devoted to a thorough examination of the AES and the VDI. I'm pleased to say that Megamax has also included a fairly exhaustive index, which has to be an important requirement for a technically slanted manual of this size.

Conclusion

The major strength of Laser C is that it provides a complete ST development system in one integrated package. One flaw with this approach is that by concentrating on so wide a brief, Megamax has inevitably left some parts of the system looking distinctly average.

This is particularly noticeable in the debugger, which appears to have been added as an afterthought, and cannot honestly be compared with the equivalent programs such as DEBUG+ or PROBE found in many of Laser's competitors.

Despite this, I still have no difficulty in recommending this package wholeheartedly, simply because the compiler itself is superb and the shell environment equally outstanding. If you are using a 520

ST you may find memory rather tight, but users of larger machines will almost certainly be delighted by the speed of the development process.

Megamax has taken a good product and improved it beyond recognition. Any potential purchasers of a package of this type would be well advised to take a long hard look at Laser C first.

FACT FILE

Product: Laser C

Price: £157.55

Supplier: AS&T, 17 Swayne Avenue, Southend-on-sea SS2 6JQ.

Tel: 0702 335511

POINTS FOR:

Programs execute faster than Megamax C.
Excellent shell and very fast compiler.

AGAINST:

Expensive. Object files are larger than Megamax C. The editor's scrolling is jerky.

COMPETITORS REVIEWED:

Mark Williams C, January 1988.
Lattice C, August 1987.



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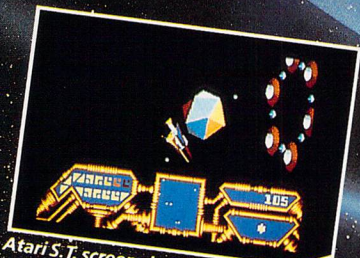
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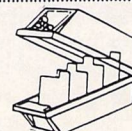
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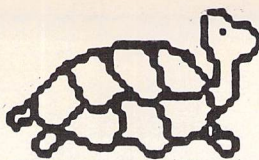
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The graphics program that calls the tune

A new graphic-based music score writing package goes under test

MUSIGRAPH is not a music program in the traditional sense. The trend in scorewriting programs is to take a sequencer file recorded in realtime and convert it to traditional music notation. Some programs, such as Hybrid Arts' EZ-Score Plus (reviewed in the June 1988 issue of *Atari ST User*), allow you to insert music directly on to the stave.

Musigraph does none of this, it's purely and simply a CAD (Computer Aided Design) program – with a bias towards music, of course. It is designed to enable you to produce quality music scores and it has the feel of a graphics program rather than a music one. You can't play the score,

Latest developments on the ST music scene

DISTRIBUTOR tell me it is negotiating distribution with a new British music software company. Its first product, called *Dxessory*, will load voices while a sequencer is playing.

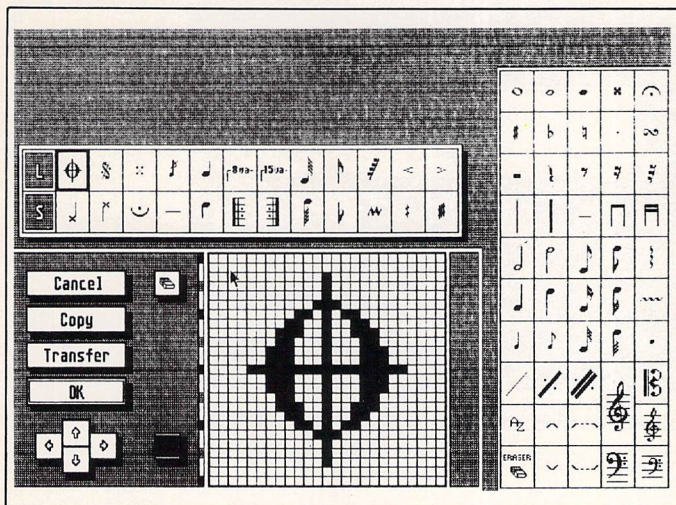
MCM also has several new programs, including a Roland D110, D10 and D20 editor all in one program for £99. The package includes an MT32 to D110 file converter and one to convert between the D50 and D110.

Other new voice editors include ones for the Kawai K1 (£99) and the new Matrix 1000 (£99). This nifty little expander contains 1000 voices, but as of writing there are no stocks in the UK. You can, however, buy the editor in anticipation.

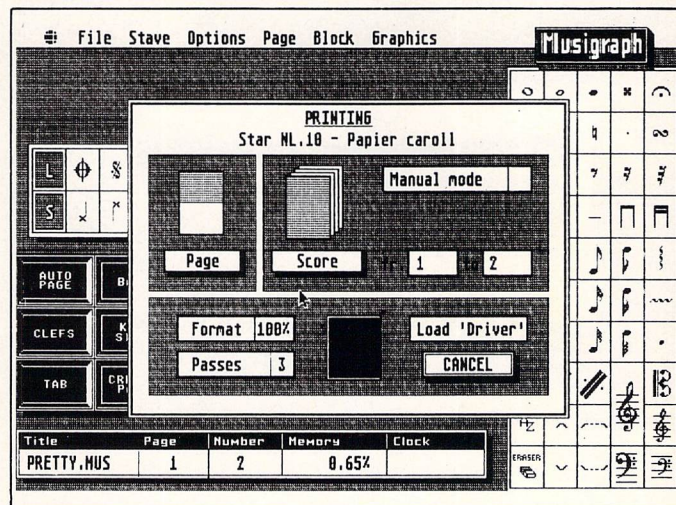
Finally, *Fingers* has arrived. It's an M-type program (M was reviewed in the May 1988 issue of *Atari ST User*) with a nice price – £69.95. I'll be looking at this very soon.

Hybrid Arts' distributors Syndromic Music, says *EZ-Track Plus* (£59.95) is





The Workshop Symbol Designer



The Print Menu

either through the Atari or via Midi, although – and this reinforces its graphic roots – you can save the screens in Degas or Pluspaint format.

Unlike most scorewriters it will run on a 520ST, although you do need a high resolution monitor. Like most music programs nowadays, it uses a dongle for protection.

There are two screens – a selection screen holds the music symbols and an edit screen contains the score. A single edit screen contains one page of music – roughly half A4 size – and you create extra pages as your score grows.

First you select the stave layout. You can click staves on to the edit screen any-

where, but the program offers several default layouts such as piano and piano/vocal staves. Budding Segovias can select guitar tablature, too.

The selection screen contains the music symbols. You simply click on one with the mouse and you are taken straight to the edit screen. You can place the symbol anywhere as many times as you like and then go back to the selection screen to pick up another one.

As well as simple symbols like notes and rests, you can also draw boxes and lines. A full complement of music symbols is available and a symbol designer lets you design your own. These can be saved and

loaded, but loading a new set will overwrite the old one. Text can be placed anywhere on the screen and there are four text sizes and three fonts to choose from.

You can insert notes from a Midi keyboard, although this method of input is angled more towards the insertion of chords than single notes. If you don't have a Midi keyboard the program will draw one at the bottom of the screen for you to click on with the mouse.

I wasn't particularly enamoured with this method of input, but you can also use the ST's keyboard, so the choice is yours.

There are block cut, copy and paste facilities in true graphics style which let you manipulate sets of symbols. Even a whole edit screen can be defined as a block and saved to disc.

Edit screens are stored in memory as a list of operations. When you change pages you can see the new one build up exactly as you drew it. This is used rather cleverly by the Undo function which lets you backstep through the operations until you find the one you want to remove.

You have to insert your own bar lines and note beams, and this is bound to leave an unwanted pixel or two somewhere on the screen. The Erase and Mask functions cover up unwanted pixels and overhanging lines such as note stems. They don't actually remove anything, just hide it. In fact they are classed as operations, so you can undo an erasure.

Symbols don't snap into place, they can literally be placed anywhere on the screen but there is an Align option which places notes centrally on a line or in a space – very useful. You can superimpose a grid on to the edit screen to divide it into up to 64 sections to help with horizontal alignment. These are all options though, and you ultimately have precise control over where the symbols go.

The ability to insert almost every kind of musical symbol, phrasemark, instruction – and lyrics – means you can score virtually any kind of music.

If you are arranging for an orchestra or

Turn to Page 30 ►

now available and includes unmix and cut and paste facilities. It is compatible with GenPatch and HybriSwitch. (The original EZ-Track was reviewed in the June 1987 issue.)

EZ-Score Plus has been further enhanced since its review in the June 1988 issue, and reverts to its original price of £129.95. Shame, but it's still worth checking out. Existing EZ-Score owners can upgrade for the price difference. Hybrid Arts' much-heralded and long-promoted Midi Score Plus looks as though it won't reach us until next year.

Announced earlier this year, but only now available, is C-Lab's combined sequencer and scorewriting program, Notator – I know because I have one on my desk. Sonus promised me the first UK version of SuperScore and I now have it. I'll be looking at both soon.

MidiDrummer (reviewed in the July 1988 issue) now has a tap tempo facility – you tap the tempo and it tells you the speed). It also now supports the Midi file standard, which means you can program your drum patterns in MidiDrummer then load them into a traditional sequencer providing it also supports

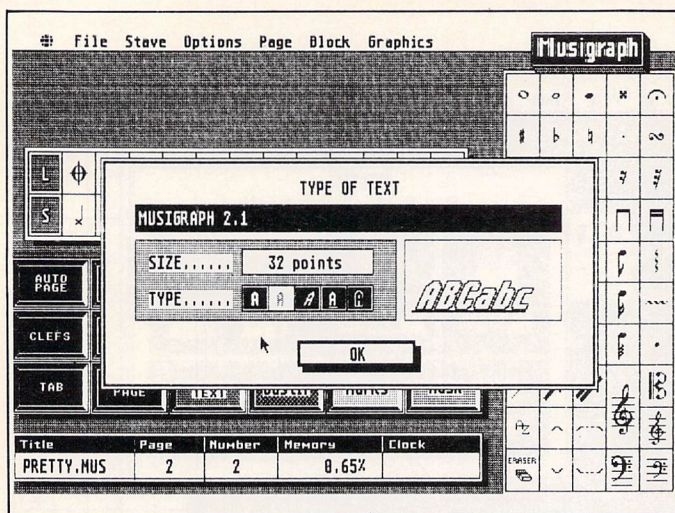
the standard. This makes MidiDrummer even more effective.

I've been taken to task for referring to the so-called Midi file dump as a standard. The Midi file standard has not been adopted officially by the Midi Association so perhaps convention would be a better word. At the risk of getting into even more hot water, I'll try to clarify the situation as it has been reported to me by several conflicting sources.

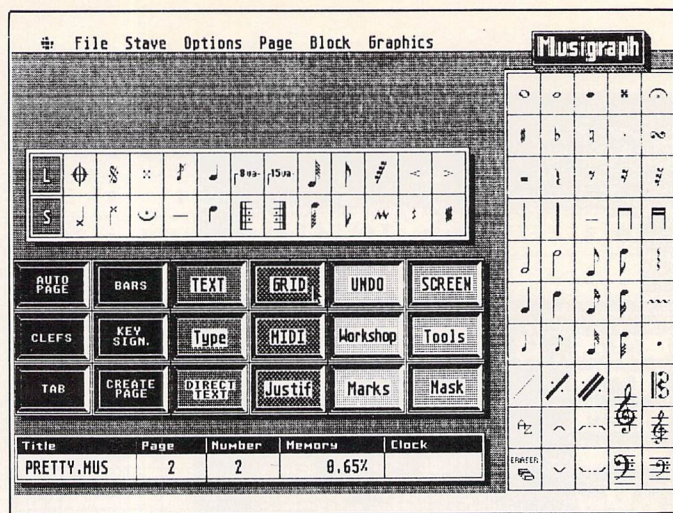
A convention has been adopted and agreed upon by Dr. T, Passport, Intelligent Music, and recently, Steinberg. It comes in three flavours: Format zero handles sequences, format one handles tracks and format three handles songs.

The Midi Association has been promising to approve a standard file dump – which, if its past record is anything to go by should be around the year 2000 – but software is developing at such a rate that we need one now, and said manufacturers have taken the standard into their own hands.

However, I can sympathise with anyone hesitating to implement an unofficial agreement. But then why don't the software boys get together and bypass the Midi Association altogether?



Selecting print type in the Text menu



The Select screen

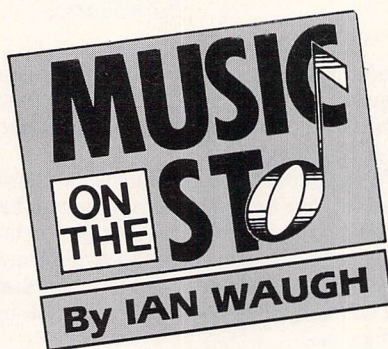
◀ From Page 29

ensemble however, there's no option to print out individual instrument parts. You'd have to block save the individual staves and load them into a separate page or score. There is no transpose option either – we're dealing with graphic shapes here, not proper music notation.

As Musigraph doesn't observe any musical conventions it makes no check upon the music you enter. That would be OK if it were a pure graphics program, but the layout of music notation obeys a fairly rigid set of rules and it would have been nice to see some features to help with the layout.

For instance, it would be helpful if ledger lines appeared when a note moves outside the stave, and an auto beaming function would have been nice, too. There could have been an auto spacing option to give crotchets and quavers a relatively proportional amount of space and what about auto bar line insertion?

There is a Justify command to help space



the notes, but it's generally easier to get things right first time.

While in a critical mood I'll also add that I did manage to crash the program a couple of times during file operations, although this didn't occur during normal saving and loading procedures. A little more care in this area would have prevented problems.

Musigraph is a French program and the translation of the manual has produced a few oddities although nothing too serious. Beats me why foreign manuals aren't shown to an Englishman before printing.

And so to its raison d'être – the printout.

The default printer driver supports the Star NL-10, which is Epson-compatible. You can produce your own printer driver, but you'll need an Ascii text editor. If you have an Atari SLM 804 Laser printer then the work's been done for you.

If you need to print clear and concise music scores do take a look at Musigraph. In spite of the operational niggles – a result of its graphics rather than music orientation – the printout speaks for itself.

FACT FILE

Product: Musigraph

Price: £150

Supplier: Evenlode Soundworks, The Studio, Stonesfield, Oxford, OX7 2PS.

Tel: 099 389 8484.

POINTS FOR:

Excellent results; easy to use; flexible.

AGAINST:

Can't play the music; little assistance with music spacing conventions.

Sonata No.12, by Beethoven (supplied with program)

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TO describe Firebird's Virus as a 3D shoot-'em-up would be to do it an injustice. It's a brilliantly programmed, totally realistic simulation of a hoverplane in battle with invading aliens over rolling countryside and deep blue sea.

Originally written by David Braben as a demonstration game to show the power and speed of the Acorn Archimedes, it has now been converted for the ST – any model, but colour systems only.

At the start of the game you are at the controls of a hoverplane, and your third person view shows your craft at rest on a grey patchwork landing pad.

As you blast off, swivel round and thrust forwards the ground smoothly drops away beneath you and quickly scrolls away.

Flying rapidly over the undulating green patchwork landscape of fields,

deep blue inland seas and rising beaches gives an amazing impression of realism and speed.

There are trees, buildings, and rotating radar scanners on the land and even fish which leap out of the water and dive back in again with a splash.

As you skim the surface of the sea your thruster trail beneath you blasts

spray up and around. Spoiling this beautiful countryside are aliens intent on invasion and the destruction of all life. They come in all manner of craft, infecting the land with a debilitating red virus and blasting your hoverplane at every opportunity.

Your task is to seek out and destroy them as quickly as possible. You are

equipped with a nose-mounted cannon and a long-range scanner – displayed in the top left corner of the screen.

There are several types of alien vessel, and each has its own function and characteristics. The seeder is a large flying saucer that sprays the landscape with a red virus causing pollution and mutation of trees. It is relatively slow and cumbersome, so makes an easy target.

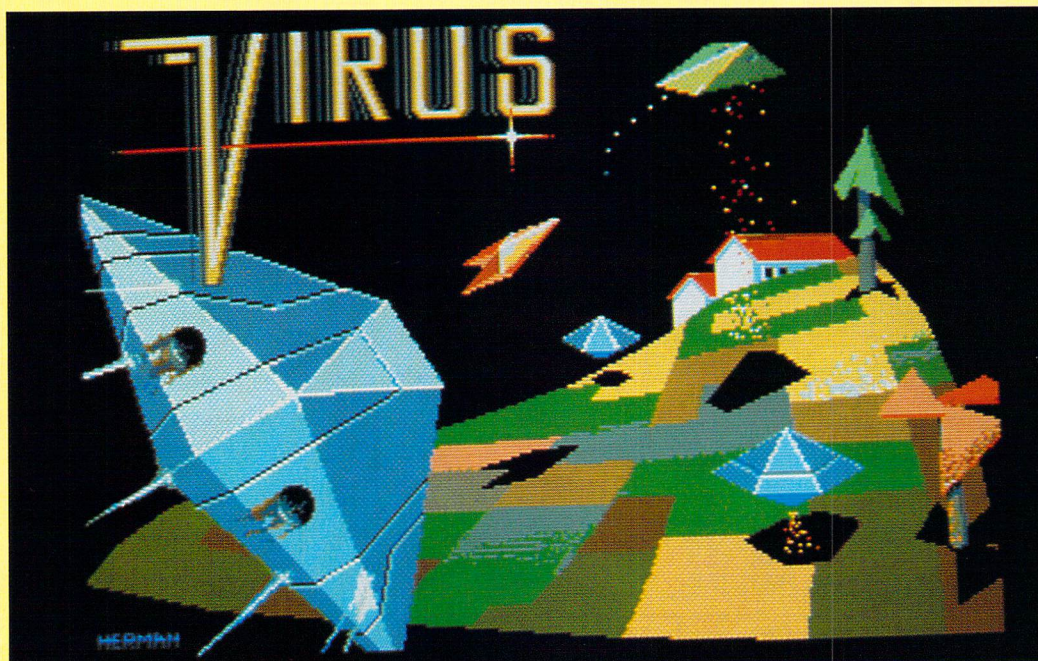
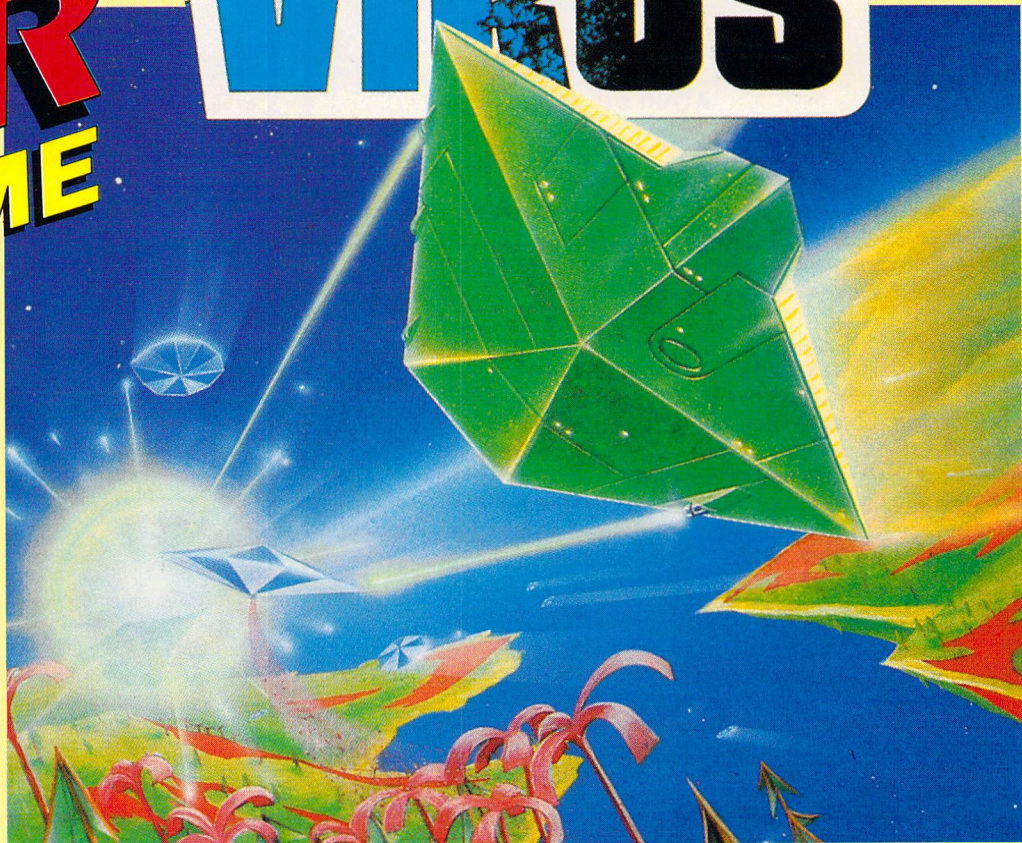
A drone is similar to your hovercraft, and its function is to shoot both you and the landscape. It also attempts to mutate itself by blasting bushes at very close range. The mutant is more aggressive and accurate in its fire. Its objective is simply to kill you.

Bombers fly at high speed in straight lines across the landscape dropping parachute bombs containing the deadly virus. Pests simply try to ram you and are particularly annoying. Fighters fly in a similar manner to a mutant and attack on sight.

The most dangerous alien ship is an attractor, and one that I've yet to see. It shoots deadly lightning bolts at the landscape and has a tractor beam which sucks your ship toward it, draining your energy.

Your hoverplane is controlled by either the mouse or keyboard, and is very difficult to fly at first. I found it easier using the keyboard, and the con-

VIRUS



SOFTWARE REVIEWS

SECOND Sight

Programmer David Braben must be a genius to write such a realistic simulation. The speed of the 3D graphics is unlike anything seen before. However, the hoverplane is difficult to control, and I would have liked the game to be more playable.

There's also little variety, so I'm not sure whether it'll keep the interest up for any length of time.

Andy Richards

Product: Shackled
Price: £19.99
Supplier: US Gold, Units 2/3, Holford Way,
Birmingham B6 7AX
Tel: 021-356 3388.



trols are: Thrust, rotate left and right, dip and raise the nose, and fire. You take off by tapping the thrust key, swivel round to face the direction you wish to travel, dip the nose to alter the angle of thrust and hit the thrust key again.

Both inertia and gravity are present, so you must use the thrust to keep aloft, and swivel round and thrust in the opposite direction to slow down or stop.

Unlike many other games, when you lose one of your three lives you continue the game at the same point with your next ship. For instance, blast a tree and it will explode leaving a smouldering stump.

If you lose a life and restart the game you'll find the tree stump still smouldering, with smoke rising into the air.

On another occasion I was rammed and exploded above the landing pad where you start the game. When I started my next life with my next ship I was showered with the debris of my old exploding ship way above me.

Initially, you'll spend most of your time learning to fly - and crashing a lot in the process. You can't begin to seek and destroy the aliens until you have mastered the hoverplane's controls.

The 3D graphics are stunning and the gameplay superb. I have only two criticisms: It is very difficult to get to grips with the controls, and there isn't any music, just a simple rat-a-tat-tat as you fire your cannon and the odd siren for the aliens.

The game is so different to anything that has gone before that it must be considered an essential buy for any hardened games addict.

Roland Waddilove

Sound3
Graphics.....10
Playability.....8
Value for money.....9
Overall9

SHACKLED is set deep in the bowels of a mysterious castle from which you have to escape a level at a time. The instructions do not say whether you are awarded a prize if you manage it, but from the meagre progress I made I think you should be.

This is a game for one or two players, but you'll need joysticks for both players as the mouse can't be used - it's almost impossible to direct your man with it.

It is possible for one person to play with two joysticks, but I found it very difficult to coordinate both rescuers, and the additional restriction of having to be in close proximity to your partner makes it even more difficult.

Pressing the fire button - both for two players - starts the game and reveals the first level which consists of a maze of corridors and rooms shown in an oblique projection.

Patrolling the corridors are a variety of guards whose job it is to stop you. Behind the doors are your friends, whom you must rescue.

Entering the rooms is achieved either by blasting them with your current weapon or using a key. Keys and other objects that increase your score and energy lie in various positions on the floors of the corridors or rooms, or are carried by guards.

You collect the objects on the floor by passing over them, but you can only acquire the objects carried by the guards or guardians by killing them first so that they drop their keys. One key is always needed to reach the exit from each level.

The object of this game is to get out of each level as fast as possible because the game is over when your energy is drained and you only have one life.

As the hints on the instruction sheet tell you, "if it moves shoot it", because if

they catch you they hold on to you until either you kill them or your energy is drained.

If the guards do not overpower you and you stay on one level too long an energy-eating blob appears. You'll have to move fast to escape from it.

As you go up each level the obstacles become more difficult to outgun and outrun. Level four is a free gift, as there are no guards to negotiate, only points to pick up.

It is advisable to enter each room, even if you can't see though the hatched ceiling which first appears at level 5, since not only can you free your friend but you also gain their weapon.

This will be shown as an icon at the side and as your friends tag along behind you they fire when you do, giving a wider spread of your chosen weapon.

The shift key - right or left depending on the player - toggles the weapon currently in use. These range from an initial dagger which is very directional, to bolases, boomerangs, and strange circular forcefields to name but a few.

The main pull with Shackled is that it is addictive, even if a little repetitive for the first few levels. This can be borne out by my disappearing at 8 o'clock for 10 minutes to play the game and surfacing well after midnight, it should appeal to all you nocturnal players.

One of the game's main disadvan-

tages is that there is no freeze-frame facility either during or when you have successfully escaped a level, nor is there a save option.

The omission of these two features will I suspect ensure that nobody ever exits the 112 levels claimed by the manufacturers. How's that for a challenge?

Jeff Cook

Sound5
Graphics.....7
Playability.....8
Value for money.....7
Overall7

SECOND Sight

This is one of those games that is fairly simple in concept, but as Jeff says, still very addictive and jolly good fun to play. I feel that having just one life makes the game overly difficult until you get used to it, but if you follow a "blast everything in sight" policy you should with practice be able to keep your head above water. Reaching the higher levels is a different matter though.

David Davenport

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Product: Gauntlet II
 Price: £19.99
 Supplier: US Gold, Units 2/3, Holford Way,
 Holford, Birmingham B6 7AX.
 Tel: 021-356 3388

THE opening screen of Gauntlet II was a surprise – the arcade machine spun around and zoomed you inside. A nice touch.

Everything progresses as you would expect, with plenty of good sampled music up until the character choices. You can now duplicate your favourite character class – with different coloured characters to avoid confusion.

Four players can play at once with the aid of a small adaptor which fits into your printer port. This has to be bought as an extra for about £5.

Faster and smoother graphics improve the gameplay almost immediately, though the sprite size has had to be reduced to accommodate this. Thankfully the detail doesn't suffer.

All the sound is digitised – 600k including the speech – all taken from the original arcade version.

The game is still basically the same, consisting of you dashing around the maze-like dungeon collecting food, cider and treasure as you go.

New horrors await. The IT monster is a small spinning gold disc which chases you. Should it make contact you are now IT. This makes you into a magnet for all the creatures in the dungeon



which relentlessly pursue you, ignoring any other player.

Gauntlet II then degenerates into a lethal game of tag, with the unfortunate player trying to touch anyone else to rid himself of the curse.

A new mischievous, if not irritating, character is the thief. His sole reason for living is to relieve you of potions or special abilities.

A large and nasty dragon, spitting

balls of fire which inflict gross amounts of damage is another innovation. It takes a lot of firepower to encourage it to spontaneously combust.

The resulting explosion leaves a hoard of keys, food and potions behind, and your ST joins in with a congratulatory "That was a brave effort".

Unfortunately, on turning around I found that one of my cowardly co-players had pilfered my hard-earned

goods. The potions and amulets are a nice feature too. Some potions are festooned with skulls – sample them and your controls will be temporarily scrambled. You are now wide open to attack.

Used correctly the amulets are very helpful. The amulet of transporting, for instance Transport to Death and you will destroy this adversary and receive a bonus.

Gauntlet II is graphically excellent and audibly marvellous. If you don't buy it, you'll never forgive yourself.

Robert Swan



...dashing around the maze-like dungeon collecting food

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

SECOND Sight

The graphics and sound are excellent – but of course they always were. Scrolling is very noticeably improved, but could still be bettered I'm sure. The new multiple-player facility is all very well, but for all but members of computer clubs is of little use.

For my money this is all a bit too much like the original. As a game though, excellent nonetheless.

Andy Richards



Product: Captain America
Price: £19.95
Supplier: GO/US Gold, Units 2/3, Holford Way, Holford, Birmingham B6 7AX.
Tel: 021-356 3388

I AM not a fan of Marvel comics, as I find the gross, nationalistic dross encapsulated by the Captain America stories boring – so I was not exactly won over by this licence. Unfortunately for US Gold, the game does nothing to change my opinion.

The setting is simple – Dr. Megalomann has a mega-powerful missile primed and aimed at the USA. Unless the President stands down and lets Megalomann take control he will press the red button – and exit America.

The marines fail to win the day, so Captain America is called in. Stirring stuff.

The missile is at the bottom of what is called the 'Doom Tube', Megalomann's HQ, consisting of three huge cylinders some distance below a desert surface.

Within one cylinder is the vault containing the missile. You gain access to each level within the HQ by using an orbivator – a lift.

Once inside the Doom Tube, you must destroy the megacyborgs which will shoot at you, and gradually progress through the different levels to make your way to the vault.

The game begins with a superb loading screen, and some excellent music. Once loaded, you find yourself in the orbivator.

The graphics are large and very good. The joystick manipulates Captain America's arm to move the control lever to select the desired level. You then have to press the top button to get into the level. This is quite fun at first, but soon palls.

Once inside, the game itself begins and the interest generated by the opening scenes vanishes completely. You are in the middle of a triangular floor, and either side of you is empty space. One megacyborg descends on

each side, shooting at you. You have to try to destroy them which is easier said than done.

Your weapon is a shield, no ordinary shield either – read the instructions for the whole story – which can be used to protect you or be thrown as a weapon. It is hard to control, and sometimes flies back to you, sometimes doesn't.

This is crucial to the game, for once you've lost it you're on your own. The instructions mention a second type of weapon called cybo-grenades, but despite valiant efforts I could not get one to appear.

The graphics throughout are good, although by no means outstanding, but there is unfortunately an overall air of playing an 8 bit game.

Nothing about it makes you appreciate that you have paid out twice as much as your 8 bit-owning friends for the game, and almost twice as much for the computer.

I expect that the game will sell well, given its licence, but it doesn't deserve to and is in many ways a waste of some obviously competent programming talent.

David Lester

Sound	8
Graphics	8
Playability	2
Value for money	3
Overall	5

SECOND Sight

I don't see what difference it makes whether or not you like the Marvel characters. A game can only be judged on its own merits. I was a great Marvel mag fan myself as a kid, and although Captain America certainly isn't the most addictive game I've seen on the superhero theme, it does have its good points and I'd hardly call it a flop.

David Davenport

Program: Quadralien
Price: £19.95
Supplier: Active, 16 Greyhound Road, Greyhound House, Hammersmith, London W6 8NX.
Tel: 01-835 7622

AT first sight this unusual game may well not impress, but once you start playing, it begins to exert a slow grip.

Quadralien is set in a vast cybernetic nuclear fission complex. Something has gone wrong – the temperature's rising, the control mechanism has gone awry and meltdown is not far away.

And to cap it all, nasty Quadralien forces have bedded in at the heart of the reactor itself.

Your six droids – Spud, Jack, Barney, Marina, Rambot and Scooter – have been assigned to sort out the problems. Each droid has a variety of features and capabilities, and you may only use two to tackle any one of the 19 different levels scattered across the four levels of the complex.

The game can be played with mouse or joystick – I found it much easier to control the droids using the joystick. The keyboard comes into play too, as there are a number of single-key options at your disposal.

The screen displays a two-dimensional overhead view of one of the chambers. At various points are access consoles to which a droid can connect to obtain a battery recharge, decontamination, information on the state of the environment, your droid's status and other useful data.

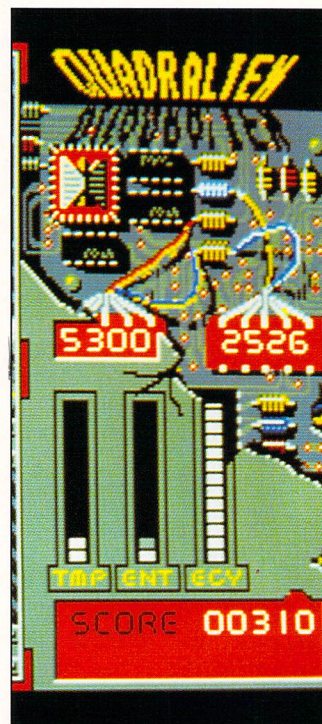
Only one droid can be controlled at a time – the F5 key toggling control from one to another. Every droid is armed with a laser, essential for blasting some of the obstacles in its way, but the prime objective is to mop up all contamination – liquid spillage and pulsating, solid green objects.

There are many difficulties along the way. Attractors, repellers, force generators and single-directional tracks impede progress.

Energy cells and coolant barrels, shoved down utility chutes are an aid to success, and explosive charges may be placed by your workers.

Quadralien forces pop up from level two onwards, and scamper around the place generally causing a nuisance. If you reach level four, the four-hearted Quadralien mother puts in an appearance. Graphically, the game is attractive but not the most impressive you'll see. Animation, while very smooth, is confined to the movement of entire objects sliding in one direction.

When your droid reaches the edge of the screen, the display flicks instantaneously to the next section. It is not as



good as scrolling, and occasionally causes you to lose sight of your droid's position.

Response of the droids and objects to your control is fast and precise, but there's no diagonal movement. The optional musical accompaniment is enjoyable but other sound effects are few and basic, although the final version promises digitised speech.

All told, an entertaining game with some very nice touches and puzzles. But once you've solved all the tricks in the game it may lose its appeal. Worth trying though – it certainly has that addictive something about it.

Bob Chappell

Sound	5
Graphics	7
Playability	9
Value for money	8
Overall	7

SECOND Sight

Another one of those "race against time and stop the disaster" games. This one is a little more interesting than most in that it is very attractive visually and you have a number of droids to control.

It would have been nicer if the screen scrolled properly rather than flicking from one part to the next. Overall though quite an interesting game once you get into it, so certainly worth a try.

David Davenport

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Dogged by tedium

Product: Sundog

Price: £14.99

Supplier: FTL/Mirrorsoft, Athene House,
66-73 Shoe Lane, London EC4P 4AB
Tel: 01-377 4645

IN the absence of an Acornsoft/Firebird version of the classic Elite for the ST the trading-exploring-fighting niche of the games market is up for grabs.

A program that is aimed fairly and squarely at this slot is Sundog from Mirrorsoft.

Following the death of an entrepreneurial uncle you become the proud owner of a small cargo vessel, the Sundog, and several sizeable bank accounts.

Unfortunately your uncle's capitalist activities were frowned upon by the authorities, and they have refused to provide any information regarding your inheritance – thus giving the game an adventuring aspect.

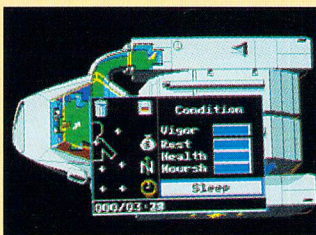
Before he died your uncle undertook a contract with a religious sect, and to fulfil this agreement you must do three things: Find the planet upon which the Branville colony is to be built, locate

and buy all materials for the construction of the colony, and finally trace the deep-frozen colonists.

The Sundog's cargo pod doubles up as a motorised vehicle – your transport for city and planetary exploration.

Cities are represented by neatly laid out rows of coloured shapes and the pod, a small rectangle, drives among these as you search for useful buildings.

Exploration on foot is a high risk



activity. As you guide the tiny square (that's you) around the city you are considered to be fair game by every petty crook and hoodlum.

Confrontation with a thug involves a multiple-choice routine – you are asked a question and provided with a selection of replies. The outcome is determined by your response to the

question. If a fight is inevitable, a small window opens up and on walk several, extremely sub-standard, stick men.

Commodities may be bought and sold on each planet, the trick being to buy low and sell high – just like the real world.

Presuming that you make a profit on these deals you can visit warehouses and buy spares for your ailing ship.

On one occasion I bought three bits of electronic equipment to patch up the Sundog, and not wanting to lose them to a mugger, hurried back to the pod and stored them in the pod locker.

After a few more minutes' exploration I returned to the pod only to find that the equipment had gone. A bug? Or does the Sundog use the same door locks as a Ford Cortina?

Space travel can be at either warp or sub-light speeds. Sub-light uses the same boring routine as Star Trek – a tiny spaceship sprite crawling micron by micron across a star chart of the solar system. Warp travel is accompanied by coloured streaks and "spacey" sound effects.

Fighting in space is just as tedious as it is on the ground – I gave up playing

SECOND SIGHT

I can't say that I was overly impressed with this one. The plot is somewhat drab – and forced – and the visual action not much better. It seems to try to combine adventure and arcade features in the same package, but offers little of interest in either camp.

The graphics aren't anything to shout about either (you are a small square blob) so after a short while I got bored and gave up. Not one I'd strongly recommend.

Andy Richards

the game in disgust when a flying X engaged me in combat.

Steve Brook

Sound	3
Graphics	5
Playability	5
Value for money	5
Overall	5



ACTION replay!

Product: Football Manager 2

Price: £19.99

Supplier: Prism Leisure, Unit 1, Baird
Road, Enfield, Middlesex EN1 1SJ
Tel: 01-804 8100

ISN'T it fun managing a football team? What with unwilling sponsors, poor gates, injuries and bad decisions, it's a wonder more managers don't bite the dust.

Initially you must grab as much

money as possible from sponsorship then pick the team, placing players in formation according to their own and their opponents' ability.

The pitch is represented as three sections, attack, midfield and defence, each area allowing you to place up to four players, plus goalkeeper in defence.

Matches are shown from the viewpoint of a TV camera, shifting from one section of the pitch to the next as play progresses.

As manager you can't influence play, but half-time gives an opportunity to rearrange the line-up and bring on substitutes.

As the season progresses your chosen team will play all the others in that division, together with league and FA Cup matches.

After each match you are told of injuries to players, given the option to trade and allowed to influence the style of your team's play by ordering training in passing, long or short, high or low.

All selections are made by the mouse, mainly on a yes/no basis, with values and players selected by scrolling through a list of possibilities. I found that response was rather fuzzy, and very precise positioning of the mouse was essential to avoid non-retractable choices. Since a season may take up to

Product: *Bomb Disposal*
 Price: £19.95
 Supplier: Classic Software, PO Box 8,
 Sandown, Isle of Wight PO36 8LT.
 Tel: 0983 864674

AS Private Peter Parts novice bomb disposal expert you're impatient to defuse a genuine bomb, so news of a Schlottern incendiary under a school has you grabbing your kit, jumping into the truck and heading off for your first brush with death.

More than a dozen devices face you as you progress, each presented graphically in situ, then by schematic circuit diagram.

Your bag holds the tools of your trade and selection is by clicking the mouse on the appropriate icon. You must use the right tool for the job, and perform all steps in the correct order.

Defusing the bomb consists of cutting coloured wires in the correct order - get it wrong and you'll jump out of your skin as the bomb explodes, treating you to a realistic animation of your death and transformation into a hollow-eyed skeleton, the subsequent funeral taking place with full military honours.

This is the best part of the game, atmospheric and adrenaline-boosting, with realistic sound effects making

failure almost a pleasure. Just as well, as you'll suffer hundreds of violent deaths on your way.

You restart at the beginning regardless of progress, and as the designers omitted a save game feature, play becomes rather frustrating.

Selection of bombs on each level is random, each version of the same bomb being represented identically internally. The differences lie in the order of defusion steps. So until you learn to identify different versions you'll be taking pot luck every move.

Once the secret is discovered, systematically working through possible combinations will make death avoidable on earlier levels.

Unfortunately, later levels involve both death and tedious repetition. The fifth level offers a 36-to-1 chance of death - a shame since the game is original, easy to operate and otherwise enjoyable.

The graphics are reasonably drawn and attractive, sound effects sparse but effective - especially when dying - and I was pleased to see the discs unprotected for back-up purposes.

Packaging is basic to say the least, but the manual supplies all necessary information to progress, despite the appalling grammar and spelling. Although imaginatively designed with a DTP system, howlers in the text

SECOND Sight

This is an unusual game, and one that you'll either love or hate. It involves defusing bombs, but the only way to discover how is by trial and error. This spoils the game for me and I found it tedious, though some will enjoy the challenge of each new bomb.

Andy Richards

produced images of the protection system requesting a misspelt word.

Even messages within the game were clumsy and lacking in punctuation, for which there is no excuse.

Although I enjoyed the game for a couple of hours, lack of variety and tedious restarts eventually spoil the fun. The game's difficulty lies more in perseverance than intuitive thought, which is a shame as the concept is imaginative.

Pat Winstanley

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

SECOND Sight

I've been waiting ages for this to appear. Now it has finally arrived, and it has been well worth the wait, as it's superb. I love the action replays - the graphics are excellent.

There's always plenty to do and the management side is well thought out, with lots of options at each stage. An essential purchase for football fans.

Andy Richards

a week of constant play to complete it's good to see a save game feature included. Up to 10 different positions may be saved, referred to by number.

But loading in a position can cause problems. If you try to load a file that isn't present on the disc, instead of informing you of the fact and asking you to reselect, the load routine puts you back to the start of the season. Then you must play a full game through before having the chance to try loading again. Frustrating!

Sound is basic, goals being greeted with a couple of seconds of unvarying white noise, while near misses are given the same treatment but of shorter



Matches are shown from the viewpoint of a TV camera

duration. The only other sound is a sort of pop when the ball is kicked.

Graphics are a little more interesting, very realistic in fact, but the ball tends to get lost in the players' socks during close action.

It's a shame that the ST's facilities have not been exploited to the full.

Apart from an action replay sequence and the rather more detailed graphics, there's nothing to set it apart from 8 bit versions.

While it's nicely presented and very enjoyable to play, it could have been so much better.

Pat Winstanley

Sound	5
Graphics.....	9
Playability	8
Value for money	9
Overall	9



Bop a baby...

Product: Helter Skelter
Price: £14.95
Supplier: ASL, Winchester House, Canning Road, Wealdstone, Harrow HA3 7SJ.
Tel: 01-861 1166

RECENTLY, it seems to me, many software houses have been concentrating more on complex graphics and less on a game that has you hooked to your ST well into the small hours.

ASL has overcome this trend very well in what must be one of the most addictive games since Tetris.

Helter Skelter has you bouncing a ball across 100 screens trying to guide it into various nasties.

To make things harder the computer will choose the order of monsters you must eliminate. This choice is marked by a yellow arrow directly above the sprite. If you hit the wrong monster it will split into two babies, thus doubling your work.

Run into one of these babies at the right time and it will disappear – yet run into the other when told and it will return to its adult size all set to split again should you bump into it at the wrong moment.

As you are getting rid of the nasties you will see icons appear in random places on the screen. They don't stay long, but if you manage to pick them up you will be given a special bonus such as extra time, the ability to halt everything on the screen or – my favourite, to speed on to the next screen.

Some are marked with the letters E, X, T, R or A and as you might have guessed they will award you with an extra life after collecting all five.

For every 10 screens cleared a password is issued. Which can be used in future to let you start further into the game.

Points are awarded for killing the monsters and for the time remaining at the end of each screen. The bonus

shown at the top of the screen will depreciate each time you press the jump key. The balance is added to your score at the end of each level.

You start with five lives and you lose one whenever you do not complete a screen within the set time. However, a bonus life is given at a certain point score.

The game is simple with one exception, and that is the screen designer which enables you to change the colour of the screen, add extra platforms, and otherwise indulge your creativity so it is quite possible for every game to be completely different.

It can be played with one or two players. If the latter option is selected both will be on the screen at the same time.

The keyboard is used to control the height and direction of the ball. Although the handling appears strange at first I grasped it quite well after only a few games.

Infuriating and simple, this is a sure winner.

John Butters

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

SECOND Sight

There's no doubt in my mind that this one is destined to be well loved. The concept is simple, the graphics are good and the game-play has that very special addictive quality that makes a classic arcade game.

And it's just difficult enough to keep you coming back for more without losing hope of ever getting anywhere. One to look out for.

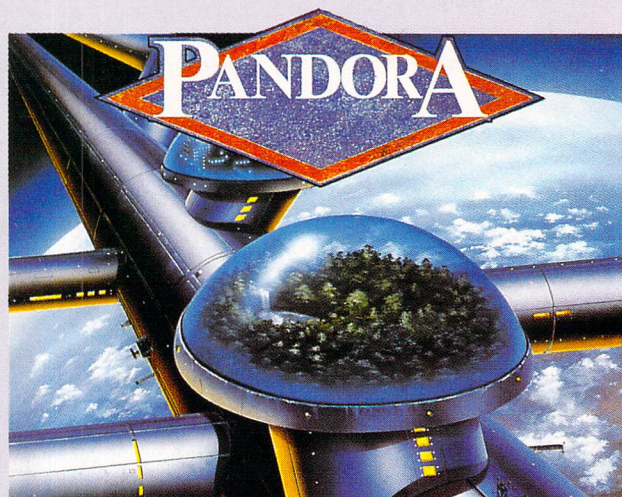
David Davenport

Touch of the Dark Stars

Program: Pandora
Price: £19.99
Supplier: Firebird, 76 New Oxford Street, London W1A 1PS.
Tel: 01-379 6982

THE Pandora is a spaceship housing a seventh-generation computer of the same name and has been roaming space for the past 200 years collecting alien beings and artefacts.

Now the ship is returning to Earth,



Beards

Product: Peter Beardsley's International Football
Price: £19.99
Supplier: Grandslam Entertainments, 12-18 Paul Street, London EC2A 4US
Tel: 01-247 6434

the default is five minutes, but you can increase this to 10, 15, or 20 minutes.

I found that I could lose comprehensively enough in five minutes, so I left this unchanged.

As the tournament gets underway the screen flashes up results from other matches in both groups, eventually your match is announced and the game begins in earnest.

Two immaculately-drawn teams appear on the pitch, a small arrow indicates the player currently under your control.

In the top left corner of the screen the animated referee puts a whistle to his lips and signals the start of the first half.

With a firm grip of your joystick, you set out down the pitch. Moving in any of eight directions, you can weave your way between the opposition players.

Pressing the fire button initiates the kicking routine – a power meter at the side of the screen begins to rise, once it has reached the desired level you release the button and Mr Beardsley will boot the ball in your direction of

BACK in June of this year I reviewed Microdeal's International Soccer – a competent program that had no real competition at that time. Now Peter Beardsley's International Football is a real contender for the footballing crown.

The game uses the same format as this year's European championships – there are two groups of four teams, with the top two teams from each group playing in the semi-finals.

One or two players must first make their team selection from the choice of eight on offer – the instructions say there are more teams to choose from, but I couldn't find them.

Next you can alter the playing time –

and you, an Intergalactic Salvage Operator, have been sent to investigate. No one thought the bio-rhythmic stabilisers could malfunction but – you guessed it – they have, resulting in pseudo-aggressive tendencies. A hostile environment, in other words.

Control is with a joystick. You wander around the ship exploring rooms, meeting crew and aliens, avoiding them, fighting them, and collecting artefacts to take back to Earth.

And what a fascinating collection of oddballs you find. Enter the piano lounge, hear the pianist play – and beat him up. The musician's also a pushover. So's the bank manager – I loved duffing him up.

But beware the mutated ice monster, the thief, the punk and the security droids. You've no idea how difficult it is to kill a priest these days.

When you get into a fight there's a swirling cloud of dust and "biffs", "whams" and "splats" pop out in true cartoon style.

During a fight, a coloured bar creeps across a box on the screen and you must press the fire button just before it changes colour – rather like playing a shot in the golf game, Leaderboard.

Once you get into a fight you can't get



out until you or your opponent is dead. Most of the characters talk to you, perhaps telling you of an item they require – you can trade with them or fight.

You need special ID cards to move around the ship and to access the computer terminals which are scattered around. You can usually pick cards up from dead science officers and the like.

You can transfer objects between your hands, pockets, backpack and dead people – you can't just drop something – and you have to be holding an item to use it.

You can access a great deal of the

ship right from the start and you'll spend a long time wandering around finding where things are, who wants what and generally trying to make some sense out of the giant jigsaw puzzle called Pandora.

Making a map will help. A few obvious tasters to lure you in would also have been nice.

All the while a counter is decrementing showing Pandora's distance from Earth's orbit – and the end of the game, should you still be alive.

I would like to have had more than one life and/or a game save feature, but

SECOND Sight

This is a sort of cross between an arcade game and an adventure. If you like puzzling out sequences of locations and finding secret keys and passageways it should appeal. And even if you don't there's enough brisk action to please arcade fans, although it's not really a shoot-'em-up. It should be of interest to the jack of all trades who's master of none.

Andy Richards

their lack did mar the game for me.

Pandora has overtones of many sci-fi classics – including the cult film Dark Star, see if you can spot it – and although it is basically an adventure, its style and format should make it appeal to a far wider audience. Certainly worth checking out.

Ian Waugh

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

Key: 1-0!

travel. The instructions say that the "current player" arrow will appear over whichever of your players is nearest the ball.

What they omit to tell you is that this only occurs if you release your hold on the joystick.

For the first couple of games I went charging after the ball, waiting for one of my dummies to burst into life and help me out, but nobody moved. It was just like the real thing!

I was very pleased to see that Grand-slam had incorporated a routine that disabled the music option while retaining the sound effects – take note Microdeal.

Peter Beardsley's International Football is a superb program – I wonder if Bobby Robson's got a copy?

Steve Brook

SECOND Sight

I'm not much of a football freak myself but I must admit that with this game I did manage to drum up some enthusiasm. The graphics are excellent, you have accurate control over your players in eight directions, and you can alter the playing time to suit you.

The league structure brings an extra touch of realism, and the way the results of other matches appear on the score tables is a very nice touch. If you're into soccer you can't go wrong with this one.

David Davenport

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

Waiting for kick-off..



Quadrupled arcade action

Program: Arcade Force Four
Price: £24.99
Supplier: US Gold, Units 2/3, Holford Way,
Holford, Birmingham B6 7AX
Tel: 021-356 3388

US GOLD's first compilation, Arcade Force Four, comprises four of their earlier arcade conversions. **Gauntlet** is the first, and I'd be surprised if anyone out there doesn't know about Gauntlet – racing around dungeons, fighting all manner of weird monsters and ghosts, collecting potions, food and cider to stay healthy.

The scrolling's a touch jerky, but the graphics are excellent and the gameplay frustrating. A very addictive version, although I am disappointed that the deeper dungeons aren't included. Overall, the best of the four. **Indy in the Temple of Doom** is searching for the sacred Sankara stones. This takes you through a mining area, freeing children from cages while avoiding bats, snakes, thuggee guards and inconvenient cliffs. Then you race down a mine track in

an old cart, while whipping enemies, avoiding holes in the track and disaster. The third level is the Temple of Doom itself, which has Indy avoiding the evil Mola Ram and his flaming hearts while trying to grab the Sankara stone from the statue of Kali. After three levels of this, you must run across a rope bridge to get to safety.

The screen is small to get smoother animation, but because of this the graphics have suffered – though nice in some parts, especially the mine, they are bland and lacking in detail. The sound is only reasonable. The game plays very sluggishly and the whipping of cages, bats and fireballs has to be precise. Nice title screen, shame about the game.

Metrocross, on the other hand, proves that a game doesn't have to be audibly and graphically amazing to be addictive.

You race along a track avoiding wind-downs in the floor, huge red cubes, tyres, rolling coke cans, hurdles, ground traps, small green rats and so on.

At the same time you should be kicking blue cans for points, squashing cans to stop the timer, kicking green cans for speed and using skateboards to make the journey even quicker. If you don't make it before the time

runs out you are electrocuted. The graphics lack finesse, and the sound is tinny – but it's addictive.

Road Runner and his old adversary, Wile E. Coyote, cross paths again in this madcap chase. The coyote wants the bird for dinner, and it's up to you to avoid his clutches, vans, bombs, mines, cannons, and crevasses.

Seed keeps your strength up – miss five piles and lose a life. There's also lemonade and you can get Wile E. to drink to gain time.

Though it has a small screen nothing's been lost, and it doesn't detract from the excellent gameplay. The sound is superb with a comical tune on each level. A nice touch is the short cut to return to your last game.

This is not a bad collection if you haven't got any of them already.

Robert Swan

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

SECOND SIGHT

This is quite a good little collection providing you haven't already got half of them, since three are tried and tested favourites. I still get a kick out of foiling the plans of the hungry coyote, and was surprised by the addictiveness of a game as simple as **Metrocross**.

This package provides a good chance to get your hands on four arcade classics for the price of one. Well, what are you waiting for?

Andy Richards



Racing against time in *Metrocross*



Indiana Jones searching for the sacred Sankara stones

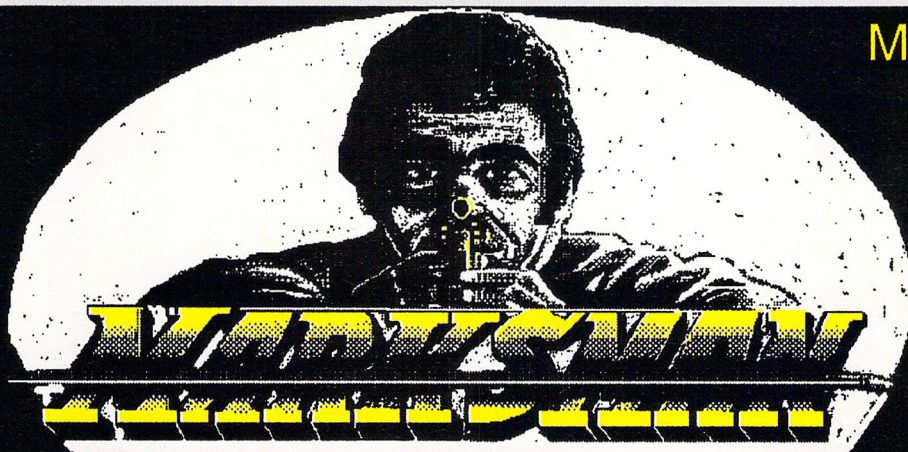
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MARKSMAN



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Product: *Alien Syndrome*

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Covent Garden, London WC2E 7HE.

Tel: 01-831 1801

IF you're the kind of guy or gal who likes to put his brain in neutral while you go dish out some serious punishment to hordes of alien filth, *Alien Syndrome* is the game for you.

Loads of aliens have imprisoned loads of hostages aboard a huge floating space ship fortress with loads of levels.

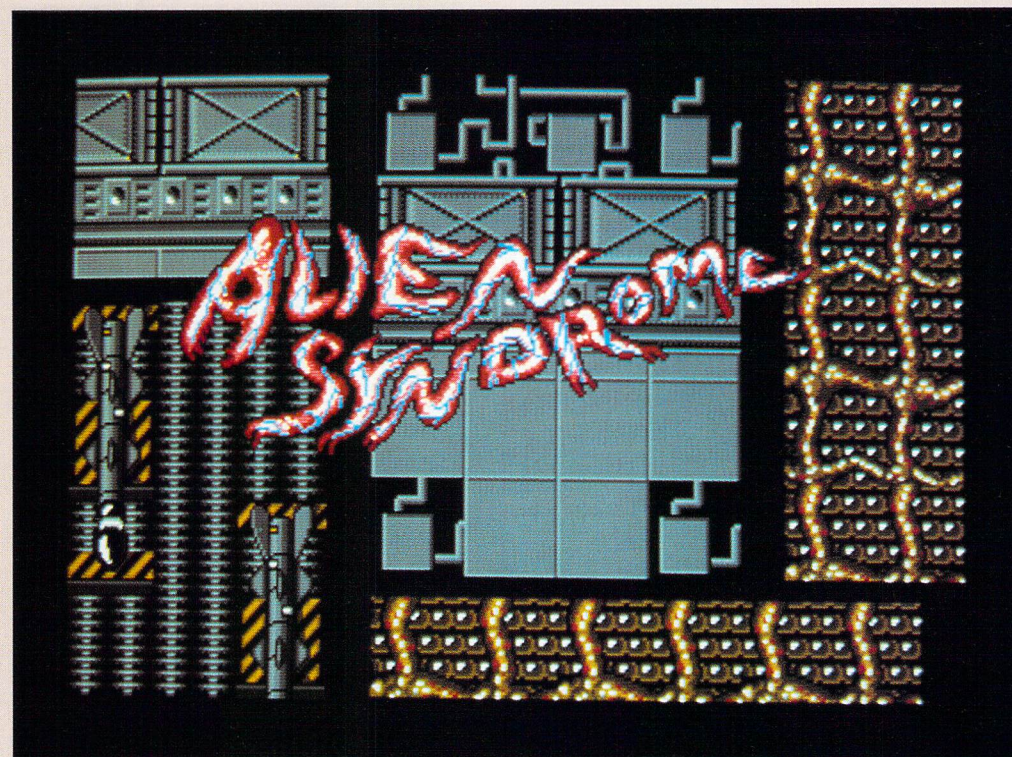
Enter Rick and Mary – select either of them for a one-player game or both for a simultaneous adventure – as a pair of space travellers armed with photon peashooters.

Playing viewpoint is strictly Gaunt-letesque, but there the similarity ends, because the aliens here are disgusting enough to turn your stomach in places, and the action incredibly fast and frantic.

The objective on each level is simple – to rescue all the hostages. These hapless individuals look like they're being swallowed by the floor as they sit there waving their arms.

Now since each level is fairly big it could get pretty boring, not to mention unhealthy if you didn't know where they all were. So thank goodness for maps stationed at periodic intervals around the walls of the ship, which show who hasn't been rescued and where they are.

Rick and Mary are armed with less than impressive implements of destruction. But fear not, help is not very far away. Also stationed in the walls around



The title screen

the ship are different weapons. Run into that section and your old weapon is dispensed with permanently and a new one pops up.

These range from zappy lasers for the girls to flamethrowers for big boys. Actually there seemed to be little difference between most of them; the main advantage of the flamethrower is that it auto-repeats very quickly.

Should you rescue all the hostages before a timer runs out – if you don't everyone is cooked quite spectacularly as the ship explodes – then the most

gruesome treat of the entire game is yours to behold: The end-of-level alien.

Now there's a fine tradition of end-of-level aliens being quite mean so-and-so's, and I understand that it's a matter of honour among aliens as to who gets the job.

But being utterly disgusting? Believe me, some of them are repulsive, especially the ones whose eyes slime out of their sockets after you. Yuck!

Survive that, and on you go to the next level, which becomes progressively harder with bridges, swamps and

gates to battle through.

Initially a Sega coin-op, the ST version is easily the best of the home computer conversions, and even features sound sampled from the coin-op machine. This adds a tremendous amount to what is essentially a simple but fairly difficult game.

Only the horizontal scrolling, which is poor, detracts from *Alien Syndrome*, but don't let that stop you from investing in a game that is great fun and so frenetic it's a danger to your joystick.

Mark Luckham



Searching for hostages

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

SECOND SIGHT

A real treat for lovers of hideous goggle-eyed creepies. There's a rich crop of them to blast to smithereens, and a wide range of deadly weapons with which to do it.

The game strategy is simple enough, but not to the point of becoming boring, and there are some nice touches such as periodic maps to help you on your way. Fast and furious, this is a must for the trigger happy.

David Davenport

MINDFIGHTER

Product: Mindfighter
Price: £24.99
Supplier: Abstract Concepts/Activision,
23 Pond Street, Hampstead, London
NW3 2PN.
Tel: 01-431 1101

THIS adventure has been given enough pre-release advertising to convince even an Eskimo that ice-cream is a good idea. When a piece of software is launched with such pazzaz, I always feel a little sceptical about the products's true quality. Mindfighter comes with a glossy paperback book, a poster of the same ilk, a sepia instruction leaflet and the all-important disc.

The book appeared to be essential reading before attempting the adventure, but rarely have I read such poorly written drivel as I waded through the 150 pages of Mindfighter – the novel.

The game by its very nature appears to be aimed at the adolescent market, yet the book was littered with spelling mistakes, punctuation errors, and poor grammatical sentence structure in support of a dull storyline with an even worse ending. Worse, the novel included tales of rape, murder and gore which even the most liberal parent would find offensive.

The game itself is something of a relief, but even then the blood and horror necessary to create the scenario would be a little strong for most die-hard adventurers.

Was there really a need for men and women to beat a dog to death with sticks, or a guard remove a man's hand

with a blunt knife, to then lick the blood from his weapon?

This tends to spoil what is generally excellent programming, including verbose atmospheric descriptions and cleverly constructed puzzles.

I must admit that I was knocked out by the graphics, which are generally mono-tonal in effect and come as close to true photographic representations as I have seen in an adventure.

The chronicle itself is unique. Robin, an 11-year-old psychic adolescent, has pushed his mind into the future and found himself trapped in a post-nuclear holocaust nightmare.

His body remained in the present in a coma-like state while his friends maintained a worried vigil at his bedside.

In the future, Robin is frightened and confused. All he wants is to go home.

Robin is able to relay all he sees on to the opaque greenness of his eyes, which act something like a video screen. You play the role of a friend who must guide, cajole and advise him as to the course of action he should take.

His task could not be more daunting as he must find a way to save the world from nuclear devastation which appears to be less than two years away.

You not only have to go adventuring with an emotionally disturbed parapsychological boy – which poses problems enough – but must interact with non-player characters who do some weird and worrying things.

Fergus McNeill, the programmer of Mindfighter, informed me that the adventure closely follows the plot of the

book. I found that this was often not the case.

Early in the game I discovered a wrench, a blanket and a dead dog, whose uses baffled me as I sought to follow the book's storyline.

It was only when I became involved in a number of Dungeons and Dragons type conflicts – which do not feature in the book – that I realised that Fergus meant "loosely follow the plot".

Once I had managed to find a way of stopping Robin from dying of radiation sickness and had acclimatised to this strange experience, I made progress quickly and did not find the problems too difficult to overcome.

Indeed I relished some of the neat chaining puzzles which have to be accomplished in order for Robin to save mankind.

I discovered that at some locations my ST launched into hysterics of clicking. I did not find out whether this was due to some clever programming to imitate a Geiger-Muller counter or just an annoying bug.

Input is via the keyboard, but your mouse can be used to operate an icon window which offers facilities such as a short or long textual description option, save and load, and a host of other clever devices.

Perhaps my favourite such commodity in adventure games is the OOPS or OG manoeuvre, which allows you to go back one move if an irredeemable mistake is made.

This program takes this one step further by allowing multiple OOPS to let you retrace your steps over many moves.

I still cannot decide whether I love or hate Mindfighter. I suggest that you ditch the book and discover the true delights of the adventure for yourself.

Nic Outterside

SECOND Sight

This is an excellent adventure with, for once, a well thought out and cogent storyline. It comes complete with a novella – although the game itself is much better – and the graphics are outstanding.

Good use is made of lengthy descriptive text to create atmosphere, and there is a game save and load feature plus bags of other niceties like the ability to take back multiple moves.

Strongly recommended.

David Davenport

Presentation	9
Atmosphere	9
Frustration Factor	7
Value for money	6
Overall	8



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Football management games, both Soccer and American Football, have the potential to produce excellent strategy games of some considerable sophistication. QUALSOFT produced League Division One in 1983, and Mexico 86 in 1985, but otherwise the implementation has been infantile. When Coda sent me HEADCOACH for the BBC Micro, 2 years ago, I saw an American Football computer game for the first time that measured up to the same standards. QUALSOFT is pleased to offer Atari ST users "World of Soccer" and "Head Coach v3", two games I honestly believe will fill a yawning gap for those looking for realistic simulations of the real games.

Malcolm Howard, QUALSOFT

WORLD OF SOCCER

International management is the ultimate challenge in soccer. To build a squad of players to defeat the ball playing skills of Brazil, the fluid play of Holland, the organisation of West Germany, the counter-attacking of Italy, and the many varied styles of many others, demands an insight into the game rare amongst managers let alone fans. Do you exploit a team's weaknesses, or play to your own strengths? Do you attack down the flank with wingers, or pierce the centre with powerful midfield running? Do you play a flat back four, or use a sweeper or libero?

In "World of Soccer", players are not just attackers/defenders/midfield but goal poachers, play makers, ball winners, wingers, left, right and centre backs, sweepers (19 types of player in all). The results of matches are determined by simulated soccer matches controlled by the skills of the opposing players. Strategy is determined by the skills you build into your squad, and tactics by the particular skills you use to defeat particular teams. Substitutions and tactical moves can be made during the match to change or reinforce your plans.

For four years, through the Qualifying and Final stages of the European Championship and the World Cup, you will guide the European team of your choice. You can prepare for the competitions with friendly matches of your choosing, developing your strategy to match the in-form players at your disposal. Success is there for the taking, but it will need earning.

Choose from 33 European squads. The 4 UK home countries have 16 man squads which can be increased to 36 with players of your own. A customisation program will allow squads for any of the 33 countries to be created.

HEAD COACH v3

On the field 220lb blocks of concrete-on-legs collide, while a small man in a suit paces the touchline stroking his chin. He's the Head Coach. He has more tactical skill in his little finger than the MCC can muster in the entire club. Third down and 9, he signals to his quarterback. The quarterback takes the snap back into the packet, dummies to his star running back, wheels to the right skirting two defenders, motions to throw to his rightside wide receiver and then swings his pass back over the pack to his open Tight End. He catches and makes another five yards before being grounded. An eleven yard gain and another first down, thanks to 2 hours of rehearsal the previous Thursday afternoon. The crowd cheer the quarterback but the head coach knows that his Right Guard really deserves the credit. This is American Football, Chess with mobile human pieces.

It's your first season as a Head Coach in the NFL and you face two pre-season games. You must give as many of your 45 players a run out to see how they've come through the close season. Through these matches and the time spent at training camp you must devise your game plan to face your first NFL game. Over the next 16 games you will meet the likes of the Chicago Bears, the Washington Redskins, the Dallas Cowboys, the LA Raiders (hiss). Each game will need a new plan to exploit the weaknesses and nullify the strengths of such teams, and in the game you will probe their defense and try to stifle their offense. Success over these 16 matches will put you into the playoffs and in sight of the Superbowl. Failure will give you the best of the college draft, which will allow you to make up for the deficiencies you must by now have discovered in your side. Providing of course that the club keeps you on . . .

Let us be straight, Head coach v3 is NOT an arcade game. It's a sophisticated game based on American Football. For those who already understand something about the game, it's a chance to find out just how much they really know. For those to whom the game appeals but is something of a mystery, then Head Coach v3 is the ideal way to find out what the game is all about. In the match itself, you have a choice of 27 offensive plays and 21 defensive plays, and so you can bias your plays to suit the skills of your squad and negate those of the opposition. The training camp will give you an insight into the current performance of your players, even checking their speed in 40 yard sprints. There's only one thing that can prevent your team from eventually achieving a Superbowl place; YOU! But we warn you, this game is ADDICTIVE.

"World of Soccer" and "Head Coach v3" are available from QUALSOFT at £17.50 and £19.95 respectively.

Dept. STU,
18 Hazlemere Road
Stevenage SG2 8RX

Tel: 0438
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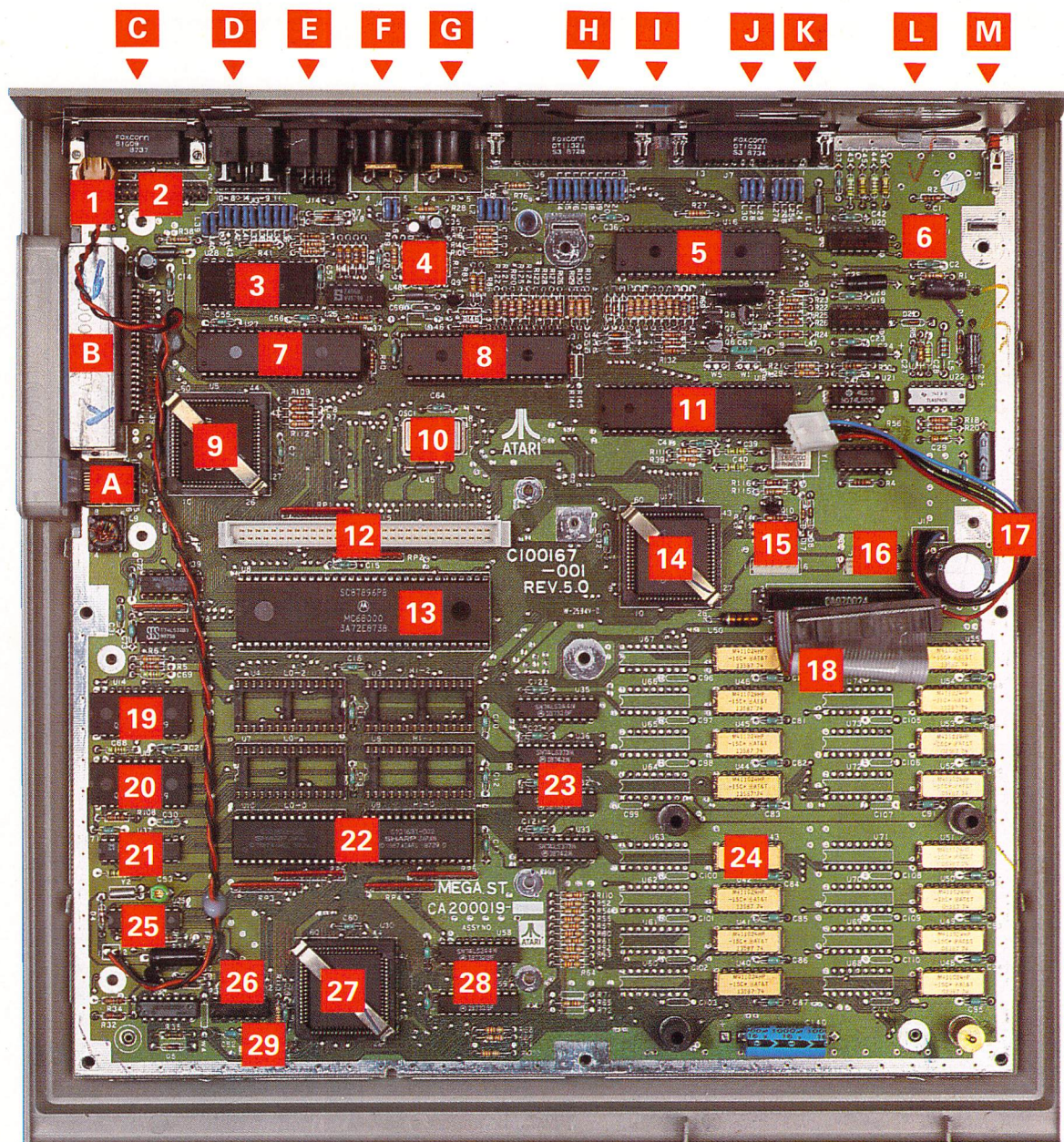
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The keyboard on a Mega is a detachable unit, giving far more space inside the casing for future expansion. This leaves the whole of the left-hand side of the main board exposed, and an ideal place for third party add-ons to be located after connection to the internal expansion slot.





The components

1 Connector for clock battery: This lead plugs into the small battery compartment located in the upper casing of the machine.

2 Internal DMA (direct memory access) connector: This is an extension of the normal hard disc port at the rear of the machine **C** to allow internal expansion cards such as a hard disc drive to hook straight into the high speed DMA bus.

3 WD1772 floppy disc controller (FDC).

4 PC 900 Opto-Isolator: This is a special type of safety buffer which allows data to pass to and fro down the Midi lines without any direct contact with the main circuit board. This is to avoid possible damage to the micro if a wrong cable is attached to one of the ports.

Inside the chip is a tiny LED and a photodiode which work in exactly the same way as the remote control on your television or video. As the light flashes in sequence with the Midi data the photodiode picks up the signal and converts it back to data pulses – all without any physical connection between the input and the output.

5 YM 2149 Programmable Sound Generator (PSG).

6 Reset chip.

7 Direct Memory Access (DMA) controller.

8 Shifter.

9 Blitter: The third of the Atari custom designed chips which, if fitted, allows much faster internal movement of blocks of data. This is most noticeable in terms of graphic speed, and a blitter can often increase the speed of block moves and text printing operations by two to three times. If a blitter is fitted in your machine you will see it as an extra menu item on the main desktop Options menu.

10 32Mhz oscillator: This provides the master clock frequency for the whole machine, which is then fed to the Shifter and Glue chips to be cut down to the more familiar 8Mhz required by the processor.

11 MK 68901 Multi-function peripheral (MFP).

12 Expansion slot: The equivalent of the IBM Expansion Card system, this connector allows you to easily plug in specially designed add-on boards. These could have a variety of functions, but as yet very few are available.

13 Motorola 68000 micro-processor.

14 Glue.

15 Spare power outlet: Connected in parallel with the power supply board **16** this may be used by third-party expansions and other add-ons which require their own power. The supply is rated for 5v DC and 12v DC.

16 Power supply connector: The separate power supply board plugs in here.

17 Internal floppy disc drive power cable.

18 Internal floppy disc drive data transfer cable.

19 MC 6850 asynchronous communication interface adaptor (ACIA): The same as in the 520ST.

20 MC 6850 asynchronous communication interface adaptor (ACIA). This second ACIA is used to convert the serial data from the external keyboard's HD 6301 processor into the parallel form required by the rest of the computer.

21 Real time clock PLA: This converts the signals from the clock chip into a form that the computer can more easily deal with.

22 Rom: The Mega ST normally uses two one-megabit rom chips, giving 256 kilobytes of permanent memory in which to hold Gem and the rest of the operating system. There are six sockets in all to allow for both the older OS roms and for future expansion.

23 74LS244 and 74LS373 ram buffers: These control the data going between the ram chips and the memory management unit.

24 Ram: Rather than using the older 256 kilobit chips found in the 520 and 1040 machines, the Mega ST includes high capacity one megabit ram chips. Eight of these may be used to give a full megabyte of memory – as opposed to 32 of the older type. Thus a Mega 2 will contain 16 of these new ram chips (as shown) and a Mega 4 would have all 32 spaces filled.

25 RP5C15 real time clock: This stores the current time and date used by Gem and the disc handling system. When the ST is switched off the clock is kept running by the battery in the upper casing of the machine.

26 Rom select chip: It handles the various possible configurations of rom chips, depending on which is fitted into your particular machine.

27 Memory management unit (MMU).

28 Ram select chips.

29 Rom selection wire links: They define the size and type of rom chips in use.

External

connectors

- A** Keyboard – serial data transfer.
- B** Cartridge connector.
- C** DMA Port – hard disc, laser printer.
- D** External floppy disc drive.
- E** Monitor – RGB/monochrome only.
- F** Midi in.
- G** Midi out.
- H** Centronics printer port.
- I** 240v AC mains socket.
- J** RS232 serial port.
- K** Power switch.
- L** Cooling fan.
- M** Reset button.

Simple arithmetic

DOING maths in ST Basic is essentially no different from doing maths on a pocket calculator. However, the symbols used for the various mathematical functions frequently bear no resemblance to their algebraic counterparts, which often results in confusion. You can see in the panel below the most common symbols and their meaning.

At this point you may well be wondering where the equals (=) sign has gone. In fact, equals is used frequently in Basic, but isn't necessary when we require an immediate answer.

Let's try some simple addition sums. Enter the following, not forgetting to press Return at the end of each line:

```
PRINT 2+3
PRINT 2+3*2
```

This last simple sum has two obvious answers 8 or 10. Basic, correctly prints 8. Why? See the panel below for the answer.

Variables

IF Basic could only work with absolute values - 2, -5, 4.5 are examples - pro-

grams would be either incredibly long or impossible to write in the first place. To avoid this, Basic enables you to use variables. These are similar to the letters we use in algebra, but don't worry if this topic makes your brain itch - it's much easier in Basic.

You can use almost any combination of letters and numbers to make up a variable's name. However, the first character must not be a number and only the first eight are unique.

Basic has four types of variable: Single and double precision reals, integer and string. For the moment though we'll stick with the simplest - single precision real. At this stage, although they sound quite a mouthful they're really quite easy to understand.

Basically...

A PROGRAM is far more readable if variables are given meaningful names. For instance, in a program to keep track of your bank balance you could call the final amount *balance*. You can join words together with an underscore (new ST Basic) or a full stop (old ST Basic) like *bank_balance*, and *bank.balance*.

What's in

a name?

All variables have names, and it's good practice - although not essential - to give them names that mean something. This way when you try to modify a program months later, you'll have some chance of understanding it.

Let's take a simple example: John has five apples and six pears, and he wants to know how much fruit he has. In terms of variables the problem looks like this:

```
pears = 6
apples = 5
fruit = apples + pears
PRINT fruit
```

or in a shorter, less clear form:

```
p = 6
a = 5
f = a + p
PRINT f
```

From this basic premise, it's easy to see how variables can be set or altered to suit the requirements of the program. The equals symbol is used here as an assignment operator - that is, a variable is assigned (given) a value.

Oh, my giddy Aunt

At school we are taught to evaluate expressions using the My Dear Aunt Sally (MDAS) rule of thumb. That is, multiplication first, followed by division, then addition and lastly subtraction. Not surprisingly, Basic computes its sums in exactly the same way.

This system is often referred to as operator precedence, but it means the same thing. In the example above therefore, Basic computes the multiplication first - then the addition.

Of course, there are cases when you need to force Basic to evaluate an expression in a particular order. For instance, to do the addition first. This is done by surrounding such parts in brackets. If the result of the previous example was intended to be 10 then the addition - which has a lower precedence than multiplication - has to be enclosed in brackets. Now try this:

```
PRINT (2+3)*2
```

which prints 10 as you might expect.

Brackets can, if necessary be nested to give some gloriously complex equations.

For example:

```
PRINT 1+(((2+3)*4)+5)^6
```

In practice it's very rare to see an equation as complex as this. For one thing it's almost impossible to read, and for another it's very prone to errors - for instance, not enough closing brackets, or brackets in the wrong place.

Before leaving pure arithmetic, there are two operators requiring further investigation, exponentiation and modulus.

The table below shows these as symbols, although you should note that modulus is a keyword (MOD) not a symbol, not that it makes any difference to Basic.

I'll leave you to discover what they do for yourself.

A ^ B	Raise A to the Bth power (exponentiation)
A * B	Multiply A by B
A / B	Divide A by B
A MOD B	Divide A by B and leave the remainder
A + B	Add A to B
A - B	Subtract B from A

Arithmetic symbols in ST Basic in order of precedence

Our first

Basic program

I have left this until now because it introduces a whole new part of ST Basic - the List and Edit windows. Everything we have done so far can be typed directly into the Command window, and the result of our instructions is echoed in the Output window. Entering a program is a little more complex, but mistakes can be rectified relatively easily once you get the hang of the editor.

Type EDIT from the Command window to enter the editor, and F10 at any time to leave it. While a line is being edited it will be shown in light text, but note that the changes don't take effect unless you press Return. To get used to the editor it may be worthwhile to use it to enter the following examples.

All programs in ST Basic rely on line numbers as reference points. Every instruction you give to the computer is typed on a line, and every line has a number. It is a long standing convention that line numbers go up in steps of 10 - 10, 20, 30 and so on. This makes it easier to insert extra lines at a later stage.

Incidentally, the Basic command AUTO can be used to enter the line

Our first program

Try this...

- Experiment with different expressions using *, /, +, and - Try to predict the results?
- Variables are normally assigned a value. What happens if you attempt to use a variable before it has been given a value?
- Modify the fruit program to account for the difference in price between apples and pears.

numbers for you, though I prefer not to use it.

Enter the following short program using the editor:

```
10 INPUT "How many pears ",pears
20 INPUT "How many apples
   ",apples
30 fruit = pears + apples
40 PRINT "Total = ";fruit
```

The first two lines introduce another simple keyword, INPUT. This causes the program to stop and wait for you to type something and press Return.

In this case the program will expect to find a number. Anything between the quotes is printed just like the PRINT statement. This time though, when you enter a number and press Return, the value is assigned to the variable following the comma.

The message in quotes is in fact optional, and if you omit it Basic responds by stopping and printing a question mark while it waits for some response.

To see this program work, type RUN

or operate. RUN from the menu of the same name. Of course, a program like this can be simplified. For instance line 40 can be rewritten as:

```
40 PRINT "Total = ";
   apples+pears
```

Which completely obviates the need for line 30.

Now let's just suppose John buys the fruit at a fixed cost per unit, no matter what it is. How does he calculate how much he has to pay? We need another variable *cost* to indicate the cost of the produce.

This amount will be fixed, so it can be defined as a constant in the program. In Basic constants are just variables – it's up to the programmer to ensure they keep the same value. Here's our program modified to include the cost per item:

```
5 cost=0.10
10 INPUT "How many pears ",pears
20 INPUT "How many apples
   ",apples
30 PRINT "Total="apples+pears
40 PRINT "Price="(apples
   +pears)*cost
```

Variable

differences

THERE are quite significant differences you should be aware of in the way old and new ST Basic handle variables. For instance, old ST Basic stores integer

Basically...

STRUCTURED programming involves breaking a problem down into small manageable chunks or modules. These modules can be written as general procedures and are normally complete routines which are totally independent of the rest of the program.

Once written they can easily be incorporated into any program. Each module will have a specific function, and possibly, input and output parameters. A whole team of programmers may work on large projects, and a module may be allocated to each one.

variables – those with a per cent sign tagged on to the end of their name – in two bytes. This means they can handle whole numbers between -32,768 and +32,767.

New ST Basic on the other hand uses four-byte integers with a much larger range of -2,147,483,648 to +2,147,483,647. Similarly, double precision floating point numbers – those with a hash after their name – can be much larger in new ST Basic.

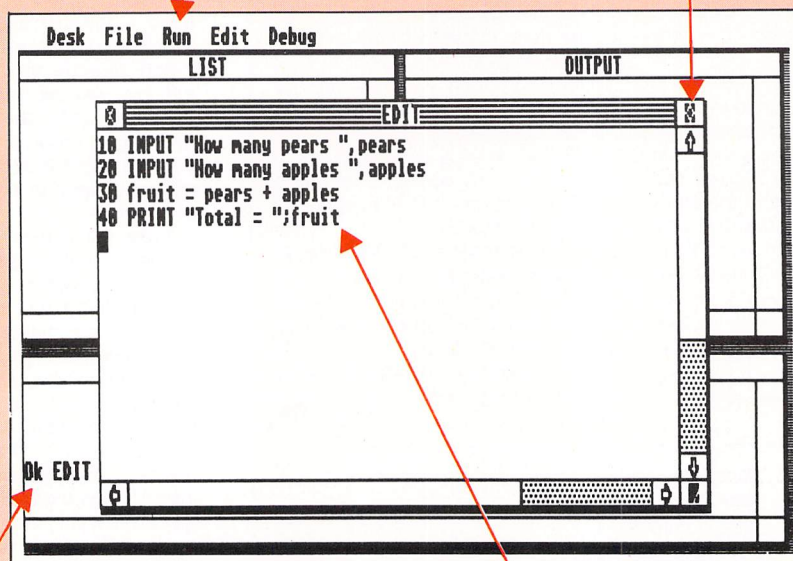
There are also bugs in old ST Basic. For instance, try entering:

```
x = 77777
```

and you'll be told *function not yet done*, and if you print out the value of *x* you'll find it is 0.00079E+11! So take care with floating point maths operations – the results may not be what you expect.

Pull-down this menu with the mouse and click on Run to see the program in action

Click here with the mouse to make the Edit window full size



Type EDIT in the Command window to enter edit mode, or pull down the Edit menu and click on Edit

The Edit window is brought to the top and you can enter your program here

NOW we will paint a simply picture using freehand drawing, flood fills and a small amount of airbrush work. The layout will take approximately 10 minutes. The final stage involving the details within the picture could take anywhere from 30 to 60 minutes, depending on how quickly you work and your eye for colour and detail.

Palette is important

THE most time-consuming task about producing a picture tends to be the creation of the palette. I know some people who may spend a week just setting up their palettes, so don't expect to get yours correct in five minutes.

Each colour you're going to use must be right, otherwise the hues within the picture will not be compatible. You will feel that something is wrong and assume it's the drawing or painting rather than one of the colours.

It's too late to find out after spending hours on your picture that one of the colours is wrong. By adjusting one you can change the colour relationship of your whole picture. The best advice I can give you is to take time to adjust your palette to the correct shades.

Let's get started

Step 1

REMEMBERING the rules of composition, balance, unity and harmony, draw in rough outline your approximate colour areas. Think of this as a rough topographical map – you can see the idea in Figure 1 (on the next page).

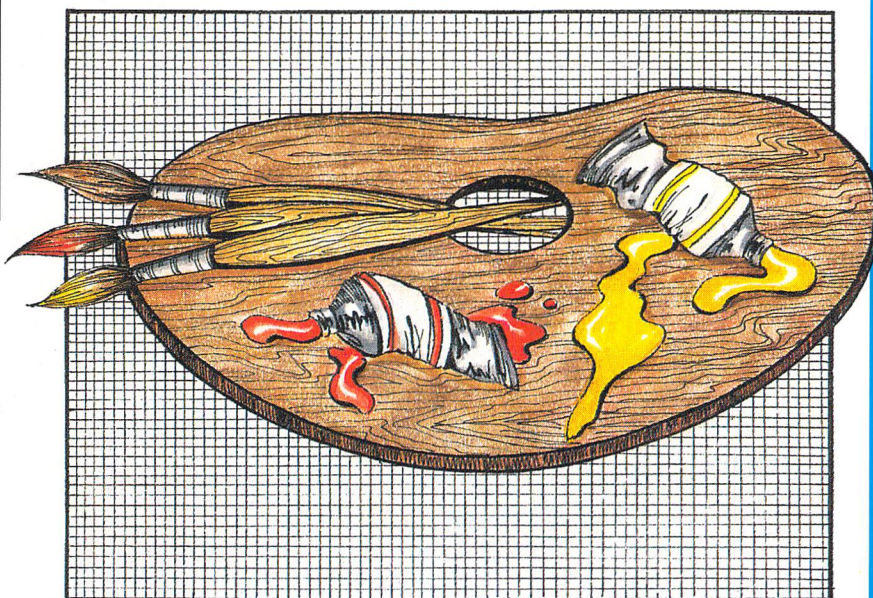
Each major colour will have its own area, and that is what you want to put down now.

As the lines come down the screen they curve, giving the feeling of movement. I did this as it will help to convey the impression of movement at the water line. It will also encircle the seagulls, which is a subtle placement of a secondary interest area, and helps break up what could have been a dead area. The eye is brought to this spot and expects to find something there.

Step 2

FILL in the areas with their predominant colours – sky 677, background trees 055, midground dark sand 554, foreground light sand 776, foreground wet sand 765, foreground wetter sand 554, and the sea 677. Use Figure II as a rough guide.

Now check on the colour balance and harmony. Step back from the screen, squint, and have a good look at what you have produced. If something seems wrong, change it now, as the mistake will not go away, it will only get worse as you continue.



Choosing the colours

YOU need not have all your colours set up before you start, but it is advisable to have either your major colours worked out, or at least half the palette.

The minor colours needed for highlights and darks may be left until they are required.

We will be using 12 palette colours plus white and black – and leave two colour allotments free. Just because 16 colours are available does not necessarily mean that you must use them all.

I could have used fewer than 14 colours, but they were there, and certain lines or highlights looked better in different shades, so I used

some of the excess colour space allowed.

The colours I have chosen are very closely related. I had in mind a rather soft picture, therefore I wanted analogous colours. The two predominant ones were green and blue. The greens had to start in the yellow area, and I wanted to have the darkest blue as a blue green. These are all cool colours.

To further soften the colours I have greyed them down to the extent that they form a very neutral or subdued selection. If you look at the colour numbers below you will notice that many of them are in the mid band approaching grey.

RGB value	Colour	Area for use
777	White	Clouds, water highlights and seagulls.
776	Off-white	Cloud highlights and the light sand in the foreground.
765	Cream	The wet sand in the foreground and highlights elsewhere.
444	Grey	The distant water line and touches in the midground bushes.
055	Aqua	Background trees, the water line and bushes.
345	Blue	The water line.
677	Blue	The sky and the sea.
242	Green	The tree tops.
050	Green	The midground.
354	Green	The midground bushes.
264	Green	The touches on the tree trunks plus the midground hill.
550	Green	The touches in the water line and midground.
554	Green	The wetter sand, darker foreground and bushes in the midground.
000	Black	The sea gulls' feet and beaks, touches on the tree trunks.

Freehand drawing and painting

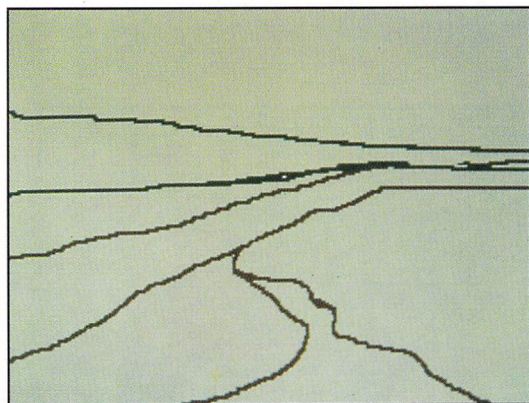


Figure I: Outline your approximate colour areas

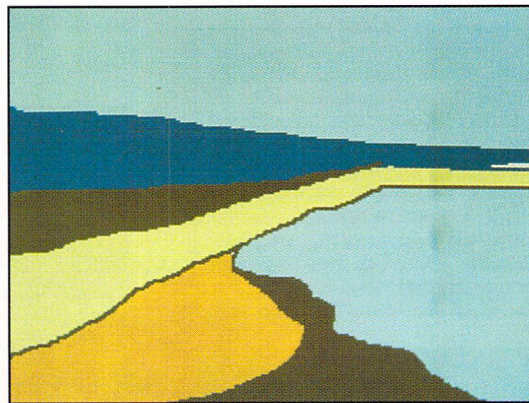


Figure II: Fill in the areas with colour

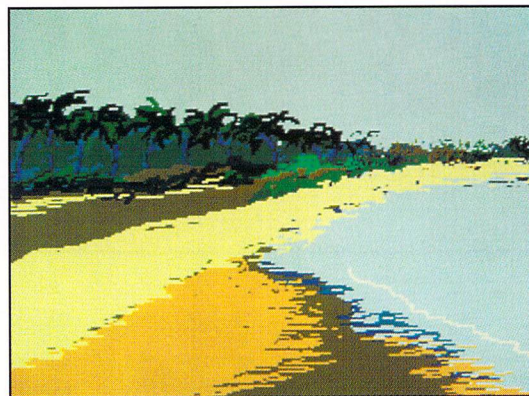


Figure III: Start adding the detail

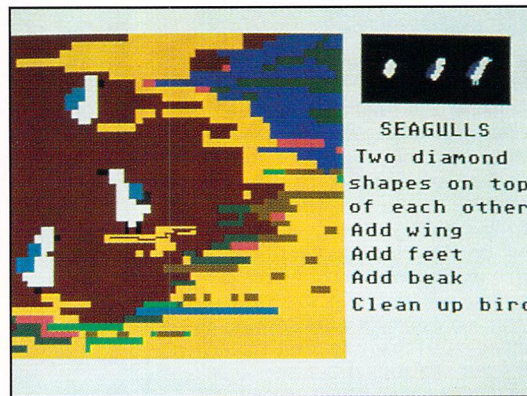


Figure IV: Adding a bit of interest to the foreground

Step 3

FLIP the picture upside down to check your overall balance of line and colour – if it still looks good go on to the next step. If something bothers you about it, work out what it is and adjust those areas that need adjusting.

Sometimes the picture design layout actually looks better when it is flipped. By using your imagination you could come up with a second picture using the flipped version as a starting point.

Step 4

START defining your picture. Using a medium size square cursor draw in the tree tops using three greens (242, 050, 354). Work on the dividing lines to break up the straight lines where two colours meet.

Add some definition here and there, using darker colours – but don't use black – to indicate shadows and lighter colours for the highlights and relief of dead areas. Figure III should give you some idea what you are trying to achieve at this stage.

Step 5

NOW it's time to be particular about what you're doing. Refine your dark and light areas – highlights. Clean up areas that look a bit rough. Break up any colour that looks too solid by adding a spot of another colour to it.

The sky area needs to be broken up. Use the airbrush on a small size and medium flow with white to indicate clouds. Don't overdo it – be light and easy. To highlight the clouds just skim

over them with the airbrush using the off-white colour.

The most difficult part of this picture was the waterline. Play around with this using the two blues, aqua, white and the cream colour until you are satisfied with what you have. Use the smallest brush and draw these small straight lines freehand.

The tree trunks are just a medium thick line drawn on a curve in a medium colour. To give them some solidity I added short strokes of black to bring out certain parts. Don't draw all the trunks in black, as this is too heavy a colour for the picture. What you could do is set up a couple of browns or greys in the two empty palette spots and use them instead.

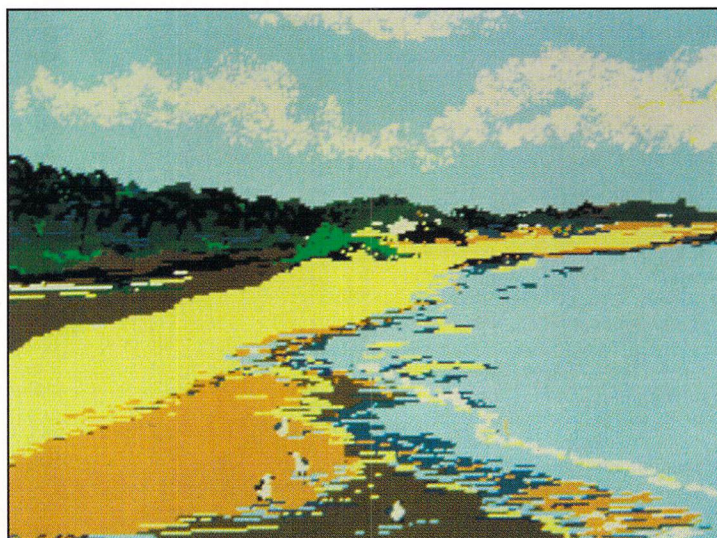
To add a bit of interest to the picture I have included some seagulls walking

in the wet sand by the waterline. Don't be put off – they are really very simple to draw.

Take a large diamond shape cursor and make one point over another in white – see Figure IV: That's the body. Using aqua or blue or grey, add the wing by following one side of the diamond down, starting about three quarters from the top.

Now using black or a dark shade draw two strokes for the legs and one stroke for the beak: That's a sea gull! Experiment with these simple tricks and see how many different poses you can come up with.

Now that you have completed one picture, use the same palette to create another. This time choose a different subject matter and use the colours in a different way.



The finished picture

ONE of the chief pleasures of adventuring is that of escaping into another world, leaving behind everyday life and being so diverted and engrossed by the skills of the author that you practically forget it is only a game, and really become absorbed in the story and role assigned to you.

For such successful escapism the adventure must generate a suitably gripping atmosphere and hang together logically, even if the logic

happens to be that of an entirely different culture.

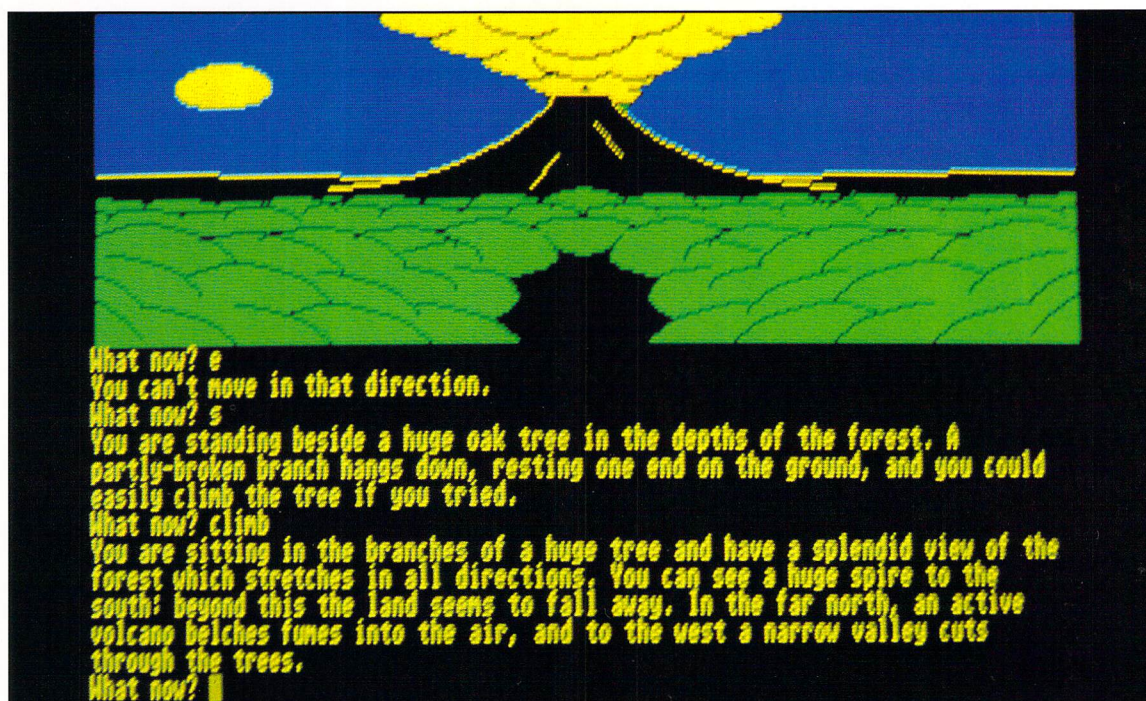
The main device for creating such an atmosphere is the use of vivid and fulsome descriptions in the story. The more detailed and literate the narrative, the more the adventure engages the player's heart and mind.

The poorer adventures offer skimpy and banal descriptions such as "You are in a gloomy cave. There is a knife here. Exits are east and

down". Not terribly exciting. Such works are the product of impoverished or lazy imaginations and are rarely worthy of your attention.

They try to compensate by offering a greater number of locations, characters and puzzles, but to my mind such adjustments are scant reward.

Unless a strong atmosphere is created much of the enjoyment and *raison d'être* of an adventure is lost.



The descriptions in Colossal Cave are some of the finest in the history of adventuredom

Colossal Cave

THE better adventures provide rich and finely honed text, rather like a good book. One of the best – and it so happens, the first – adventures ever written is the famous Colossal Cave by Crowther and Woods. The descriptions in this classic fantasy are some of the finest in the history of adventuredom.

Although it was originally written for a mainframe computer, you can nevertheless obtain an almost identical version for your ST. By the use of some clever text compression techniques, Level 9 managed to get it to run on a home computer. Colossal Adventure, as the adaptation is called, is currently marketed by Rainbird as part of a trilogy called Jewels of Darkness.

To illustrate the excellence of this and to show the sort of standard you should be looking for in a quality adventure, compare the following excerpts from Colossal Cave with the example given above:

"You are on the edge of a breathtaking view. Far below you is an active volcano from which great gouts of molten lava come surging out, cascading back down into the depths. The glowing rock fills the farthest reaches of the cavern with a blood-red

glare, giving everything an eerie, macabre appearance.

"The air is filled with flickering sparks of ash and a heavy smell of brimstone. The walls are hot to the touch, and the thundering of the volcano drowns out all other sounds. Embedded in the jagged roof far overhead are myriad twisted formations composed of pure white alabaster which scatter the murky light into sinister apparitions upon the walls.

"To one side is a deep gorge filled with a bizarre chaos of tortured rock which seems to have been crafted by the devil himself.

"An immense river of fire crashes out from the depths of the volcano, burns its way through the gorge, and plummets into a bottomless pit far off to your left.

"To the right, an immense geyser of blistering steam erupts continuously from a barren island in the centre of a sulphurous lake, which bubbles ominously. The far right wall is aflame with an incandescence of its own which lends an additional infernal splendour to the already hellish scene. A dark, foreboding passage leads to the south".

Now is that a description or is that a description? In fact, Colossal Cave is the yardstick by which all other adventures should be measured.

Adventure

topography

NARRATIVE quality is not the only element that goes to make up a good adventure. Topography is significant too, and must be consistent both with the rest of the contents of the adventure and within itself.

For instance, if you leave a dungeon via the North door and arrive in a murky chamber, you should expect to find yourself back in the dungeon if you exit via the South door.

Similarly, if you have scrambled down a slippery slope it does not necessarily follow that you should be able to go up it again without difficulty. Perhaps a rope tied round a boulder at the top of the incline would assist.

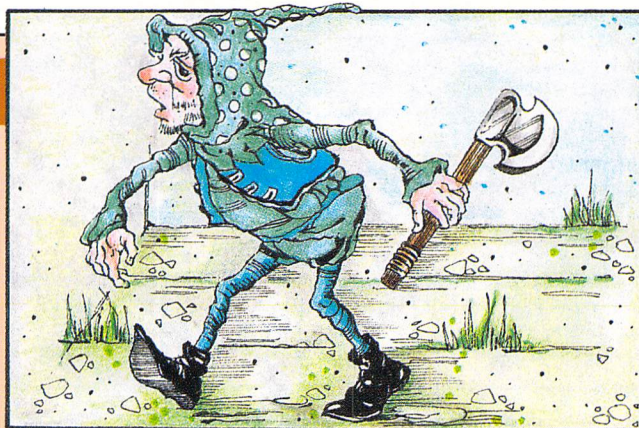
As another example, if you've cut a hole in a sheik's tent in order to escape, you should expect to find it still there if you return. If it had been repaired you would expect some explanation to be proffered if credibility is to be maintained.

Logic and consistency in the topography is critical if the atmosphere is to

Keeping up interest

ANOTHER element of a good adventure is the inclusion of plenty of interesting incidents and events. A static adventure, no matter how vibrant the text or how imaginative the land, can be a bore.

This further example from Colossal Cave should give you some idea of what I mean: "A little dwarf just walked round the corner, saw you, threw a little axe at you which missed, cursed and ran away".



be sustained and your enjoyment is not to be marred by illogicalities.

As there are usually a large number of connecting locations a simple methodology is to draw each location as a small uniquely labelled box with the exits depicted as straight lines emanating from the appropriate points.

For instance, North would be the top of the box, South the bottom, Northwest the top left corner and so on. Up and down – stairs and hill paths are pertinent examples – can be shown by a zigzag line at the top or bottom of the box respectively.

By linking these boxes together as you progress through the adventure you will be able to retrace your steps whenever you wish.

A maze in

adventures

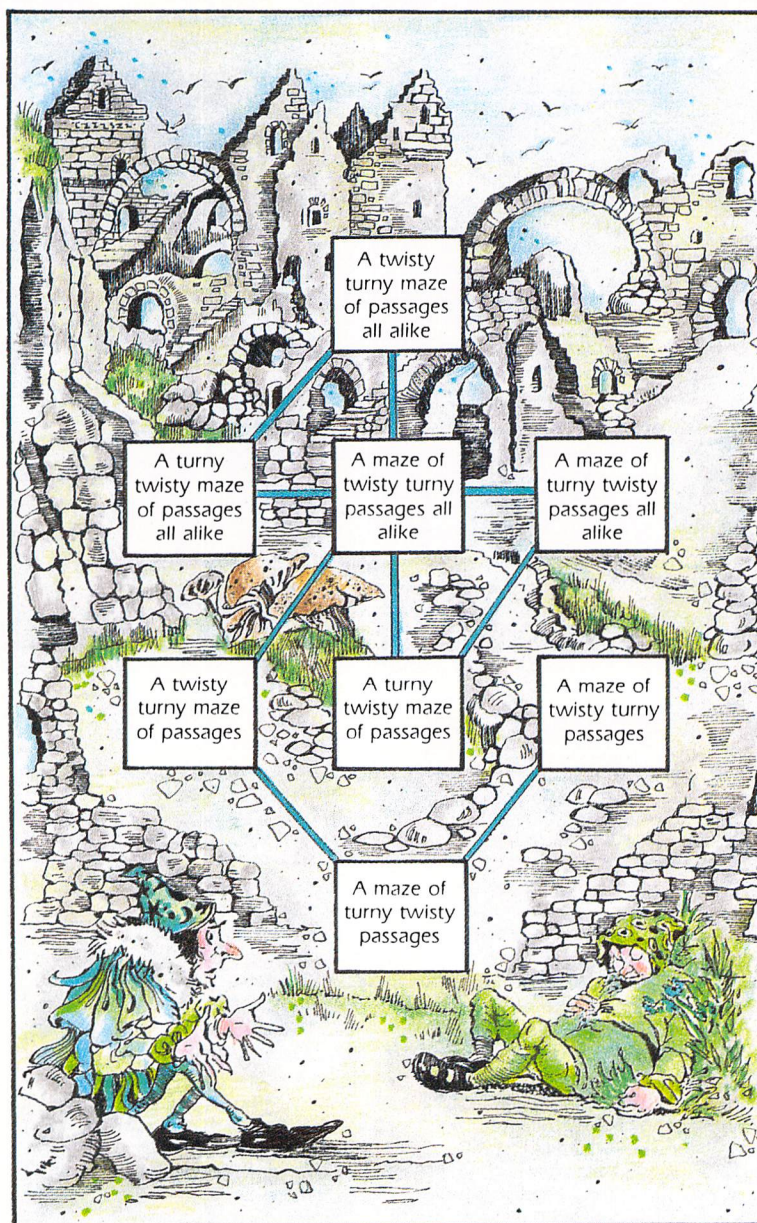
MAPPING works well until you hit one of the banes of an adventurer's life – the maze. These used to be the staple diet of adventures and you would be hard put to find one that didn't have one in some form or another. These days they are less common, mostly because all the variations have been rung out of them, and because many experienced adventurers find them too tedious.

The basic idea was to have a series of linked locations, every one of which had the same description. Relying on the position of the exits to differentiate between one location and another was not a lot of good either since many were identical even though they in fact were separate places.

Simply taking pot luck and moving from one spot to another in the hope that you might stumble on the exit was a sure way to get nowhere fast because for all you knew you could have been going round in circles.

Colossal Cave had a maze where each room had a small, easily-missed variation in its description. Each was thus uniquely and fairly described, but you had to be on your toes to spot it.

The traditional method of cracking mazes is to grab as many objects as you can before entering, then drop one in each location. Even though the location description is still the same, the presence of a dropped object uniquely identifies it – adventures always tell you what is visible. It usually takes



A typical maze

several forays into a maze to map it as there is a limit to how many objects you can carry.

Some of the more fiendish adventure writers use ploys to thwart this system of maze solving. One had a thick mist on the floor so anything dropped was lost to sight. The solution was to carry a huge fan.

Another had a small dragon that ran

in, gobbled up the dropped item, then ran out again, while another adventure would not allow you to carry anything except a lamp. The secret was to switch it off – in the dark, a luminous arrow pointed to the exit.

Yet another had a character who would move into a location you had left, pick up the object and place it in another room just to confuse you.

Initialising the VDI

AFTER we've installed our application we have to specify which output device we wish to use for our graphics. This may seem rather silly, as the only obvious choice would appear to be the screen, but Gem theoretically also has the ability to draw graphics directly on to plotters and laser printers.

In order to do this, it uses a function called open workstation – *v-opnwk()* – which loads a separate program known as a device driver from disc. This holds the information the ST needs to allow it to generate all the various screen effects on a particular device. Regrettably, since these extra device drivers are not yet widely available, this function is currently pretty useless.

So how do we tell Gem we wish to display our graphics on the ST's screen? Well, there's a separate instruction called *graf-handle* which returns an identification number for the screen known as the physical handle:

```
handle = graf_handle(&char_height,
&char_width,&cell_height,&cell_width);
```

The variables *char-height*, *char-width*, *cell-height* and *cell-width* simply return the height and width of each character, plus the size of the rectangular box it occupies. If this data isn't needed you can save some space by using the same variable in all four positions like this:

```
handle=graf_handle(&d,&d,&d,&d);
```

Don't forget to define the variables *handle*, *char-width*, *char-height*, *cell-height*, *cell-width*, or *d* as integers before you use them. Most Gem programs will happily work in any resolution. This is only possible because of a special function called *v-opnvwk* – open virtual screen workstation for technically minded readers.

This automatically finds out the precise dimensions of the screen, and how many colours can be displayed on it. It uses two arrays of integers, commonly called *work-in* and *work-out* which you should define at the start of the program:

```
int work_in[11];
/* This holds a list of data */
/* to be input to v-opnvwk */

int work_out[57];
/* This returns the screen */
/* size along with a number */
/* of other useful results */
```

A list of the usual contents of these arrays can be found in the adjoining tables. As before, these definitions should be

work-in[0]	Device identifier, screen=1
work-in[1]	Line type, 1-7
work-in[2]	Line colour, 0-15, 1-3, or 0-1 depending on resolution
work-in[3]	Mark type, 1-6. Used with polymarker functions
work-in[4]	Mark colour
work-in[5]	Character fonts. 1=standard, others not included
work-in[6]	Text colour
work-in[7]	Fill type, 1=solid, 2=dotted, 3=hatched
work-in[8]	Fill index, 1-24 depending on fill type
work-in[9]	Fill colour
work-in[10]	1=NDC coordinates (32,767 x 32,767 (not implemented), 2=normal raster coordinates 640 x 400, 640 x 200, or 320 by 200 depending on resolution

Input parameters for *v-opnvwk*

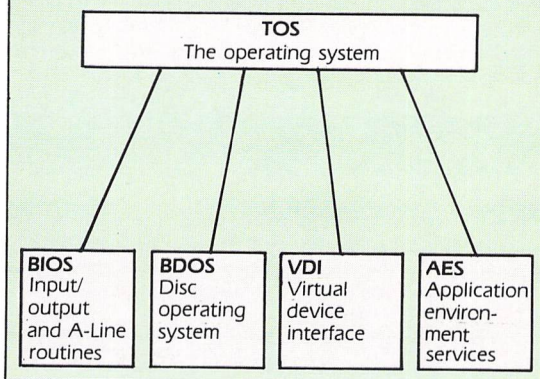
The Operating System – Tos

The Atari ST's operating is in many ways similar to CP/M 68k, and has built-in extensions to handle the mouse, Midi interface, intelligent keyboard controller and joysticks. Gem – the graphics environment manager – provides extra support for windows and graphics through four separate modules called the VDI, AES, Bdos and Bios.

The first three are machine independent and are the same on any micro supporting Gem, but the last module – the Bios – is machine specific, and contains the input/output code and primitive, but extremely fast, graphic A-Line routines for drawing pixels, lines and sprites on the screen.

The Bdos enables access to the disc drive and file management system. The AES – application environment services – is a multi-tasking system using a time-slicing technique. It provides a series of utilities that handle graphic based inputs such as icons, file selectors and menus.

The VDI – virtual device interface – provides a set of graphic functions that are independent of physical hardware. It enables you to define the workstation parameters governing the font and window size, define and output graphics to a device, draw lines, arcs, fill shapes, justify text.



preceded by *short* if required by your compiler.

Although you can in practice alter the screen attributes by directly manipulating the data in the *work-in* array, the reliability of this can't be guaranteed. It's much easier to simply initialise the first 10 integers of the *work-in* array with one using a loop, and *work-in[10]* with two to specify that the ST should use normal (raster) coordinates for all graphical operations.

You can now change any of the colours, or fill types, directly using a separate set of attribute functions. The following fragment of C code demonstrates the use of this procedure.

```
for(i=0;i<10;i++)
work_in[i]=1;
work_in[10]=2;
v-opnvwk(work_in,&handle,work_out);
```

This completes the Gem initialisation process.

work-out[1]	Pixel width of screen
work-out[2]	Pixel height of screen
work-out[5]	Number of text sizes
work-out[6]	Number of line types
work-out[7]	Number of line widths
work-out[8]	Number of mark types
work-out[9]	Number of mark sizes
work-out[10]	Number of character sets
work-out[11]	Number of patterns
work-out[12]	Number of hatch types
work-out[13]	Number of colours

The most useful results of *v-opnvwk*

Handling Gem graphics

Accessing the VDI

A N important side effect of *v-opnvwk* is to take the physical handle produced by *graf-handle()* and return a separate screen identifier for each application.

In the example I've stored this data in the variable *handle*. You need to use it whenever you wish to access any Gem functions. Here are a couple of typical VDI functions which illustrate this technique:

```
v_gtext(handle,x,y,"Some text...");
/* A standard graphic text */
/* function, like Basic's */
/* PRINT AT(x,y) */

v_circle(handle,x,y,radius);
/* This routine prints a filled */
/* circle at x,y, with radius r */
```

If all this looks rather too complicated, don't panic, because the same code can be used again and again, whenever you create a Gem application. To make things even easier I've written two procedures called *gem-on()*, and *gem-off()* which enable you to enter and exit Gem from just a single line.

The comments are for your information only, and don't need to be typed in, and remember to define the variables *char-height*, *char-width*, *cell-height*, *cell-width* and the arrays *work-in* and *work-out*, before you use these routines:

```
gem_on()
{
    int I;          /* Define counter */

    appl_init(); /* install application */

    /* Get device number for screen */
    handle = graf_handle(&char_height,
                        &char_width,&cell_height,
                        &cell_width);

    /* Load work_in array with
       appropriate values */
    for( I = 0; I < 10; I++ )
        work_in[I] = 1;
    work_in[10] = 2;

    /* Find screen resolution and
       return the screen identifier */
    /* to be used in application */
    v_opnvwk(work_in,&handle,work_out);
}

gem_off()
{
    /* Inform Gem we don't need the */
    /* screen identifier any more */
    v_clswwk(handle);

    /* Tell Gem we are exiting from */
    /* our program */
    appl_exit();
}
```

Try this ...

T HE following listing gives you a small taste of the graphics capabilities of the VDI. We'll see shortly precisely how the functions work, and I'll show you a number of other useful VDI commands:

```
/* Simple Gem demonstration written in
Megamax C. Shows how Gem is initialised
and how VDI text and graphics functions
can be called */
```

```
#include <stdio.h>
```

```
int contrl[128]; /* Gem arrays ... */
int intin[128]; /* short int for */
int ptsin[128]; /* Metacomco C */
int intout[128];
int ptsout[128];
```

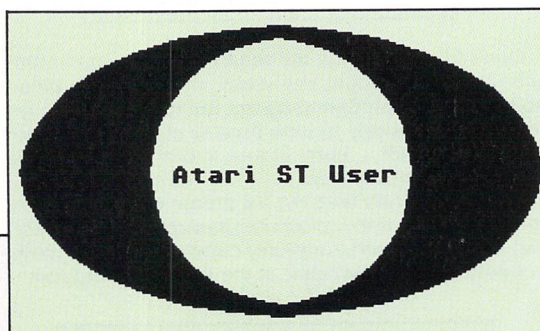
```
int handle; /* Working storage */
int char_height, char_width;
int cell_height, cell_width;
int work_in[11], work_out[57];
int x,y,radius;
```

```
main() /* Main program */
{
    int s;
```

```
    gem_on(); /* Initialise Gem */
    v_clrwwk(handle); /* Call VDI to
                       /* clear screen */
    x=160; /* Experiment with */
    y=100; /* different x,y */
    radius = 60; /* and radius */
```

```
/* Draw filled ellipse at coords x,y
with radii radius and radius*2. Fill
colour defaults to black (1)
v_ellipse(handle,x,y,radius*2,radius);
```

```
/* Call an attribute function to make
the fill colour white (0) */
```



```
s=vsf_color(handle,0);
```

```
/* Draw a white filled circle inside */
/* black ellipse */
v_circle(handle,x,y,radius);
```

```
/* Print some text inside the circle */
v_gtext(handle,x-50,y+4,"Atari ST");
```

```
gem_off(); /* Turn off Gem */
```

```
/* Press a key to return to desktop */
s = getchar();
}
```

```
gem_on()
{
    int I;

    appl_init();
    handle = graf_handle(&char_height,
                        &char_width,&cell_height,
                        &cell_width);
    for(I=0;I<10;I++)
        work_in[I]=1;
    work_in[10]=2;
    v_opnvwk(work_in,&handle,work_out);
}
```

```
gem_off()
{
    v_clswwk(handle);
    appl_exit();
}
```


ALONG with 68000 machine code, the programming language C is probably the most important language to learn. The vast majority of serious software – word processors, text editors, spreadsheets, databases, utilities and so on – are written in C. Even the Gem operating system is largely a C program.

So if you want to write this type of software package, or even if you simply fancy investigating the latest fad in computer programming languages, then C is a must.

History

THE roots of C can be found in CPL – Combined Programming Language – created by the University Mathematical Laboratory in Cambridge and the University of London Computer Unit.

However, the language was far too bulky for most applications programmers had in mind, so Martin Richards at Cambridge developed a cut down version called BCPL – Basic CPL. This was condensed even further by Ken Thompson at Bell Laboratories in New Jersey and he created B.

Dennis Ritchie, one of his colleagues with whom he was working to create a new operating system called Unix, further developed B and it became the language C. Unix was then almost entirely rewritten in C, which is why it is so closely associated with it.

Programming in C

C PROGRAMS are written using a text editor which produces Ascii files. The source code – the C program listing – is then taken by a compiler and turned into a machine code program which can be run regardless of whether the compiler is present or not.

The C language itself is very small, and the vast majority of functions and procedures found in other languages are missing. They are provided separately and are stored in files on disc called libraries.

The compiler can be instructed to include the contents of these libraries in the program at compile time. A C compiler is often judged by the size and quality of the ready-made libraries provided.

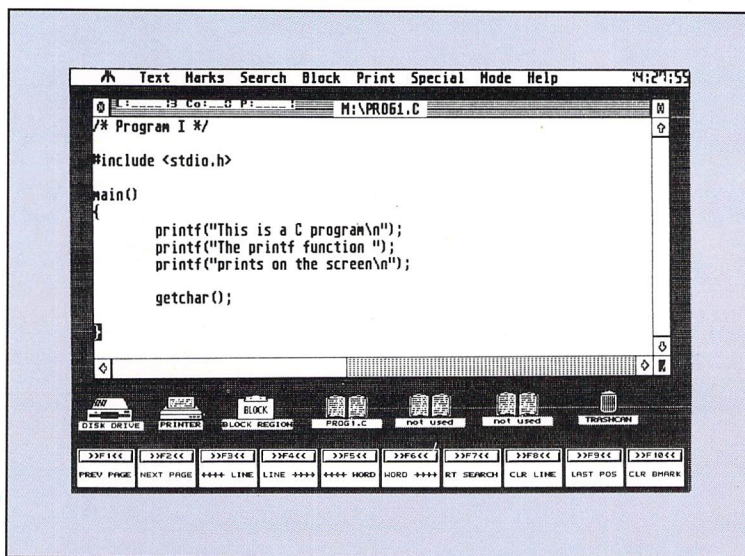
Creating a C program is a bit like putting a jigsaw puzzle together – it's made up of separate sections all stored individually on disc. These are then combined by the compiler to produce the finished program.

Step by step

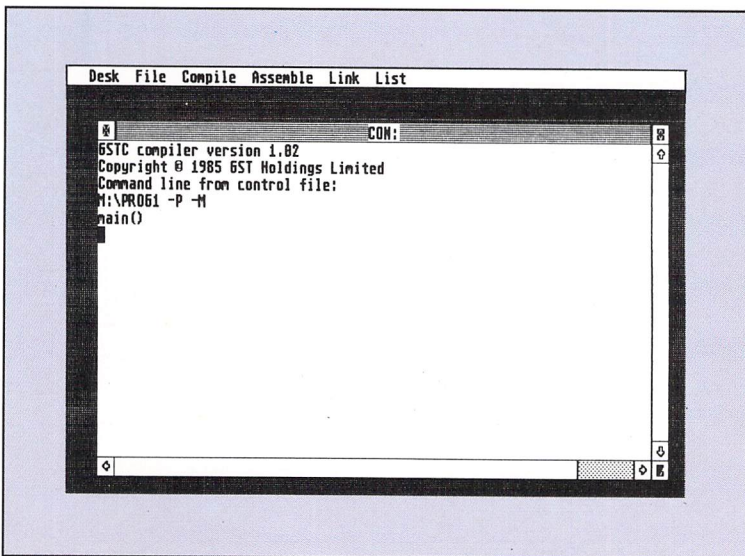
THERE are several stages involved in writing an executable C program. Fortunately the whole process can be automated to a large extent, though this may require some effort setting up initially.

The separate stages are:

- Write the program using a text editor and save the source code in Ascii form.
- Compile the program – a utility



Creating the C source code using a text editor



Compiling the source code to produce an assembly language listing

called a preprocessor first expands the source code so it is readable by the compiler which then translates the listing into assembly language.

- Convert the assembly language program into a relocatable object code module using an assembler.
- Link the object code with the necessary code modules from the C runtime library and translate it all into an executable machine code program.

This can take up to 10 minutes or more for a large program running from a floppy disc. If, after testing the program, it is found to have a bug the whole process will have to be repeated.

Which C Compiler?

A WIDE range of C compilers is available for the ST, and they have an equally vast price range starting at rock bottom with a free public domain version and rising to full development systems costing several hundred pounds. So what is the difference between them, and which is best?

The major differences are usually to be found in the number of utilities and library functions provided – useful routines written by the software company for you ready to slot into your programs. There are also minor differences in the compiler itself, but these

are probably less pronounced.

GST C is a budget C compiler costing as little as £15 at some retail outlets, and was used to write some of the programs in this section. It is supplied on a single disc along with a slim manual. Its major limitation is that it can't handle floating point arithmetic. However, it is surprising how rarely this facility is needed.

Mark Williams C – used for the rest of the listings – lies at the other end of the price range and is supplied on four discs packed full of ready made library functions and utilities. A 700 page manual is included too. It is expensive however, costing almost £150.

The lack of library functions and utilities in GST C isn't too serious a problem as you can always write your own, though it will require some time and effort which could otherwise be used to get on with developing your program. The lack of floating point maths is more serious: Imagine a spreadsheet used to run a large business that ignored the pence and just worked in pounds!

Making a start

WE will start off C programming with a very short, simple listing which just prints a message on the screen:

```
/* Program I */

main()
{
    printf("This is a C program\n");
    printf("The printf function ");
    printf("prints on the screen\n");
}
```

The first line of the program is a comment containing the program title. The `/*` tells the C compiler to ignore all the text following until it meets a `*/`. It can then carry on compiling. Comments can be placed almost anywhere in the listing.

Every C program is composed of functions – they are easy to spot as they are followed by a pair of parentheses. There must be one called `main()`

somewhere in the listing as this is where the program starts executing when it is run.

The chunk of code making up the `main()` function is contained within braces, and in our listing is made up of three `printf` functions. These are used to display the message on the screen.

The text of the message is contained within quotes and each `printf` is terminated with a semicolon – this symbol separates all the statements and functions in C program listings.

Notice the `\n` at the end of the first and last text strings. This moves the cursor to the start of a new line on screen, otherwise the program would carry on printing the text on the same line each time as it does with the second and third strings.

Glitches

IT'S quite rare that programs work perfectly first time, and there's often something we mistyped or forgot to include. These minor glitches will be highlighted by the compiler during the compilation process and an error message will be reported.

The messages will usually tell you what the error is and at what line it occurred. Take them with a healthy dose of salt though – they can be very misleading. It may be helpful to introduce a deliberate error into a C listing, in Program I say, and see what your compiler makes of it. The results can be surprising.

Assuming you've entered Program I correctly and compiled it, you may still have problems running it. What is likely to happen is that the program runs, ends, and returns to the desktop so quickly that you think it hasn't worked.

The solution is to pause after the program has finished so you can see the output on the screen. This is achieved by adding the line:

```
getchar();
```

to the end of the listing. This function gets a character from the keyboard – it waits for you to hit Return.

Some C compilers may also require an additional line telling them that the function `getchar()` is defined in the library `STDIO.H`. The command:

```
#include <stdio.h>
```

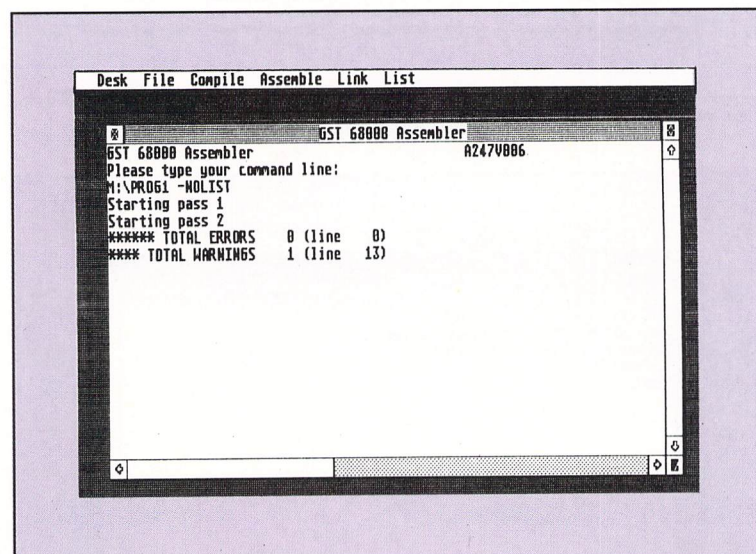
tells the compiler to include all the source code in the `STDIO.H` file when it sets about its work.

The complete listing now becomes:

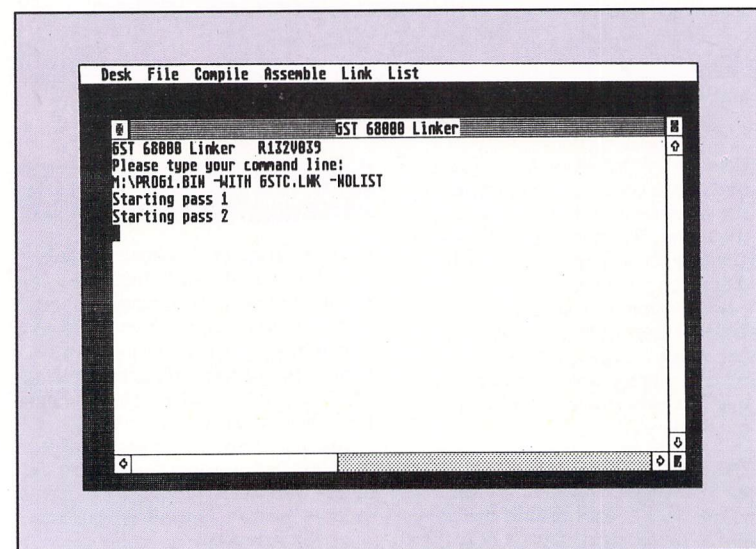
```
/* Program I */

#include <stdio.h>

main()
{
    printf("This is a C program\n");
    printf("The printf function ");
    printf("prints on the screen\n");
    getchar();
}
```



Assembling the assembly language listing to produce a relocatable object code module



Linking the object code with the relevant code modules from the C runtime libraries



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ADVENTURES

Brillig lends a hand in solving problems for fantasy fans

Laughing all the way to Labion

SINCE there wasn't room at the time to give them the full Brillig treatment when they were released, I thought that this month it would be worth taking time out to tell you some more about Space Quest II and Police Quest, two Sierra adventures recently released by Activision.

Laughter keeps you feeling young, and Space Quest II had me gurgling like a new-born baby. A funnier program has not come my way since Hitch-Hiker's Guide to the Galaxy which, in its zany sense of humour, this text and animated-graphics adventure sometimes resembles.

As a lowly space janitor sweating like a pork-beast in a pressure suit in zero gravity, and pausing only to retrieve my cubix rube puzzle and athletic support from my locker, I set off on mucking-out duties.

On arrival at the shuttle bay via high-speed pneumatic tube – one of the many examples of entertaining animation with which this program abounds – I was mugged.

When, hands tied behind my back, I regained consciousness in unfamiliar surroundings, I faced a sagging mass of flesh that appeared to have been human

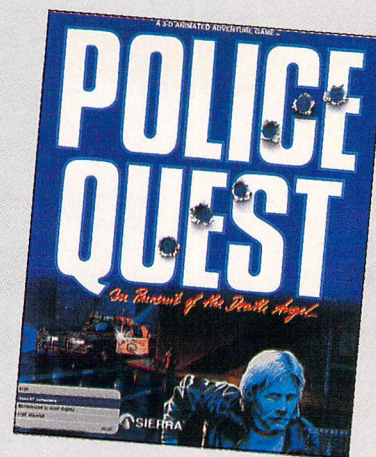
at some time. Tubes and wires extended from his body leading to machines which kept him alive. Great Gorgonzolas of Gornflatz – it was my arch-enemy, Sludge Vohaul.

"I have devised a plan so horrible, so frightening, so diabolical, that no one will be able to stop me", he burred. Vohaul's unspeakable scheme was to infest my home planet with thousands of genetically engineered, door-to-door, life insurance salesmen. Was there no end to his vileness?

As he peered down at the hoses protruding from his chest, he cackled: "My plan was to kill you, but I've had a change of heart. Ha,ha,ha.... Get it? Forgive me. I'm a kidder". Instead, he decided to enslave me in the mines of Labion.

Whisked away from Vohaul's floating space fortress, I found myself prisoner on a hovercraft which, as it skimmed over the treetops, began to falter. As the two guards blamed each other in intemperate language for forgetting to refuel on the last trip, the craft plummeted from the sky.

The guards' bodies cushioned my fall, though it didn't do much for their health, and I was alone in an alien jungle.



Nearby, some giant pink mushrooms caught my eye. Straying too near, I was swallowed by one.

Although I couldn't move a muscle, the delightful sensations of tingling, warmth and moisture made me think that perhaps "it's not so bad in here. Wow. Check out the colours, dude!". Unfortunately, this short-lived buzz was only a side effect of the lethal poison in which I now marinated.

Did the invasion of the insurance salesmen succeed? Of what use was the Labion Terror Beast Mating Whistle? Find out for yourself by playing Space Quest II, a first-rate, animated adventure that had me giggling all the way to Labion and back.

Police Quest is another animated graphics and text adventure and gives you the chance to see how you'd make out as an American cop.

The adventure takes place in a small town with a growing crime rate. One of its most wanted criminals, the Death Angel, is causing havoc in the community and your ultimate task is to infiltrate the Angel's gang with the intention of bringing him to book.

You start out as a uniformed cop on the beat and have to deal with the routine round of attending briefings, handing out traffic violation tickets, patrolling your

HINTS AND TIPS

DUNGEON MASTER SPELLS

Symbols	Spell	Symbols	Spell
X1	Man protection potion	X152	Leave trail
X2	Heal potion	X153	Wisdom potion
X4	Magic torch	X154	Vitality potion
X6	Dispel magic (open doors)	X320	See through solid matter
X14	Group protection	X326	Invisibility
X15	Shield potion	X335	Lightning bolt
X25	Venom potion	X345	Special light
X31	Poison cloud	X352	Dexterity potion
X44	Fireball (easy to remember)	X451	Strength potion
X51	Magic missile	X454	Fire shield
X52	Weaken immaterial beings	X546	Darkness
X61	Venom potion	X635	Zokathra spell
		X655	Mana potion

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beat on foot or by car. At all times you're expected to follow standard police procedures – all laid down in the accompanying manual.

For example, failure to inspect your vehicle – by walking round it carefully – before driving it away from the police car park soon results in a flat tyre and early retirement.

As a police procedural, the game works well and is detailed, if lacking in excitement. One thing I didn't like was that you have to steer your car around the highways – it's an overhead view. If you're a bit slow on the keyboard you'll almost certainly crash and have to restore or restart the game. In adventures, I prefer my challenges to be cerebral, not physical.

Police Quest is a realistic, original but somewhat slow-paced and uneven adventure. It's certainly worth buying but I wouldn't put it at the top of my shopping list.

This month's hints and tips section, thanks to Bob (Coffo) Goffman of Paris, includes a list of spells for Mirrorsoft's splendid *Dungeon Master*. Rather than try to reproduce the spell symbols, I have used an alphanumeric system which you'll find particularly easy to use in a hurry.

Trying to remember obscure symbol configurations while being bashed about the bonce by a band of berserk banshees is, I'm sure you'll agree, not the happiest of situations for cool thinking.

There are four sets of spell symbols in *Dungeon Master*, each consisting of six individual graphic symbols in a row. You may select no more than one symbol from each set to make up a spell. Initially, only set one is shown on screen, but as soon as you make your selection, that set is replaced by set two – and so on until set four appears or you elect to cast the spell.

In the list, a spell is identified by the letter X followed by up to three numbers. The X always represents set one and signifies that you may choose any symbol you like from that set, subject only to the current mana strength of your character.

The numbers indicate the position in the row of the required symbol for each of the remaining three sets respectively. For example, the spell for a magic torch is shown as X4. This means you must select any symbol (X) in set one followed by the symbol occupying the fourth position (4) in set two. As you will see, some spells only need two symbols, some three and some four.

Similarly, to invoke the invisibility spell (X326), you should select any symbol (X) from set one, then the symbol located at the third position (3) in the row in set two, then the symbol at position two (2) in set three and finally the symbol at position six (6) in set four. Easy, isn't it.

Until next month, happy adventuring.

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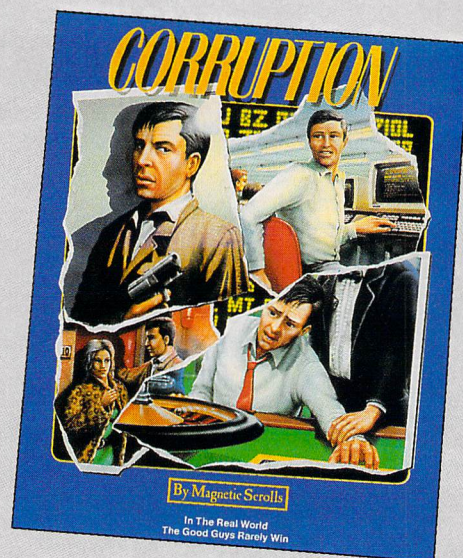
THERE's a distinct air of realism about Magnetic Scrolls' new text and graphics adventure on the Rainbird label, so don't expect to stumble across any thieving trolls, suspect sorcerers or wayward wizards.

The fantasy worlds of their earlier adventures – *The Pawn*, *Guild of Thieves* and *Jinxter* – have been replaced by the more familiar, but equally dangerous, modern city of London.

In *Corruption*, I found myself cast as a newly-promoted successful businessman, an Honest Joe of a fish in the shark-infested waters of high finance, a world of commercial intrigue and dodgy dealing where Porsches and profits were proof that you were a winner.

My partner seemed a decent enough guy, as did our company lawyer, but perhaps I was being a bit naive – they didn't seem to want me to sit in on one of their meetings, for some reason.

Like the almost vertical walls in the company's loo, something was out of true here. And speaking of loos, while I



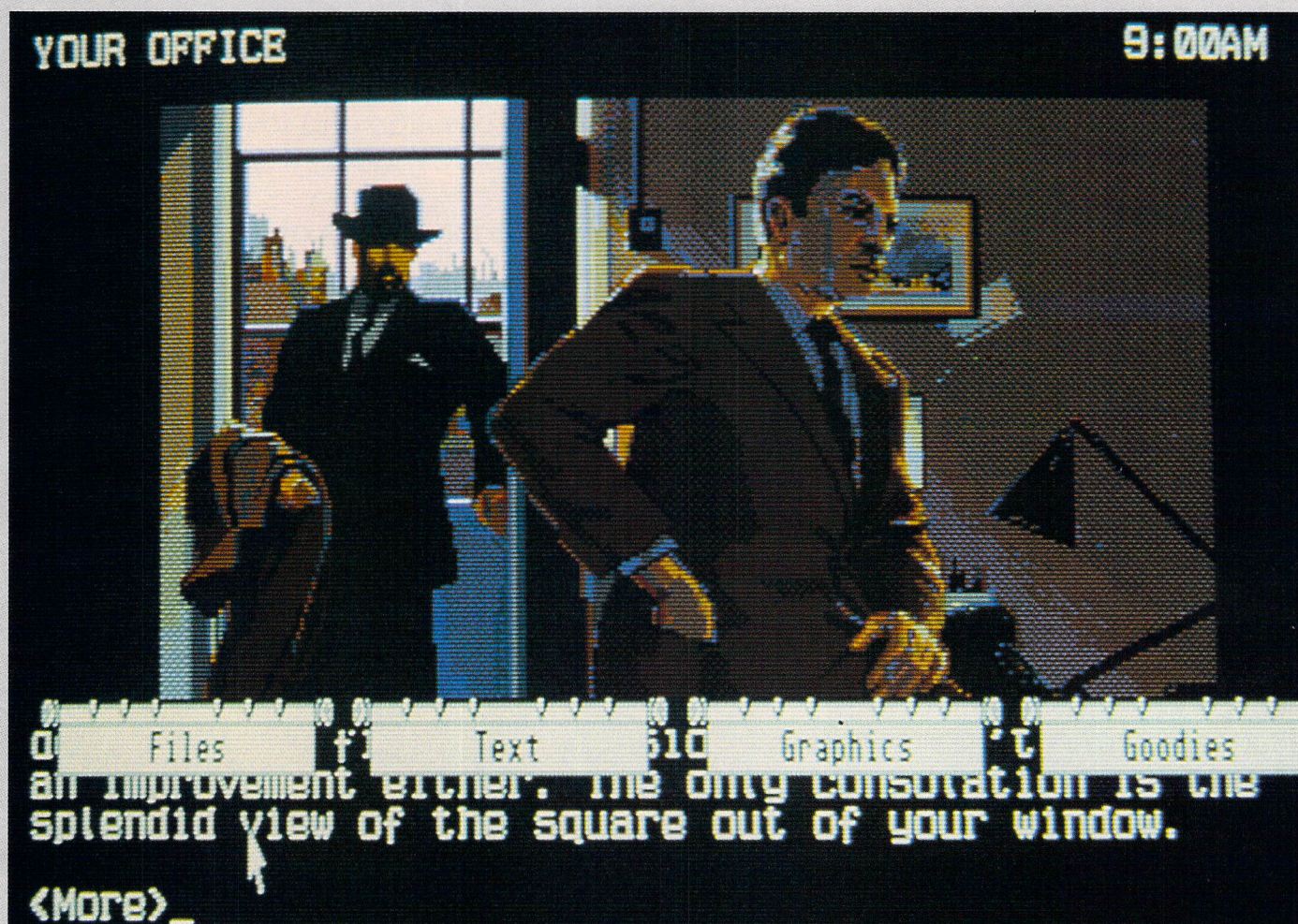
wouldn't normally go peering into lavatory cisterns, I thought I might just take a peek – and my unease grew as a result.

The cleaning lady seemed a nice enough character, being reluctant to dish the dirt about any of the people of whom I asked – either that or she was in on what was beginning to look like a conspiracy of sorts.

In contrast, my secretary Margaret was not the warmest person I've ever had the pleasure of working with and always



The second time I died from a lethal injection – in a hospital of all places



Like all Magnetic Scrolls' adventures *Corruption* features high quality graphics

reacted rather sniffily whenever I tried to make a phone call by myself. In somewhat censorious fashion, she always insisted on dialling the number for me. Was she spying on me or was I becoming paranoid?

Theresa, my partner's secretary, was not much better. She was one of those types who spend more time filing their fingernails than the company's documents. She was a good watchdog, I'll grant her that – there's no way she was going to let me get past her into her boss's office.

But everyone has to answer a call of nature at some time and when it was Theresa's turn, I seized my opportunity for a quick snoop. The cassette I found was probably worth a spin on the player in my BMW down in the car park – and so it proved.

The plot was definitely thickening faster than my granny's gravy.

You would have thought my wife would have been some comfort at this time of personal worry, but no – bitter and vindictive best describe her attitude to me over lunch at a nearby restaurant. In fact, what I had already suspected from certain evidence I had acquired during that very morning was confirmed out of her own mouth during the meal. Clearly

this was not going to be one of my better days.

That was to turn out to be an understatement. Soon after lunch I was arrested and imprisoned for insider dealing – an innocent man framed by his crooked and cuckolding partner. But languishing in a cell was a darn sight more pleasant than two other endings I experienced in subsequent attempts at completing *Corruption* – I was murdered!

The first time I was blown up, the second I died from a lethal injection – and in a hospital of all places. I knew the City was ruthless and greedy, but never this bad.

Like all Magnetic Scrolls' adventures, *Corruption* features high quality graphics, the only difference being that these concentrate on people rather than places. Some mismatching of a picture's contents with the text still occurs though. Quite often objects are shown in the graphics which are not accessible or recognised in the text. Better connection between the two would aid credibility.

The plot is convincing and the text is as literate, detailed and flavoured as ever – more than one element in the package indicated to me that a well-known Punch writer is involved again.

The puzzles are challenging and focus

around character interaction and information gathering rather than the usual manipulation of objects. An imposed time limit within the game helps build up the pressure and atmosphere.

Corruption is attractively boxed and comes with the expected bunch of goodies which include a casino chip, a cassette containing dialogue and music (to be played at an appropriate part in the adventure), a play manual, and a collection of filofax style sheets providing cypheric hints, a gambler's guide, a business entertainment guide (a deliciously funny parody, this) and much other essential information.

Corruption is yet another excellent adventure from the inspired Rainbird and Magnetic Scrolls team. While targeted at a more adult section of ST owners, this latest offering should appeal to all adventurers, new and hardened.

In *Corruption*, the good guys rarely win – but you'd certainly be a loser if you didn't try it.

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THIS month Gallery features a broad range of themes and styles, as well as bringing together the work of our readers from all around the world.

Matthew Durrance of Surrey kicks off in all-American style with his slightly cartoon-like portrayal of the ubiquitous king of the junk foods. Jason Hone of Middlesex then focuses sharply on the king of the road with a gripping head-on view of the classy – and pricey – Lamborghini Countach.

Atsuko Nienhuis of Holland took our minds off meal time and motoring with his striking impressionist portrait of a vivacious young lady.

Atsuko also manages to bring one of his own homeland's most famous artists up to date in quite a novel way. Past meets present as Van Gogh, depicted very much as in his own self portrait, is seen daubing with the modern micro palette of the ST.

There's a detailed study in still life too from Chris Emmett of Brighton, who captures a beautiful red rose in full bloom. And finally Verona Kellett of Victoria in Australia rounds off with a far-ranging view of the sparsely fertile expanse of the outback Down Under.

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Food for thought

Matthew Durrance

stage, why not send it on disc to Gallery? Remember though, anything you submit must be all your own work. You must own the sole copyright and provide us, in writing, with confirmation of this fact as well as your express permission to publish your work.

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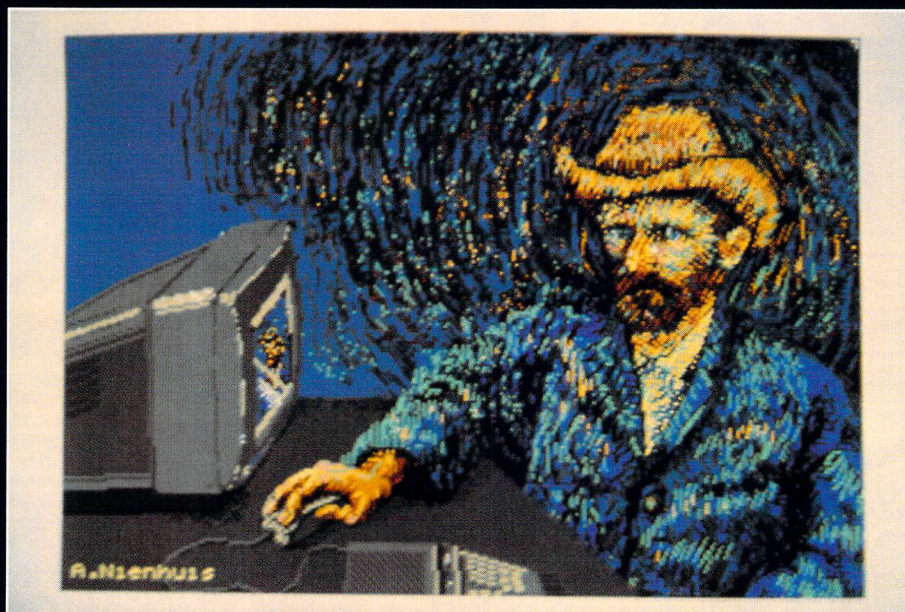


Mean machine

Jason Hone



Mystery maiden



Masters meet

Atsuko Nienhuis



Summer rose

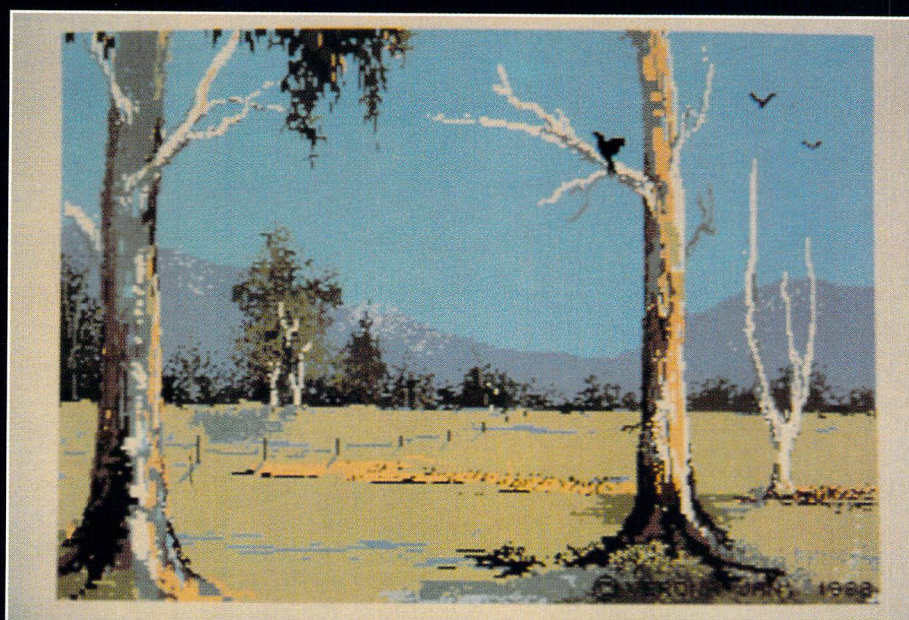
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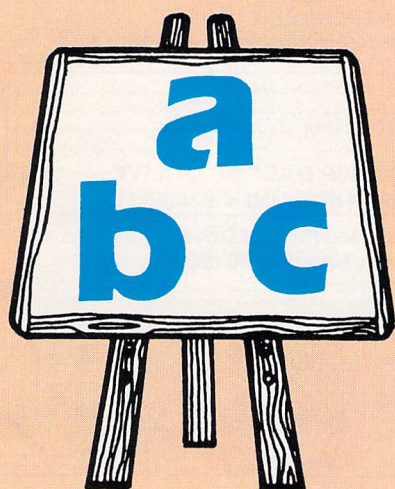
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Easy as



Nic Outterside finds a superb spelling aid for infant school children

SPELL Book is Softstuff's first educational release for the Atari ST, and I am most impressed. Like its author, Robin Kimberley, I was weaned on to micros by way of the ever-dependable BBC model B.

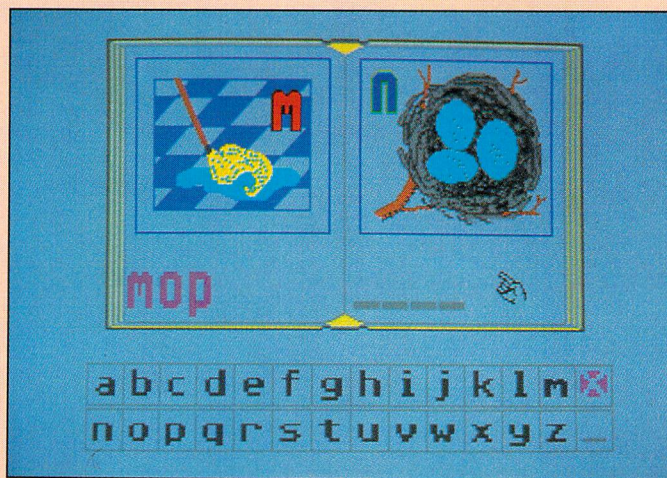
Robin and I have experienced some of the plethora of educational titles available for that machine, and consequently we are both aware of the pitfalls that much of that software fell into.

Programs either contained good ideas which were spoiled by garbled instructions, or precious computer memory was used to produce stunning graphics and sound at the expense of educational content. Worse still, programs were produced by people with little or no experience of the educational processes used in schools and colleges.

Unfortunately, many of those traps are still catching authors of the Atari ST's comparatively small, but steadily growing array of educational software.

Mr Kimberley has learned from seeing children in his school suffer as a result of using poor software. With the aid of an inspired local artist and a primary school headmistress, he has produced this excellent spelling package for use with four to six-year-olds.

The software is presented in a clever



The pictures are delightfully simple and chunky

little folder designed to look like a child's exercise book, with full instructions for parents and teachers stapled inside.

The notes explain that most infant school children learn the alphabet as lower case letters. They are then promptly expected to operate a program on a micro using an upper case keyboard.

This can confuse and demoralise children, as capital letters often bear no resemblance to their lower case equivalents. Spell Book is a totally mouse-driven suite of programs, overcoming this hurdle, leaving the child free to concentrate entirely on the screen, with the mouse used as a pen, selector, rubber and continue signal.

Upon loading you are presented with a beautifully simple introductory screen and the question "How many to play?". You have the option of one or two children to work Spell Book at one sitting.

Click the left mouse button, and a letter grid constructs the alphabet in lower case at the bottom of the screen. A Return icon and a Delete bar also appear next to the alphabet.

The message "Who are you?" next appears and the child has the first opportunity to use the Spell Book letter grid. Most four-year-olds, with a little adult help, can use the mouse to drag the letters of their name from the grid to a spelling line in mid-screen. Pressing the right-hand mouse button will release the letters on to that line.

Next the child is asked to choose his spelling level from very good, good, and not very good. I suggest that to start with, all children begin at the last stage – there is nothing more upsetting for a child than to get every spelling wrong.

To give some incentive for success, each level awards higher marks for correct spellings. However, the highest level only allows one attempt at each word, whereas the lowest level allows three.

The child can then select at which stage of the alphabet he wishes to begin a spelling exercise. Needless to say, all these selections are made using the

mouse to choose from an appropriate set of icons or words.

All information is given by means of a screen which is cleverly designed to look like a classroom blackboard. Then the picture screen will load with four pictures relating to four beginning letters. For instance, the first screen deals with three-letter words beginning with a b c and d.

In turn the child must drag the correct letters from the alphabet grid to spell each simple word on the spelling line. The words in Spell Book have been chosen to be phonically regular; that is to sound as they look.

At all levels a pleasant little tune is played for a correct answer along with a "Well done..." message. Incorrect spellings are dealt with gently, and the child has the chance to try to spell the word again.

I would suggest that Spell Book is used in conjunction with simple phonic books such as Methuen's First Phonics or E. J. Arnold's Sound Sense.

Spell Book does not claim to be the best graphics package available for the Atari ST and as such, the pictures are delightfully simple and chunky.

Softstuff has already prepared a picture/word disc for a bargain £9.95 which can be used to upgrade Spell Book for use with seven to nine-year-olds.

Spell Book is one of the best pieces of educational software available for the primary age child and one I wholeheartedly recommend.

FACT FILE

Product: *Spell Book*
Price: £19.95 (Extra data discs: £9.95)
Supplier: Softstuff, 193 Stetchley Road,
Burbage, Leicestershire LE10 2DY.
Tel: 0455 617426

POINTS FOR:

Good presentation. Easy for a child to use.

AGAINST:

Chunky graphics could be better.

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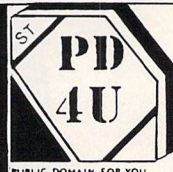
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With just an ST, a dot matrix printer and the right kind of software it is possible to produce professional typeset publications. David Davenport looks at Signum 2 to find out just how it's done



The professional choice

SIGNUM was reviewed in these pages when it was first released, but that was over a year ago. For the sake of the majority of new ST users I will be introducing Signum 2, the latest upgrade to the original program, as if it were a completely new product.

Version 2 has several major enhancements over the original, most important of which are the extended line length – now a maximum of 250 characters per line as opposed to the old 180, and the exciting new capability to handle graphics images as well as text. But more of that later – let's start from the beginning.

Signum refers to itself in its documentation as a document processor. It is neither a word processor nor a desktop publishing system in the fullest sense, but provides most of the features of both as are necessary for the neat, attractive and professional presentation of information on a printed page.

And if this were to be the criterion by which document processors should be judged, then Signum 2 is very clearly a top-end-of-the-market system.

Installation

Before you can run the program you must first install certain routines that the system requires in memory. This must be done every time you want to use Signum, but takes only a few seconds, and so could quite easily be incorporated into an auto folder.

The system is large and powerful, and as a result requires a minimum of 1 Mb of memory – the program itself has a 500k workspace – so it will only run on a 1040 ST or Mega ST. It also requires a monochrome monitor.

Once loaded, Signum presents you

with its main editing screen. This works very much like the edit mode of a word processor, but provides much finer control over the positioning and appearance of material within a document.

The program is completely wysiwyg in the truest sense: Various character fonts appear on screen in the flesh just as they would on paper, and even the line spacing is shown as it will appear.

Along the top of the screen is the main menu bar, which works in typical Gem fashion through point-and-click options in various pull-down menus. These are used mainly for file handling, page formatting, and the setting of any precise parameters requiring keyboard input.

Below this main menu bar is the page ruler, through which the left and right margins and tab markers are set. The ruler calibrations break down into tenths of an inch, and you can set, delete and edit its various settings visually using the mouse.

The Functions menu on the main menu bar allows you to adjust the basic settings for typing in text, such as turning on and off automatic insert, line feed, line insert, hard carriage returns, and indentation.

Down the left-hand side of the screen is the attribute line. This shows the status of any one page line with regard to the presence of paragraph markers, special protected areas, and major lines. A major line in Signum is a proper text line, rather like a normal word processor or typewriter line.

Signum allows very precise positioning of characters on the screen, right down to 1/54th of an inch vertically and 1/90th of an inch horizontally.

This makes true proportional spacing possible, and is ideal for foreign language scripts and scientific/mathematical not-

ations. Text justification can be to the left, right, centre, or full out, where this microspacing is used to best effect, with inter-word spacing exactly even.

A text line's influence extends both above and below the usual positions of characters in major lines as you would find in a standard word processor. Its sphere of operation, which can be exploited for displaying super and subscript text on screen as well as diagonally ascending and descending text, is governed by a base index line distance which you can set yourself through the line spacing options.

Hyphenation control

One text processing feature I was particularly impressed with was hyphenation control. This can be turned on or off, and can be automatic or manual. Signum understands and applies the formal rules which govern where a word can be broken to best effect and where not. This is backed up by an editable exception table file in which you can make further specifications, perhaps for specialised terminology. The manual claims this system is 93 per cent effective.

The function strip along the bottom of the screen holds a range of icons used to toggle on and off the various line and text status settings. Wide text is double normal width, large is 50 per cent larger, and small reduced by 25 per cent.

There's also a trash can that works like the one on the Gem desktop, a clipboard used for temporary block storage operations, an indication of the cursor position, and the icons controlling movement

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between the different work areas within a document.

This bottom strip also allows you to set up to three tabulation markers. For experienced users or anyone who doesn't particularly like the mouse, most options are selectable through fast keyboard combinations using the Escape key.

Importing Ascii

You don't necessarily have to type text into Signum at the keyboard either if you find this method cumbersome for heavy duty work. The system has a facility for importing pre-prepared Ascii text files – as produced by any word processor worth its salt – which means you can do most of your word crunching in a familiar environment then suck it in and polish it up within Signum. Conversely, you can also save off the contents of a Signum document in Ascii format if for any reason you need to transfer the text to another application.

A Signum document consists of up to 100 pages, any number of which can be grouped into sequential chapters. Each page then breaks into three main areas: The textual area – the main body of the page – the header zone at the top, and the footer zone, which can also contain special footnotes.

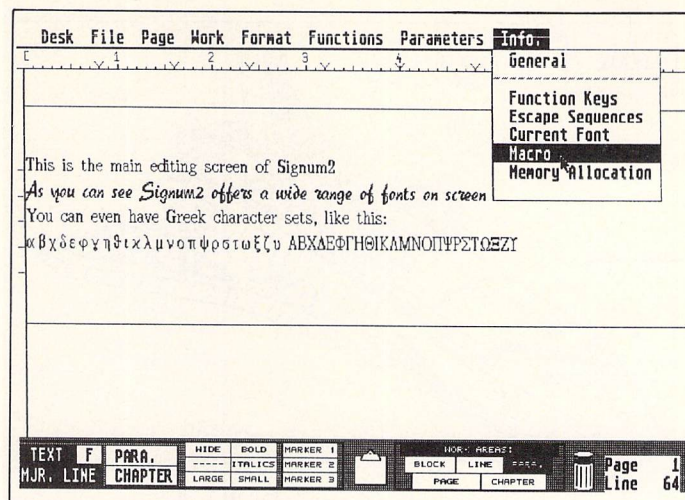
You have precise control over the relative sizes of these three areas down to fractions of an inch, but you can only work within one area at a time. You can go directly to any area by clicking on the appropriate work area icon, and you can flick through a document page by page in the same way.

Pages can be sequentially numbered within chapters, and you can begin at any page number of your choice, thus allowing large pieces of work to be broken down into smaller sections without a loss of continuity. Breaks between pages are shown clearly by a horizontal line.

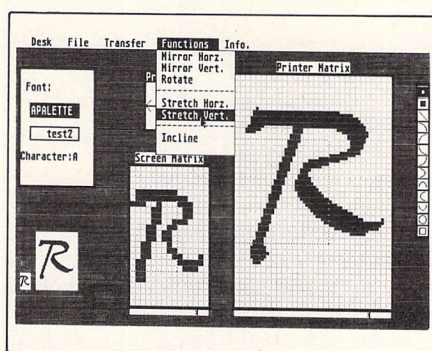
All the usual word processor text editing functions are available. Text sections can be defined by holding down the Shift key and the left mouse button and dragging the mouse to stretch a box from the top left of the required section to the bottom right.

The area defined this way cannot be longer than the size of the current working window, but once defined such sections can be cut, copied and pasted around a document. A section defined in this way can also be used to change all the attributes of a particular block of text, say from italics to bold.

What Signum calls text areas, as opposed to sections, work slightly differently. A text area must be one of the five types of text entity Signum recognises: Block, line, paragraph, page or chapter. This type of block operation can make



Signum's main editing screen showing a few of the supplied fonts



The font editor at work

things very simple if an area of text you wish to manipulate falls clearly into one of these five fundamental blocks.

They can be copied to the clipboard for temporary storage while you do something else, and if you wish you can save the clipboard contents and reload them when required.

Another type of temporary storage provided is the accumulator. This works like the clipboard, but whereas whenever you place something on the clipboard its previous contents are erased, the accumulator allows you to add things as you go along. It will also hold graphics blocks.

This allows you to gather together information from all over a document which you wish to merge later in another spot, making it ideal for major restructuring. Material is added to the accumulator in a line by line fashion.

Graphics

Signum handles graphics by means of hardcopies and sections. Hardcopies are the graphics contents of a full screen, whereas sections are cut-outs from a hardcopy. Graphic sections can be moved around and manipulated in a variety of ways just like text blocks.

Hardcopies are the starting point for any graphics section, since sections must always be "snipped" from the former. Signum provides a special utility which once installed as a desktop accessory

under Gem can be used to produce a Signum-compatible hardcopy on disc of whatever is on the ST's screen, just by pressing the Alternate and Help keys. So if you can get something on to the monitor screen under Gem, you can produce a Signum illustration from it.

Signa Publishing has a 3D graphics program in the pipeline, and the pictures it produces will be compatible with Signum 2.

When you cut a section from a hardcopy for the first time you must give it a baseline, which works like a text baseline, and from that point onwards the section is glued in as it were, to that baseline.

This seems a complicated process at first, but in later use it ensures that a graphic section with any text around it can move more synchronously during insertions and deletions to a document.

Scaling graphics

When created, a graphic section takes on a predetermined set of sizing values to bring it to the screen, but if you then find it either too large or too small you can re-scale it as you wish in both the X and Y directions.

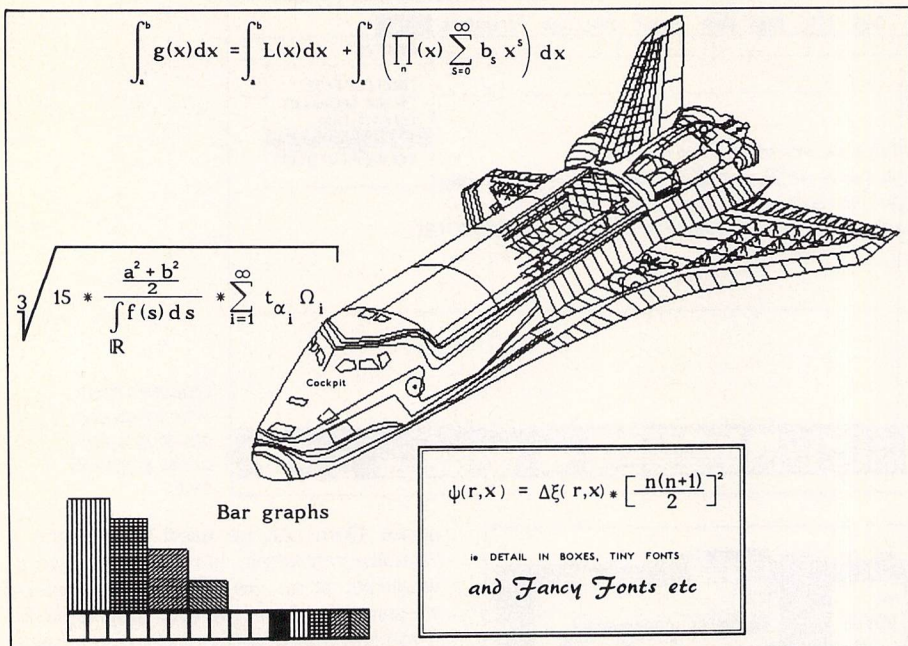
The scaling factors available as standard should be broad enough for most occasions, but if they don't happen to suit your purpose you can always specify the exact scaling manually to pixel accuracy.

Once on the page, graphic images may be switched on or off through the System option of the parameters menu. They are visible when on, but only appear in outline when turned off, to remind you of their presence.

A fairly wide range of fonts is supplied, all of which can be bold, italic and so on. The program will output these to 9 pin and 24 pin Epson-compatible dot matrix printers, and is supplied with printer drivers.

The system will work to the highest quality with a laser printer, and although laser drivers are not included with the

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You name it...Signum 2 can put it on a page

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package they can be obtained from Signa.

The system's search and replace facilities provide everything you'd expect to find in a good word processor, such as replacement of strings or whole words either automatically or after confirmation.

However, this function is much more versatile than it at first appears, because it lets you specify not only a character string for replacement, but also specific fonts and the precise text attributes. So you could, for example, replace an underlined bold occurrence of one word in one font with the same or another word in bold italic in another font.

If you have a complete change of heart on your standard font for a document, all occurrences of one font in the whole text can be instantly replaced by another just by loading the substitute in its place – although this can be dangerous if two fonts are not completely compatible in all respects.

Up to seven fonts can be used on any page, any of which can be displayed in full at any point. Most useful of all, you can set up the keyboard so that the default font is in force when using the keyboard normally. But others are invoked whenever keys are shifted or used in conjunction with the Control or Alternate keys.

There's a very impressive font editor, with which you can either modify the existing fonts or create your own. Since the package works with both 9 pin and 24 pin printers, two font editors are supplied as well as two lots of every font supplied with the package.

The editor works by building up characters pixel by pixel, the resolution of the pixel grid depending on whether you use the 9 pin or 24 pin editor. Most of

the hard work is taken out of the always laborious task of designing characters by a range of special geometrical drawing and block editing functions.

Rather than build things up right from scratch at pixel level, you can draw straight lines, all sorts of curves and ellipses, copy blocks from one part of the grid to another, and rotate, mirror and stretch particular areas.

You can also overlay one character shape on top of another, and when your character is finished it can be scrolled pixel by pixel in any direction to ensure it is in exactly the right place in the grid.

Macro power

Perhaps one of the most powerful features of this package is its macro facility. A macro is an abbreviated keystroke combination or keyword command to which is assigned a sequence of longer keystrokes or commands, so that the short abbreviated form can be used to execute a tedious regular process at the press of a few keys.

By using the upper and lower case capabilities of the ST keyboard this facility effectively provides you with up to 130 programmable macro terms, which even have the power to call each other, thus allowing you largely to automate your most common tasks.

These macro capabilities are very versatile, allowing you to store not only straightforward commands and strings, but also line spacing, fonts, character attributes and powerful escape sequences. You can save each set of macros off individually as a file to be reloaded for specialist purposes whenever you need them.

Signum provides the same precise control in its output as it does on the

screen page. When you come to print something out you have a choice of both horizontal and vertical resolutions in dots per inch, you can pick from light, normal and heavy image density, and there's the same choice for emboldened characters.

You can even compensate for quirks in your stationery or cater for special output requirements, by increasing the size of the top and left margins of a document. You can opt for manual, tractor or cut sheet feeder paper settings, and specify the page length in fractions of an inch.

Documentation

The manual is both detailed and comprehensive, covering every program feature step by step in a well organised fashion.

Topics are subdivided into numbered paragraphs and sub-sections that make the detailed contents index easy to use, and the chapter organisation reflects the overall structure and workings of the program itself.

The manual is primarily a reference text however. Although it explains the system's workings in easily understood terms, it completely lacks a beginner's tutorial to get you started from scratch. This is a shame, since a great deal of time and effort has obviously gone into its preparation.

There are no example pages either, but then the professionally presented manual was itself produced entirely with Signum 2 and a 24-pin dot matrix printer, so perhaps the authors think that is proof enough of the software's capabilities.

I can find very little to criticise in the program. It really is a very sophisticated package capable of producing superb results. It is expensive, but as with everything else in this world, quality comes at a price.

For anyone looking to produce publishable material of a professional camera-ready standard on their ST, Signum 2 is highly recommended.

FACT FILE

Product: Signum 2

Price: £184

Supplier: Signa Publishing Systems,
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AGAINST:

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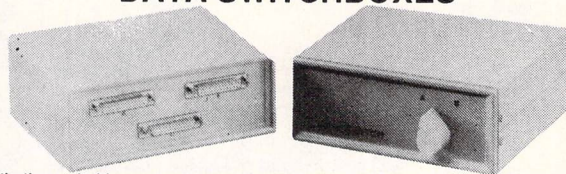
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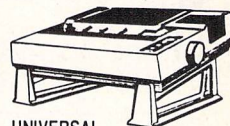
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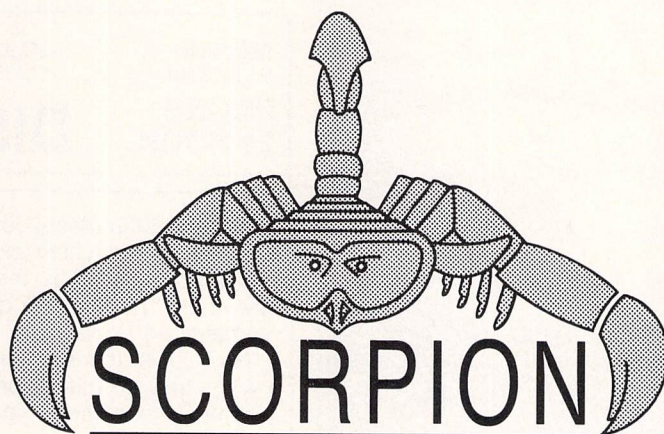
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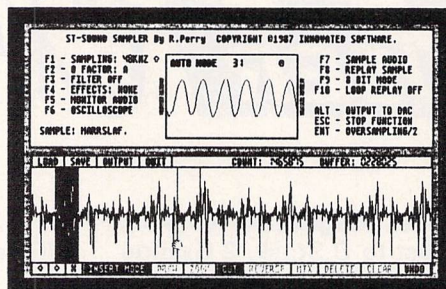
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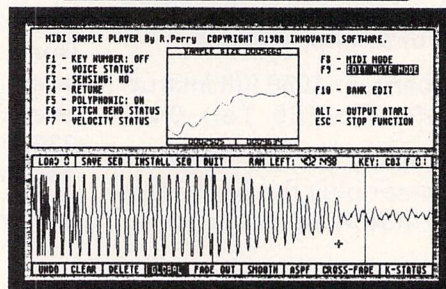
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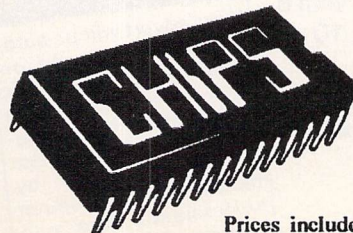
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THERE is quite a plethora of programming languages available for the Atari ST, and it seems that new ones crop up almost every week. After experimenting with ST Basic, many aspiring programmers look around for something a little better. But with such a wide choice available, which language is best?

This is the dilemma facing many people that this book attempts to dispel. By educating the reader and expanding his knowledge of what is available it enables him to make a much better and wiser choice of software.

After all, a great deal of time and effort must be put into learning a new language, so the task is not to be taken lightly.

The author starts with a discussion of computer languages in general, and examines whether or not they are in fact true languages like English and French. She then moves on to chronicle the growth of computer languages.

Finally, in the first section, she compares the structure of languages and the various methods of classifying them, and looks at the ways in which they handle data.

The major portion of the book deals with a description of 22 different languages. This isn't intended to be a programming tutorial, though there are one or two brief listings. However, these are used merely to illustrate a particular aspect of the language being discussed.

A fair proportion of the text is devoted to the history of each language, as once you know by whom, for what reason, and where a particular language was developed it becomes much easier to understand why it is so popular – or not so popular – and why it is used for solving a particular type of programming problem.

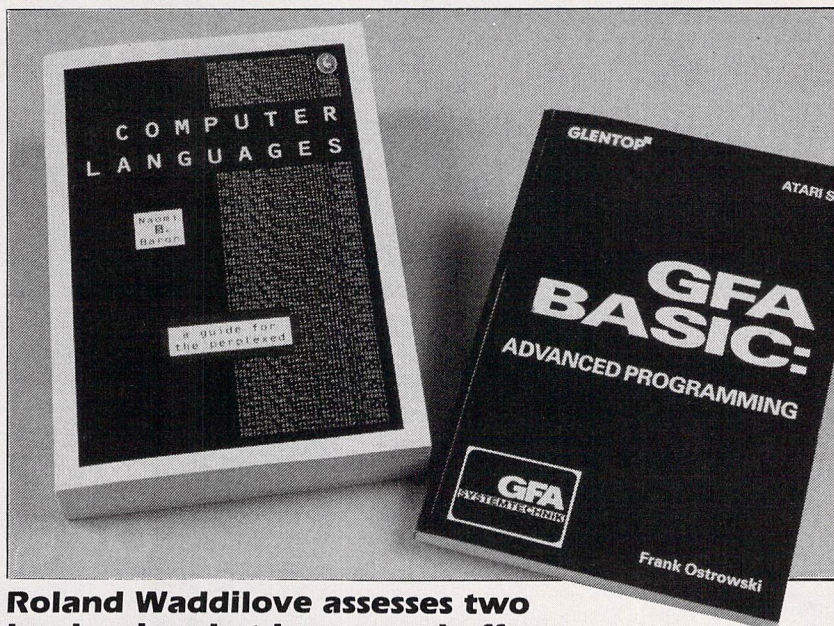
Did you know for instance, that Ada was named after Augusta Ada Byron, Countess of Lovelace, and inventor of the stored program? And that it was specifically designed for controlling military hardware?

It is often said that the camel is a horse designed by a committee. Well, Ada is the ultimate computer language, and was designed by the biggest committee of all – the US military – which explains a lot, if you've ever met the language.

APL – A Programming Language would you believe? – must rate as one of the strangest languages around. It is often called a write only language as once you've written a program, you have no chance of reading and understanding it the next day!

There are many more examples I could

LIBRARY



Roland Waddilove assesses two books aimed at language buffs

quote, but that would spoil your enjoyment of the book. If you have an interest in computer languages, or if you simply want to know why structured Pascal programmers sneer at Basic hacks with their spaghetti-like code, then I can recommend this as a good read.

It won't teach you programming, but it will give you the knowledge and understanding to make a better choice of language to learn.

Straight from the

horse's mouth

Title: GFA Basic: Advanced Programming

Price: £15.95 (book), £19.50 (book+disc)

Supplier: Glentop Press, Bath Place, High Street, Barnet, Herts EN5 5XE.

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IN this superb book, the author of GFA Basic, Frank Ostrowski, reveals many tricks, tips and advanced programming techniques for GFA Basic programmers. It is packed full of programs and to save time and typing, these can also be supplied on disc.

The first chapter examines optimisation – how to increase the speed of execution of your programs – and examples show how to load and save data to disc and sort arrays of items into ascending numeric or alphabetic order.

Chapter two moves on to look at graphics, showing the SETCOLOR

command, how to eliminate flicker and use the raster graphics commands.

Chapter three is a large section devoted to many different topics, including sound, dialogue boxes, input routines, reading the disc and keyboard and several printer routines. There's also a screen magnify routine and a utility to change a picture from one resolution to another, both written in assembly language.

Later chapters deal with the highly complex subject of Gem – a difficult topic for many programmers, and one that is often avoided. The Gemdos, Bios and XBIOS calls are listed, and whenever possible, a short example listing is given to illustrate its use. Often this amounts to no more than a short procedure call, but it is useful nevertheless.

One of the most useful chapters is the one dealing with the AES. This reveals how to create dialogue boxes and use resource files from within GFA Basic. The following chapter follows on with a detailed description of the internal structure of a resource file.

Also included are example listings showing how to create and use icons, dialogue boxes and so on.

The final chapter is devoted to quite a long and complex example showing how to set up and use Gem windows from GFA Basic.

If you've got GFA Basic, then I'd say this book is absolutely essential if you wish to get the best out of your programs. It's well written and there are some superb examples. Recommended.



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ST BASIC has a reputation for being a bit of a turkey – it's often said to be full of bugs. This is quite true, but the language still has many uses, and to prove the point, here is a powerful and flexible utility program written in ST Basic.

The accompanying listing is for a file editor which will allow you to examine and edit any file on disc. It will also enable you to repair corrupted files without having to load them into memory first via a text editor or machine code monitor.

To use the program enter it into ST Basic and save it. Run it in medium or high resolution and at the prompt enter the name of the file you wish to edit. A 64-byte block of the file will be displayed in both hexadecimal and Ascii format, and you'll be prompted with *Next, Back, Alter or Quit?*

Entering N for Next will display the next 64-byte block of the file. Back – enter B at the prompt – displays the previous block.

Alter – A – prompts you for the byte to alter. First enter the number of the byte using the left-hand index column as a guide, followed by the new value. You can enter it in hexadecimal like &H41 or decimal like 65. The final option, Quit, ends the program.

Before I delve into the workings of the program I must point out that there are two versions of ST Basic – the original one, and a new enhanced version. They are quite similar, but by no means the same, and the differences cause many problems when running some old programs and listings.

To see which one you've got first boot up ST Basic, then pull down the Desk menu and have a look at the copyright notice. The old version is 1985 vintage, and the enhanced one is 1987.

The STs currently being sold are supplied with new ST Basic along with a very slim manual – only 29 pages – which does little more than list the commands and their syntax.

Old ST owners were much better catered for, though the situation was by no means perfect. The manual which used to be supplied with the micro was

No mean dump

Examine, edit and repair corrupt files with Julie Boswell's powerful dump utility written in ST Basic

around 240 pages long, and provided quite a few helpful examples.

Now let's have a look at the listing and see how it works. Line 120 makes the output window – the one used by the program for all PRINT statements – full size, and then clears it. The GOTOXY statement moves the print position to the coordinate specified.

The DIR command in line 140 is interesting as old ST Basic doesn't like it appearing in a program, but will happily accept it in direct command mode. It says *Something is wrong* when you enter it into a program.

If you ignore the error message the program will still run, but the line will be ignored. New ST Basic is quite happy with it in a program or direct mode and it prints a list of the files on disc.

Line 160 asks for the name of the file to edit, then opens it as a random access file with a record size one byte long. When reading and writing to a file we need to allocate space for Basic to use as an input/output buffer. The FIELD command in line 180 tells Basic that the string *buffer\$* is the buffer and is one byte long.

The variable *ptr%* is used as a pointer for the byte to read or write to the file. The subroutine labelled *dump* starting at line 220 does most of the hard work, displaying a 64-byte block of the file.

Line 330 gets the next byte pointed to by *ptr%* from the file if we haven't gone past the end of it. Line 340 adds the character to the Ascii string providing it is printable, otherwise a dot is added instead. The following line prints out the

byte value in hexadecimal, adding a leading zero for values less than 16.

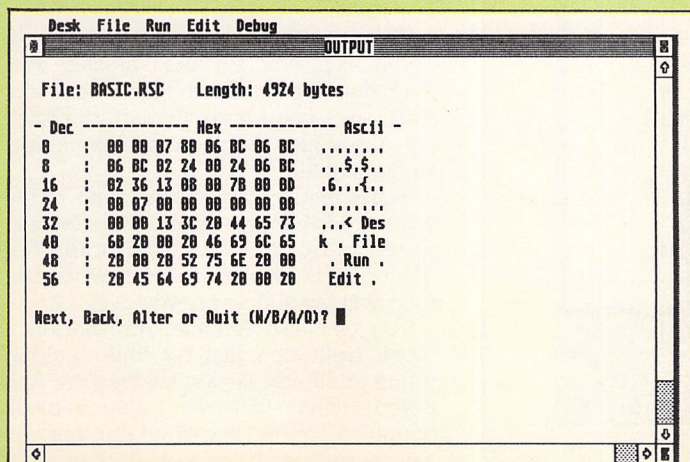
The final subroutine *options* asks you what you wish to do. The major part of it is quite straightforward so I'll skip to line 480 which asks for the new value of the byte to alter. This is input as a string and VAL is used to turn it into a number so that hexadecimal values can be input.

Line 500 inserts the new value into the input/output buffer and the following line writes that buffer to the file.

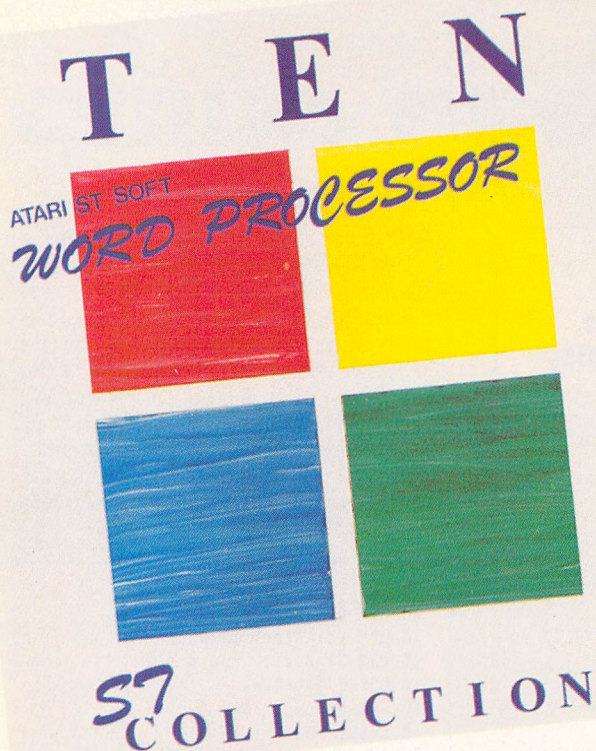
```

10 REM File Editor
20 REM By Julie Boswell
30 REM (c) Atari ST User
40 REM ST Basic (old & new)
50 GOSUB filename
60 GOSUB dump
70 GOSUB options
80 IF INSTR("NnBbAa",opt$) THEN 60
90 END
100 '
110 filename:
120 FULLW 2:CLLEARW 2
130 GOTOXY 0,1
140 DIR : ' New ST Basic only!
150 PRINT
160 INPUT "File to edit: ";file$
170 OPEN "R",#1,file$,1
180 FIELD #1,1 AS buffer$
190 ptr%=1
200 RETURN
210 '
220 dump:
230 CLEARW 2
240 GOTOXY 2,1
250 PRINT "File: ";file$; " Length: ";
LOF(1);"bytes"
260 PRINT
270 PRINT " - Dec ----- Hex ---
----- Ascii -"
280 FOR j%=1 TO 8
290 a$=""
300 GOTOXY 1,3+j%
310 PRINT ptr%-1;TAB(7);": ";
320 FOR i%=1 TO 8
330 IF ptr%<LOF(1) THEN GET #1,ptr%;b%=
ASC(buffer$)
340 IF b%>31 AND b%<127 THEN a$=a$+CHR$
(b%) ELSE a$=a$+"."
350 PRINT RIGHT$("0"+HEX$(b%),2);"; ";
360 ptr%=ptr%+1
370 NEXT
380 PRINT " ";a$
390 NEXT
400 RETURN
410 '
420 options:
430 GOTOXY 1,13
440 INPUT "Next, Back, Alter or Quit (N
/B/A/Q)";opt$
450 IF INSTR("Bb",opt$) THEN ptr%=ptr%-
64+64*(ptr%>127)
460 IF INSTR("NnBbQq",opt$) THEN RETURN
470 INPUT " Alter which byte";n%
480 INPUT " New value";a$
490 b%=VAL(a$)
500 LSET buffer$=CHR$(b%)
510 PUT #1,n%+1
520 ptr%=ptr%-64
530 RETURN

```



The dump routine in action



A find in the

BUDGET software is not often around for the Atari ST and what is available cheaply tends to be limited to revamps or re-releases of old games. The average ST business application, programming language or utility tends to fall into the £50 to £100 price range.

It therefore comes as something of a surprise to see a range of serious software appear at true bargain basement prices. It is all the more pleasing when this range turns out to be of sufficient quality to warrant being used for real applications, rather than a motley collection of cheap and nasty routines.

Robtek has recently released just such a range, aptly named Ten because each of the four programs can be acquired at the incredibly low cost of just under a tanner.

The range comprises a word processor, a database, a disc library

David Davenport tries out a small range of competent applications and utilities selling at a real budget price

manager and a set of disc utilities, all of which have been sold as full-blown packages in their own right at some time. The word processor was known as Colorwriter and the database as Filemaster.

Word processor

Colorwriter works in all three screen resolutions in both colour and monochrome and operates along the lines of the majority of Gem-based ST word processors, making full use of many of Gem's standard features. All text handling

is done inside a main editing window with vertical and horizontal scroll bars, and there is a system of pull-down menus along the top of the screen for disc filing and the program's fancier functions. Most facilities can also be accessed through simple one-letter keyboard commands.

The cursor can be moved around the editing window using the mouse as well as the cursor keys, allowing you to place it quickly on any word or letter within the current edit window. Word wrap is automatically in force, relative to a ruler you can set and adjust through one of the pull-down menus on the main banner.

All the normal text editing keys of the ST keyboard are used, such as forward, delete and backspace. Ctr/Home takes you to the top of the document in memory, and Shift+Ctr/Home takes you to the end. Shift pressed with the up or down arrow keys takes you to the top or bottom of a window, and you can flick through a document page by page by just clicking on the arrows at the top and bottom of the vertical scroll bar down the side of the editing window.

The program gives you the power to handle strange character sets, which you can define to be produced by any key in conjunction with Alternate. These definitions can be saved to disc and reloaded whenever required.

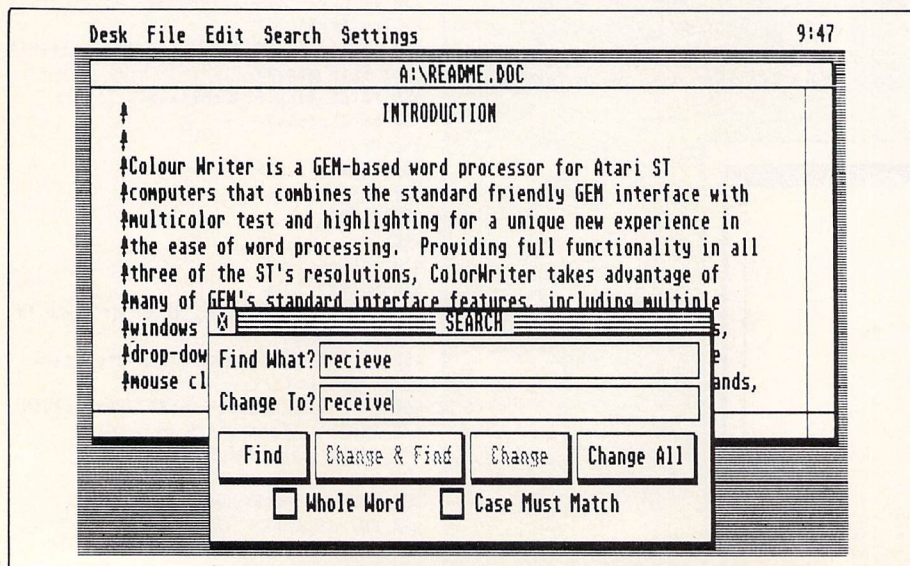
A particularly handy feature is that scrolling does not necessarily move the cursor position, or 'text insertion point' as it's referred to. This means that you can browse forwards and backwards through a document without losing the place at which you were working. You can return to it immediately just by choosing the Show Caret option from the Search menu.

The usual block manipulation functions of cut, copy and paste are present, and can be called into play either through the appropriate menus or by use of the mouse.

Defining a block with the mouse is as simple as placing the cursor at the start of the block to be defined, then with one of the mouse buttons held down, dragging the cursor until the required text area is all highlighted.

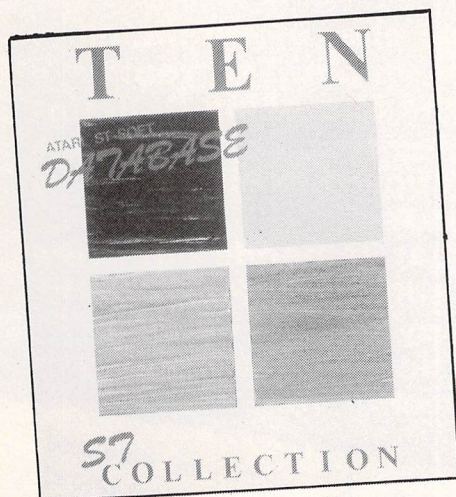
You're not limited to the scope of the current edit window either when defining blocks, because when the cursor reaches the top or bottom of the window its contents will scroll up or down.

You can also lengthen or shorten a block definition just by Shift-clicking inside or outside the set boundaries. And if you change your mind after a block operation has been carried out you can always restore things to how they were



Colourwriter's Find and Replace at work

e bargain basement



immediately by pressing the Undo key.

Search and replace facilities are very good, too. You can replace either globally or individually for each occurrence; you can take case into account or ignore it if you wish, and you can search for whole words rather than all occurrences of a string.

Colorwriter allows you to mark blocks of text in different colours for your own reference on screen, and the search facilities take this into account by allowing you to search for all occurrences of text highlighted in a particular colour.

You can even search and replace within a predefined text block, which is quite an advanced feature.

As for file handling, you can have up to four files open at a time, and swap between them by clicking on a window. If windows are overlaid on each other you can bring any one to the front by pressing one of four special keys.

All file handling is done through the standard Gem file selector boxes, so the program fully supports the use of folder directories.

Colorwriter stores two files for every document. One is a plain text file containing only text and carriage returns, and the other, with the filename extension .FMT, contains all the formatting control codes.

Files can be saved under the name they were loaded with, or deliberately saved under another name, and you can delete files from within the word processor – a very useful function whenever you run out of disc space. You can import and export files in standard Ascii format too, so the program will also interface with most other text-producing software recognising this standard. The maximum file size is around 30k, which should be adequate for most purposes, especially since files over about 20k are

unwieldy anyway, and should be partitioned into smaller chunks.

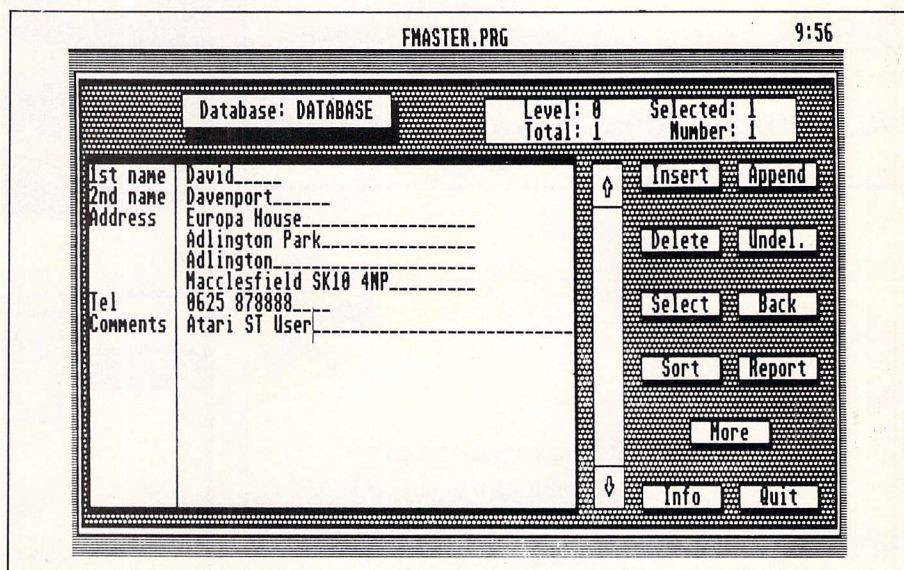
If you need to send special codes to the printer you can easily do so. This is how you would turn on bold, underlining, italic, NLQ and the like within a document. It is somewhat clumsy really, but nonetheless effective.

Although lacking in specialist features compared with the majority of WP packages on sale for the ST today, all in all Colorwriter is a pretty well rounded and very workable program.

For anyone who's looking to carry out

forward. You specify how many fields are required when requested, then go straight on to give them titles and attributes. As soon as the record format is set up you can go on to inserting information, with the normal ST keyboard editing keys all working normally.

The data input routine does have one very annoying quirk though: Once you have completed one field of a record, you must use the cursor keys to move to the next, rather than Enter or Return, which if pressed will prematurely complete the record. This takes ages to get used to and



Entering data into Filemaster

fairly basic word processing with a package that is very easy to learn at under a tenner Colorwriter is a steal.

Database

Filemaster is another stand-alone program in its own right that Robtek is licensing cheaply for the Ten range.

It's a simple card index type database suitable for the majority of tasks most home micro users tackle with a database, such as address lists, record collections, and so on.

Like Colorwriter it makes use of all the handy features offered by Gem for file handling. Records can contain up to 16 fields, each of which can hold up to 40 characters, which should be adequate for most card index type applications.

Five field types are available: Text, numeric, date, time, and unique fields (for such things as automatic membership numbers for clubs).

Setting up a database is straight-

had me tearing my hair out. I just can't see why anyone should want to program it that way.

The same screen is used for adding, editing and viewing records, so you can edit records as you are browsing through a database. You just specify which type of action you wish to carry out on a record by clicking on one of the function boxes at the right of the screen.

You can insert a blank record at any point, then fill in the necessary information and append it to the database. You can delete individual records, and restore them in the same session if they are still in memory.

Filemaster is at its best when it comes to searches, or selections as it calls them. Opting for the selection menu from the main menu bar brings up a dialogue box, and choosing a record to search on is a doddle – just click on the appropriate field name from the selection shown on

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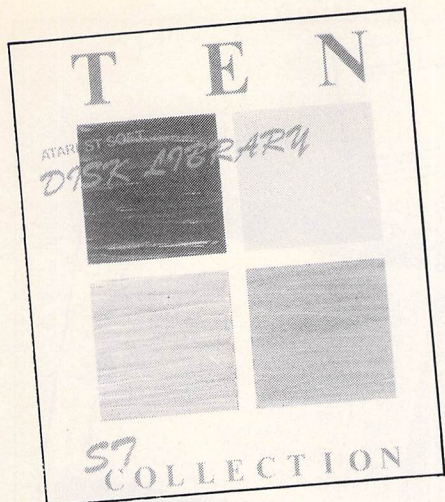
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the left. You then select a search operator from another selection box in the middle, and enter the text or value you wish to search on.

There's a more than adequate range of search operators too – equal to, less than, greater than, less than or equal to, greater than or equal to, not equal to, and for text fields, including and not including a particular string. Unfortunately you can only search on any one field of a record at a time, so searches of the type *if this is true AND that is true* are not possible.

Once a search has been made, the selection of records captured can be saved to a separate disc file. You can also change a particular field across a whole range of selected records, and quickly sort them into either ascending or descending alphabetical or numerical order, as you can with the entire database just by clicking on the Sort box.

A feature I did not expect to find in a basic package like this, however, is a statistical function. This allows you to find out such pertinent information as what the average numerical value is for a particular field across the whole database file, and makes the program useful for some quite serious business applications.

The program can import Ascii files from other databases and save files in that format for use with other packages, which to my mind is an essential feature in any credible database program, if only for mail merging in conjunction with a word processor.

Filemaster will also allow you to merge one database with another, which to a limited extent provides you with make-shift relational capabilities if need be. As with all the Ten range, the price rules out the possibility of printed documentation, and all instructions are to be found on disc in a file called README.DOC.

With Colorwriter this was both comprehensive and detailed, but Filemaster's only stretches to 5k and is superficial and not really much help. There isn't a sample database to get you started either,

although documentation suggests that there is.

As a basic card index Filemaster is certainly competent enough to handle most simple filing applications, and since it can export Ascii files would make a cheap complement to your word processor if you want to mail merge and don't already have a database.

I didn't feel very happy with the program's general mode of operation though, which I found rather over-simplified and, ironically, rather confusing at times as a result.

Disc Library

The Disc Library utility supplied as part of the Ten range is incredibly simple to use and potentially very useful. Essentially it provides you with a means of keeping a running record in one or more files of what you have stored on each of your discs, be they single- or double-sided.

Again the program works through

every file on the disc, and every folder and its file contents and size.

The library manager is thus particularly useful in that it allows you to see which folder a file is in on a disc. You can also add comments against each file to say briefly what it is. The information stored in the library is fully cross-referenced and can be sorted by file or folder name, filename extension, the file size, the date or time stamp on the file, or even by the comments.

An information line along the top of the screen gives you a brief summary of how many discs, folders and files are currently held in the library.

There are powerful search facilities, allowing you to quickly find out which disc a file or folder is on, or which discs have a particular amount of storage room left. You can show just the disc names in the library, just the folder names, just the filenames, or show them all.

A disc library can be saved to disc as a file under any name you like and then reloaded whenever you need to find

Desk File Show Order Options				10:02
DISK LIBRARY: 1 disks, 5 folders, 28 files; 39 entries of 2120 maximum				
ROOTDISC	44264 bytes	11 items		
SAUTO	0 08-16-88 00:32a			
FAST_BAS	0 04-18-88 02:03p	Fast Basic programs		
ST_BASIC NEW	0 06-01-88 04:28p	New ST Basic + programs		
ST_BASIC OLD	0 06-01-88 04:31p	Old ST Basic		
UTILS	0 06-01-88 08:53a	Utilities		
ADDRESS CC	4096 04-18-88 02:04p	Backpack data file		
BACKPACK ACC	620 04-18-88 02:04p	Backpack desk accessory		
CONTROL ACC	20080 04-18-88 02:04p	Desk accessory		
DESKTOP INF	555 06-21-88 02:22p			
STORE CC	8992 04-18-88 02:05p	Backpack data file		
TTOL ACC	9921 05-24-88 01:16p	Disc/memory editor		
SAUTO	5464 bytes	2 items		
RAMDISK PRG	5389 04-18-88 02:03p	Backpack		
VERIFY PRG	75 06-21-88 04:24p	Set disc		
FAST_BAS	131568 bytes	4 items		
FASTBAS PRG	123970 04-18-88 02:03p	Fast Bas		
NEW MAKE DISC	1240 06-01-88 05:10p			
DRIVE 'A' DIRECTORY				79853 byte
DESKTOP INF	472			
DLIBRARY PRG	40755			
DLIBRARY ASC	6478			
README DOC	32148			

The disc library manager in action

Gem, this one making particularly good use of its multiple windowing facilities – one window for the main library, one for disc directories and one for carrying out searches.

The program can be operated through a system of menus selectable from a main banner across the top of the screen or by simple keystroke commands.

The library of disc contents is held in memory, and to add the contents of a new disc to it you just log in the disc in question so the program can ascertain its contents. The details will appear in a directory window, and you then file it with a single keypress or choice of menu option.

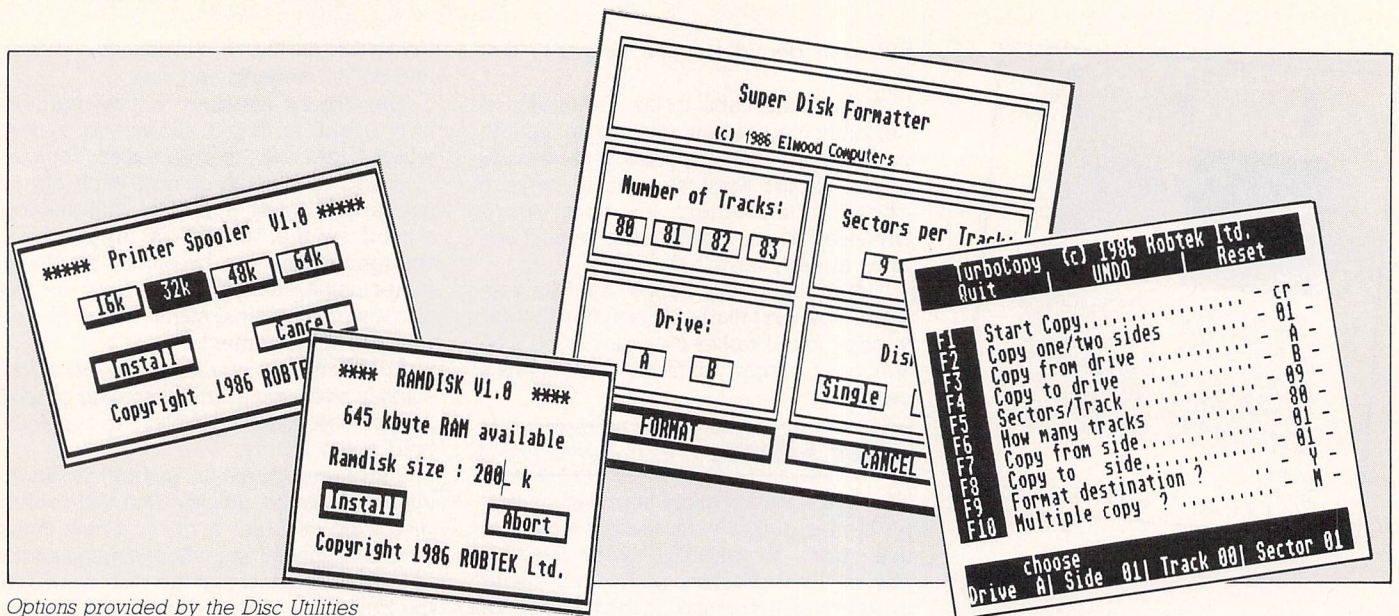
Each disc you keep a record of in this way must have a unique label, as set through Gem's Show Info menu, and the program checks to make sure no two in the library are the same. This label is stored together with the name and size of

something, so you can have as many different libraries as you need. There's a merge facility too, so that you can suck the contents of several libraries into memory to cross reference them and save them as larger combined libraries.

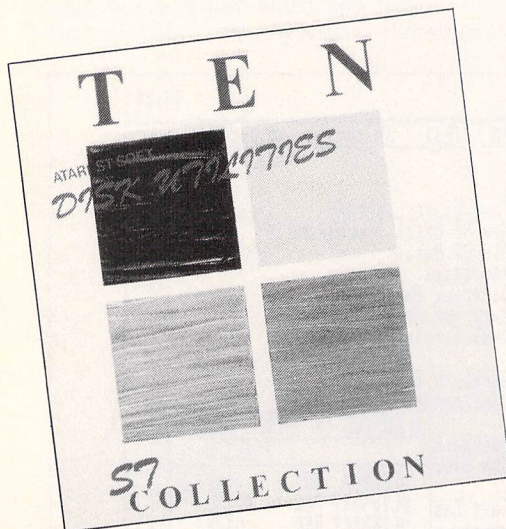
The maximum number of entries a library file can hold are: 150 disc names, 500 folder names, 1,500 file names and 2,500 comments. In practice that's an awful lot of discs. And if you decide to erase the contents of any or even reformat them you can delete the relevant information from the library as easily as you added it, and rename discs too.

The README file that comes with this utility suggests that you take a report printout of your library and keep it at hand so that whenever you make a change to a disc you can mark the printout, then periodically bring your library

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Options provided by the Disc Utilities



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up to date by rerecording the contents of the altered discs and choosing the Update option to overwrite the old information with the new.

There's a built-in report generator to enable you to do this, and it's designed to work with any printer. You install a printer as normal through the desktop, but the library program will allow you to send out control codes for special effects if need be.

Through a dialogue box the report generator lets you specify the number of 40-character columns in the report, the number of lines per page, and even the number of lines to skip on page feeds. This permits some quite complex customised reports, and to give your output that professional touch you can also add a three-line heading.

If you use a lot of discs and regularly need to quickly access information from any of them then this utility is a must. Programmers using high-level languages such as C could find it extremely useful for managing their own specialised lib-

rary routines. It's powerful but very easy to use, comes with extensive documentation on disc, and is well worth £10 of anybody's money.

Disc utilities

This package is the weakest of the bunch and consists of five utilities on a single sided disc – Format, Disc Info, Turbo Copy, Printer Spooler, and Ram Disc. Again there isn't a manual, just a READ.ME file on disc which you can print out providing you have a printer.

The Format utility is provided in two forms – as a desk accessory and as an executable program. Both forms are identical, but are called up in different ways. Format enables you to format discs with up to 83 tracks and either nine or ten sectors per track, single- or double-sided.

This boosts a single-sided disc's capacity to 413k – an increase of 56k over Gem – and a double-sided disc to 838k, an increase of 112k. Of course, this is assuming your drive can handle it, and not all can. The only annoying feature of this utility is that the pointer becomes a busy bee when Format is run from the desktop which makes it a little awkward to select the buttons in the dialogue box.

Disc Info – also supplied as an executable file and a desk accessory – is a very simple utility that reads a disc's format and tells you whether it is single- or double-sided, and how many tracks and sectors there are.

It is intended to be used with Turbo Copy, a program which formats and duplicates discs quicker than normally possible with Gem. This requires you to enter the number of sides, tracks and sectors per track. This utility would be much better if it read this information off the disc like Disc Info.

Printer Spooler is a useful program that sets up a printer buffer by partitioning off

some of the ST's ram. Four sizes are available in 16k blocks up to 64k. If you spend a lot of time hanging around waiting for your printer to finish printing then you'll find this an indispensable time saver.

And last, but not least, is Ram Disc, which as its name implies creates a ram disc. This can be as large as necessary and the size is input when the utility is run. The more ram you have the more useful this utility becomes. Still, I wouldn't be without one even on a 520ST.

Ten pounds may seem cheap for a disc of utilities, but they are really only of public domain standard, and you'll find similar listings for a ram disc, printer buffer and formatter in back issues of *Atari ST User* (July 1988, January 1988 and December 1987).

Many PD utilities around will do the same job as these. PD discs are usually crammed full of programs, whereas the disc here has a measly 46k of programs and 311k of empty space. I would suggest browsing through a good PD library.

FACT FILE

Product: Word Processor

Product: Database

Product: Disc Library

Product: Disc Utilities

Price: £9.99 each

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AGAINST:

The range is let down by the poor disc utilities which are little better than public domain programs.

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In the beginning was the word...

IT was inevitable that the barriers between traditional programs such as databases and word processors were going to be broken by releases that can handle several such tasks.

Of course, integrated software already exists for the ST. But at best such integrated packages still require you to exit one program in midstream to use another, or involve learning different styles of program control. At worst they fall between several stools – amalgamations of half-baked utilities that are just poor excuses for useful programs.

Protex Office – Arnor's new "add-in" database and invoice generator for the Protex/Promerge combination – is radically different from most. Simple but ingenious in concept, it comprises quite simply an integrated set of Protex EXEC files written in Promerge, and so runs entirely from within the word processor itself.

These executable files are also very efficient in that they make great use of the many file, text and disc handling routines that Protex already has on board as it were. The result is a powerful combination with several advantages over traditional packages.

Modifiable code

This package is particularly versatile in that it is by no means a static piece of software. If you are proficient in Promerge you can easily edit and extend the various modules of code yourself to suit exact requirements, or even use them as a base for designing your own.

Protex Office comprises two main parts, Protex Filer, the database, and Invgen, an invoice generator. Like all

What's Promerge?

Protex is an extremely powerful and versatile WP package, with a built-in spelling checker and mail merger. Protex's mail merging facilities work through commands which you can either embed in your text or store in executable files called EXEC files which run from within Protex just like programs.

The command language used is appropriately called Promerge, and constitutes a procedural command language in its own right, with facilities for maths, variable handling, looping and conditional control structures and

a whole host of other powerful features.

So not only does the program allow you to control simple things such as margin and printer settings and the insertion of addresses in letters, it also facilitates calculations, decision making and some quite complex data processing.

Protex Office and Protex Filer are thus just a collection of lengthy and complex Promerge EXEC files, which call each other to chain together and effectively run just like any other program.

Tony Kendle test runs an integrated database and invoice generator extension for Protex

databases, Protex Filer uses records made up of several fields, which can be of fixed or variable length. Fixed length fields always take up a nominated number of lines. Variable fields are useful where the information is unpredictable, for example the lines of an address.

The fixed field option is unusual in that the files created are still very economical on space – many databases such as dBase pad out fixed length records with blank characters.

Data can be entered directly into a Protex file, which makes typing in and

amending the information incredibly quick and simple. Most databases have cumbersome data entry and revision procedures, and mistakes are easy to make and awkward to correct.

Arnor's release enables you to make use of all of Protex's sophisticated editing functions, spell checking and so on. It also means that data for mail merging can already include printer control codes. It is this fluent merging of database and text editing features that gives this program the real edge over other integrated software and makes it such a pleasure to use.

If you insist on being traditional, data can also be entered into an existing file in response to menu prompts, and once a file is created Protex Office can search, sort or select the data according to spe-

Turn to Page 98 ►

```
PROTEXT Document menu      LK  Justify Off      Word-Wrap  ALT-H for Help
Page 1  Line 1  Col 1      No markers set      Insert
```

*** PROTEXT OFFICE MENU *** (v2.00)

```
I - Print an Invoice
C - Print a Credit note
S - Print a Statement
N - Set invoice Number
D - Set current Date
R - Reprint document
L - List invoice summary file
E - Edit configuration settings
F - Filer menu
Q - Quit
```

Enter option letter: i

Current datafile: address. Variable record length, max 8 fields.

*** PROTEXT FILER MENU *** (v2.00)

F - Find single record
 S - Select records
 P - Print/display records
 M - Mail merge
 Z - Sort records
 C - Count records
 A - Add new records to update file
 U - Merge update file into main file
 L - List current file information
 E - Edit current file information
 D - Change current datafile
 I - Initialise new datafile
 O - Protex Office menu
 Q - Quit

Enter option letter: f

The options available from within Protex Filer

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cified criteria. Individual records can be selected from the menu by a simple search that looks for a given string in a given field.

The first matching record is then marked as a block ready for saving, printing, or direct insertion into a document using the swap mode.

The options for selecting several records are more sophisticated. Data can be compared and tested using any of the standard operators – =, >, <, <=, and so on – as well as IN and NOTIN, which test whether a certain string or number is found anywhere in the text.

Multiple conditions

Individual fields or the whole record can be tested, and several checks can be combined using AND, OR and NOT. A maximum of three such tests can be made on the data at any one time, so you

could specify a condition such as *name=Fred AND town=London OR town=Manchester*. There are some specialist databases around that will do more than this, but it's probably as complex as most people will ever need.

Once the selection is complete, all matching records can be displayed, printed or written to a new file for mail merging. There doesn't seem to be an option for only writing some of the fields to a new file though.

The sorting options are extremely powerful and can be done through a menu choice or a stand-alone program called Fsort. Using the latter is more complicated but offers extra features.

The sort options include the usual numeric, alphabetic and reverse alphabetic orders, and there's also a personal name mode which sorts fields like A.J. Smith according to the surname.

Unlimited levels of sort can be specified, so that if two of the first fields are the same alphabetically, the next field – such as the customer account number – can be used to put these in turn into

numerical order, and so on.

gram can bring to your attention to apparent duplicate records within the file. It even does its best to identify records which are merely very similar, to take account of small differences in the typing of a name, and so on.

Special features

The hallmark of a really useful program is the constant cursing you do when you realise how much time was wasted on jobs in the past. An additional feature – a stroke of genius – is that any table of text or figures can be treated as a datafile.

In this case each line is taken as one record, and individual fields must be separated by tabs. The table can then be sorted by any one of the columns of data, say in numerical order, or alphabetically. For many people this will just be a luxury, but if you have a genuine and frequent need for such a feature you'll probably know it only too well, and be running to the shops already on hearing this.

Once selected, and possibly sorted, the data may be required for mail merging. Arnor has recognised that some people find the mail merging facilities of Protex rather complex, and Protex Office supplies you with simple menu-driven options and standard templates for such things as address labels. Again these can easily be edited to meet your own exact needs.

On its own, Protex Filer costs £24.95. The £10 extra required for Protex Office with Invgen must be a bargain for any small business.

Invoice generation

Invgen is really a highly specialised mail merging program. It can read two data files – customer records and a product file giving information on the items a com-

Turn to Page 100 ▶

```
PROTEXT Document Printed 2K Justify Off Word-Wrap ALI-H for Help
Page 1 Line 1 Col 1 No markers set Insert

Option F - Find single record

M - Main data file (music)
U - Update file (music.new)
S - Selection file (music.sel)

Enter file to select from (a/w/s): a
Field names:
f1: artist/composer
f2: title
f3: medium
f4: year recorded
f5: orchestra/performer
f6: conductor
f7:

Enter data string to look for : Dire Straits
Enter field number to search on (N): 1
```

Giving Protex Filer search criteria...

```
PROTEXT Document Printed 2K Justify Off Word-Wrap ALI-H for Help
Page 1 Line 1 Col 48 No markers set Insert

>dn "Field names: "
>sv n=0
>rp
>sv n=n+1 n=n[w1]
>sv s=s[n]
>dn f&n=: &s
>un n=len
>>>
>dn " "
>sv "Enter data string to look for : " d
>sv "Enter field number to search on (N): " f 2
>if (f1)=f
>sv f=f[2:]
>ei
>if f=""
>sv f=" "
>ei
>sv ff=""
>if f=" "
>sv f=" " ff=">sv f0=f1"
>sv n=1
>rp
>sv n=n+1 n=n[w1]
>sv ff=f+f&n+":"
>un n=len
>ei
>>>
>if opt="u"
```

and part of the editable Promerge code that lets you to do this

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pany deals with. Products can, but need not, have one of five levels of VAT additions – to allow for future changes in the law – which are calculated automatically. Conversely, different products or customers may qualify for different discount on normal prices.

Invoices are generated from a standard editable template, and show customer address, account number, invoice number, the products ordered, the total charged, including VAT and so on, and a special message, such as Merry Christmas.

All these options can be entered in their entirety from the keyboard in response to prompts, or taken from the disc files. Some of the entries – such as VAT or invoice number – have default values, but these can be overridden. The program can also prepare credit notes or statements of the invoices sent out, including payments received and so on.

Most good stocktaking and sales accounting programs will, of course, do all of this, but they are expensive and few are as easy to use as Invgen. For many companies, particularly those dealing with services rather than products, such specialist programs usually constitute sledgehammer tactics, and I'm sure

Arnor's solution will be welcomed.

The package comes on one 3.5in single-sided disc and can be run on any ST. It is worth pointing out, however, that if you'll be using Invgen for bulk processing of invoices you'd probably be better off with two drives, since it saves a copy of every invoice created, and together with the program files, these soon swallow up space.

Conclusions

I found the two programs excellent value for money. Unlike many databases, Protex Filer is quick and easy to use. The range of options available is better than those of most competitors, if not quite as good as the top quality releases, and both programs allow you to make full use of the ST's directory structure because Protex itself supports this.

But like all databases, you must make sure Protex Filer is capable of handling the tasks you need it for. Arnor seems to have thought hard though about what features most people will find useful, so the majority should be more than catered for.

Protex Office probably has a more limited niche, in that Invgen will only interest companies with a reasonable amount of invoice work and yet who are not big

enough to require a specialist program.

Even so, it is a remarkably cheap buy and very competent. Both are good enough to save many people having to buy a specialist program, and they both exhibit the typical Arnor quality and attention to detail.

FACT FILE

Product: Protex Office

Price: £34.95

Product: Protex Filer

Price: £24.95

Supplier: Arnor, Protex House, Wainman Rd., Peterborough PE2 0BU.

Tel: 0733 239011

POINTS FOR:

Very easy to use but still powerful. Menu system simplifies many Promerge tasks. Editing data much easier than with most databases. You can change and extend the program code to suit yourself.



AGAINST:

Parts of DB and invoice generator may be too limited for some jobs. Deleting records and some fields is awkward on long files. Two drives recommended to make heavy use of Invgen.

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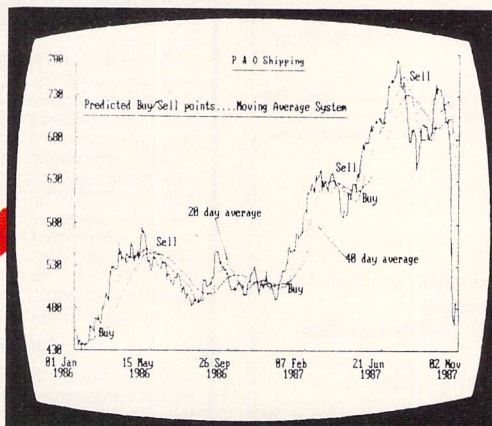
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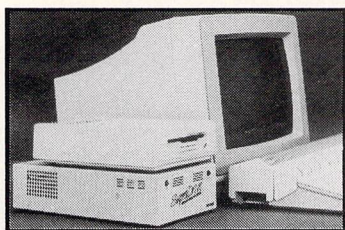
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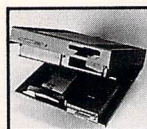


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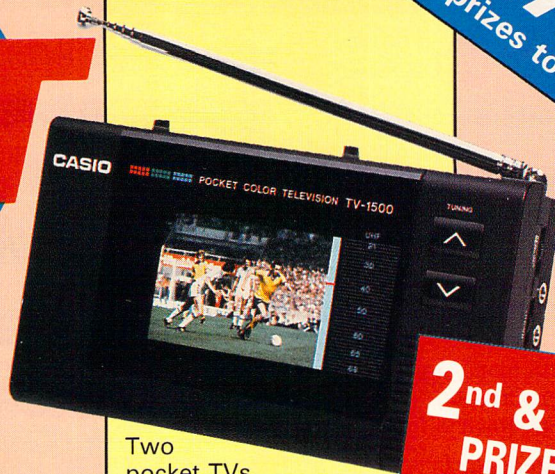
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It's simple yet highly addictive – and what's more there's an excellent editor to allow you to design new landscapes and challenges.

"Although quite simple, this is an excellent game and all who played it found it good fun. It's exciting, challenging and I can thoroughly recommend it."

Julia Boswell,
Atari ST
User,
May
1988

Dungeon Master, Oids and Sundog are making an astounding impression in the USA and in the UK. All these products have been developed by FTL, and its new releases promise to be just as interesting.

WHAT YOU HAVE TO DO

To win one of these superb prizes simply answer the following five questions. Then complete the entry form and post it to us to arrive no later than September 30.

QUESTIONS

1. What do the initials FTL stand for?
2. Isaac Asimov is famous in two careers – what are they?
3. What do the initials NASA represent?
4. In which country was Einstein born?
5. In 1988 which planet is the furthest from the sun?

ENTRY FORM ANSWERS

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Atari ST User, Europa House,
Adlington Park, Adlington,
Macclesfield SK10 4NP.

ARCADE CORNER

THIS month we feature a cheat mode for Creation's **Skyrider** supplied by R. Henderson of Liverpool, who writes:

I recently bought the game *Skyrider*, which in my opinion, is one of the best shoot-'em-ups of recent months. The cheat mode is built into the game and doesn't involve any hacking or pokes, and most of all, it still makes it challenging, though a lot easier.

Hidden in the game is a test mode. To enable this, first play it to get to the high score table. Enter your name as >SHEFFIELD and you will be told that the test mode is activated. Now delete this and enter your real name.

The *Skyrider* can now only be destroyed by buildings or running out of time. Mines and aliens pass right through your ship and can be destroyed with a well-placed blast on the laser. If your joystick has an auto fire button use it.

The maximum number of lives possible is only nine, so beware – it can cause problems. What I usually do is hang around on level one and blast aliens until I reach nine lives and then continue with the game. If a life is lost later on it can usually be regained by blasting aliens.

Learn the layout of each craft so you can navigate certain parts at full speed. This saves a lot of time on later levels. If you are using the cheat mode ignore anything that flies. Don't try to dodge them, it's not necessary.

Also hidden within the game are a number of interesting, but rather crude, quirks. If you type in a naughty word on the high score table – it knows quite a few, and even the word *Spectrum!* – you are given a warning. Do the same again and another warning is given. Do it again and the computer comes up with a message – I can't repeat what this is! – and

locks up. The expletive you enter is replaced with the word *Flowers*.

The scrolling message at the bottom of the title page is incomplete, and once I managed to get the full one to appear. It gives extra credits, says hello to all the *ST* magazines – Atari *ST* User included – and ends by telling would-be programmers to sod off. To see this examine tracks 62 onwards on disc A with a disc editor.

I don't mean to sound like Mary Whitehouse, but these games are played by young children who mess about on the keyboard. Therefore it is quite possible that they could discover these messages while tapping away. How many other games on the market contain bad language hidden in the program?



Skyrider

ARCADE CORNER is an occasional feature where avid games players can help their fellow readers. It's a place where we publish maps, complete solutions, cheat pokes and hints and tips.
If you have anything about your favourite arcade game that you feel would be of interest send it to:

ArCADE Corner, Atari ST User, Europa House,
Adlington Park, Adlington, Macclesfield SK10 4NP.

● The only way to see the messages is to type three swear words into the high score table, or use a disc sector editor – don't look at disc A, track 69, sector 9 if you are easily offended – so they can't be seen by accident while tapping away at the keyboard. We do agree however, that it is unnecessary.

Bubbling Bananas

HERE is a quick tip for Firebird's Bubble Bobble from Mark Conner of Hounslow West, Middlesex:

On the first screen kill only two monsters, then blow as many bubbles as you want, kill the monster and all the bubbles you have blown will turn into bananas worth 500 points each.

Words with Impact

IF you're stuck on the lower screens of Impact from Audiogenic and would like to have a bash at some of the others here are the passwords from Neil Smith of Llanfaes, Brecon, South Wales:

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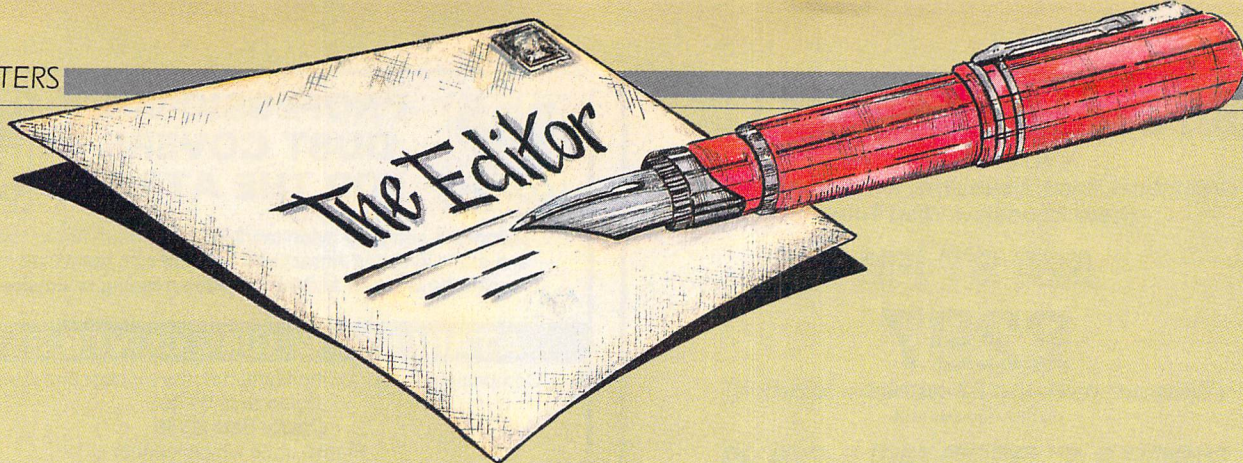
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THE PROGRAMMER'S CHOICE IS WIDE

COULD you advise me of an assembler and a C programming package, or would one of the PD C discs do the job?

Is there so much difference between the various assemblers that I could not run a listing from the magazine written on a different one to the one I buy?

How can I program Gem? I would like to be able to write a routine to use as a menu to load my own programs. Would I be able to do this with an assembler?

How can I make my Basic programs run without having to load in the ST language disc?

When running ST Basic programs, is it possible to turn off the border of the output window?

If I had a modem would I be able to link up to the stock market and buy and sell shares? – **Marc Gibbs, Swindon, Wilts.**

● A free public domain C compiler is available from Goodman PDL, 16 Conrad Close, Meir Hay Estate, Longton, Stoke-on-Trent. Unfortunately, it doesn't appear to work on anything but a 520ST. GST C is a budget C package, but is integer only.

At the other end of the market there's the excellent Laser C package from Megamax reviewed in this issue on Page 21. Generally the more you pay the better it is and the more features it possesses.

Assembler Workbench and Devpac 2 (both reviewed last month) are two excellent packages worth considering. Each assembly language development system has its own idiosyncrasies and often programs written using one will require a few minor changes before they

will compile successfully on another.

Programming using Gem is a complex topic, and one we cannot possibly cover here. Our guide to Gem programming started last month in part one of The Complete Atari ST, and is continued this month.

The only way of running ST Basic programs without first loading ST Basic from the Language disc is to compile them using HiSoft Basic or HiSoft Power Basic. This will also enable you to turn off the border of the output window.

If you buy the MicroLink Modem package you will be able to log on to Prestel where you can buy and sell shares on the stock market. You will also be able to access MicroLink and its many facilities.

ST buyer's guidelines

I AM in the process of buying a micro, having considered the various options of an Amstrad PC, CPC, Spectrum+ and Atari 520 ST.

After searching around and talking to various people I came across Atari ST User. Although I found your magazine to be of great help, I still seem to be no further forward. Therefore I am asking for

your help before I settle for a ZX81 advertised in my local rag.

Does the ST come with Basic on disc, as quoted by Silica, or do I have to buy it?

Your letters pages tend to show problems with the mouse and power supply. Is this likely to be the case with all STs?

According to another letter the manual with the package is next to useless. Can you advise on a suitable alternative that I can buy?

*Can you tell me exactly what the summer pack consists of and what size of drive is on board? Which is the best monitor for general applications? – **Eddi Bradley, Scotland.***

● ST Basic is supplied on disc with the micro when you buy it and does not have to be bought separately. The ST is quite reliable and hardware problems with it are fortunately quite rare.

The Basic manual currently supplied with the ST is quite poor, but the dealer supplying the machine should also be able to provide one of the old Basic manuals, which is much better, though far from perfect.

520STs are now supplied in a pack along with £400 of games software – you won't need to buy another game for quite some time. The drive should be double sided.

You'll be able to run the majority of games and more serious packages with a colour monitor. A monochrome monitor is useful for more business-like applications such as word processing, databases, spreadsheets, desktop publishing and so on.

NEC printer upgrade

I WOULD like to offer a word of caution to any reader thinking of buying an NEC P2200 printer. Due to the ST's non-standard strobe line, graphics dumps tend to get garbled on this printer. Also the ESC-I screen dump command does not work.

I am told by NEC that a new version of the printer's rom has been released to fix these problems.

The way to tell which rom you have is quite simple: Hold down the Print Style button and power up the printer.

It will output details of the rom.

The item of interest is the FW Rev code which will be 09 or higher if the new rom is present. If it is lower don't despair – authorised NEC dealers can obtain and fit an upgrade kit from NEC UK.

*Unfortunately, if you bought your NEC printer from an unauthorised dealer – usually much cheaper as they sell grey import units – you may have problems getting the work done. – **D. Lane, Grays, Essex.***

Mono games wanted

I OWN a 520STFM and SM125 mono monitor, which I use mainly for word processing and storing data relevant to my work.

I should also like to use my micro for playing games when the serious side becomes a little tedious. But as you are no doubt aware, the majority of games software is written for use with a colour monitor or television. I personally cannot really justify the price of a colour monitor

and don't like the lack of resolution on a domestic TV.

I feel sure that many other readers find themselves in a similar position, and would therefore ask that in all future reviews of games software you indicate whether or not it will run on a mono monitor. This would be a good extension to the excellent service which you offer to your readers. – **Martin Cairney, Airdrie.**

● In the three years that the ST has been around, only a handful of games run in monochrome. Unless the review states otherwise, it can be assumed that the game only works with colour systems.

Oh Brother, have I got problems

I OWN a 520STFM which I have connected to a Brother HR5 thermal transfer printer. Although I have no trouble in printing text, listings and so on, all screen dumps have two black lines between each pass of the print head.

I suspect that the command sent by the Atari to set a small line increment is not recognised by my printer. Do you know of any way around this problem or of any screen dump programs that allow you to define the control characters expected by the printer?

On the subject of the new extended version of Basic and the lack of documentation, readers may be interested to know that a 320-page manual about the new Basic is available from Atari UK for £10. To obtain a copy you should contact the customer relations man, Nigel Mossman. – **David Flack, Neasden, London**

● The problem with the Brother HR5 is that it is not quite Epson compatible, so the built in screen dump facility will not work. You'll have to write your own software to dump the screen.

Relying on reviews

I HAVE only had my ST for a few months and as I live abroad at the moment I have very little opportunity to view any of the releases – old or new – without actually buying them.

This is expensive if the software turns out not to be what I was after. So I tend to rely heavily on reviews. However, I find

Star Game for a Star Letter



Each month we'll select a letter of the month – and the sender will receive the program which our reviewers have rated *Atari ST User* Star game. This month, reader J.A. Harris will receive *Virus*, which is reviewed on Page 32. Letters on every subject of interest to Atari ST users are welcome. Send them to: The Editor, Atari ST User, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP.

Thumbs down to sexism and violence

I WRITE in reply to Ms Vogel's Star Letter in the July 1988 issue of Atari ST User.

Firstly as a female ST user I would not be especially interested in hiving off the undoubtedly worthwhile input of female ST users into a male-excluded group.

Secondly, although I have very little interest in playing games either with or on my computer, I do know that many games are blatantly sexist.

As a mother whose 14-year-old son is the lucky recipient of my old 520 system, I know that many games encourage sexism and violence simply by the images and themes they propose.

I very much agree with Ms Vogel's point that software houses "should realise their responsibilities concerning sexism...". Further, I would not buy my son a sexist or violent game as a present – therefore loss of sale.

This brings me to my third point: The very irresponsible and insensitive reply given by yourselves in response to the points Ms Vogel raised. What makes your magazine so sure that the majority of men wish to associate themselves with the very dubious "macho male Rambo type"?

It is responses such as this that serve to encourage and service mistaken and damaging stereotypes. It reflects the sort of attitude that keeps

social anomalies like our gutter press afloat, and does little to bridge the gap between male and female members of society.

Finally, I would like to lend my support to both J. Novak and Des Taylor regarding their comments in the same issue about the commercially inept games orientation of both Atari and general ST magazine coverage.

I have recently written to the designers of 1st Word Plus to ask them to improve their software for those who, like me, wish to use it with the ST for serious scholarly writing and have committed themselves to the ST largely because of its good design and Midi facilities.

Does anyone out there have a recipe for accessing Ancient Greek text through 1st Word Plus? – **J.A. Harris, London.**

● In response to your third point, we're sure that the majority of our male readers identify more closely with a macho male Rambo type than a wimp. Nevertheless, we are quite prepared to be convinced otherwise.

Why is only two per cent of our readership female (according to our recent survey)? What software do our female readers prefer? And what are other (male and female) readers' views on this sensitive subject? Write in to Mailbag and share your opinions.

Turn to Page 108 ►

◀ From Page 107

that even having read these I still don't know enough about the games, like which adventures compare with *Dungeon Master*? Do they have moving graphics as good as or better than DM? Is there a simulator better than F-15 Strike Eagle other than *Flight Simulator 2*?

Even though your review pages are good I think they could be enhanced if the software being reviewed was compared with similar products to provide a common datum from which to base a judgement. Even if it does mean there would be a greater degree of personal opinion in the review content.

I work as an air traffic controller on quite a busy airfield and the work can get rather exciting. As a result I read the reviews involving aviation simulations with added interest. Looking at the latest release for the Amiga there is certainly a winner in *Interceptor*, and it sounds as if there are a few good combat simulators coming out for other machines as well.

But what about the ST? Is there anything on the horizon comparable to *Interceptor*? I hope the software houses are in the process of producing a package which is at least as good. Do you know of anything?

Lastly, could you tell me which of the recent adventure releases have moving graphics and a gameplay comparable to *Dungeon Master*? It may sound like sacrilege to the old faithfuls who consider text-only adventures to be the ultimate, but having battled with *Dungeon Master*, *The Pawn* and *Silicon Dreams*, I enjoyed *Dungeon Master* the most. – **Phil Anthistle, RAF Gutersloh, BFPO 47.**

● Rings of Zilfin from US Gold, and *The Bard's Tale* from Electronic Arts are two good fantasy role playing games that are worth a look.

Flight Simulator 2 is the best simulator around. Have a look at Rainbird's *Carrier Command*, which has much in common with a simulator, though the emphasis is more on combat.

Sticking in the boot

DESPITE the fact that my 520ST, which I bought in November 1985, has Tos in rom and two Cumana 1Mb drives at its disposal, it still does not like booting programs from an AUTO folder. The programs I have tried are all non-Gem and some are specifically designed to be operated from an AUTO folder – such as *Timesave*, a PD program.

This should after a reset, reload the memory locations which hold the time and date values originally saved by the control panel. It works fine when double clicked from the desktop, but does not

Educational software

MY husband recently bought a 520 STFM. He is very impressed and pleased with it, as is our six-year-old son. They both have great fun together, but we also have a four-year-old Down's Syndrome son, and he too would love to join in and play with Dad and his brother.

We would love to get some educational software for both of them, but especially for children with special needs.

Could you please tell us if there is any software on the market which would suit both children? – **Mrs L. Fraser, Kidlington, Oxon.**

★★★

Do YOU know of any software for the Atari 1040 which is written for children of primary school age?

We have recently bought the ST for use by the whole family and, while the

children enjoy fiddling with adult-type games and playing with *Doodle*, it would be helpful to have some software which was more appropriate.

Our own children are aged three and five, but I am sure there must be other families who would welcome you doing some research in this area. – **Jane Plunkett, Enfield, Middlesex.**

● There isn't a great deal of educational software around at the moment, but one or two packages are starting to trickle on to the market. Let's hope it's the start of a flood.

Spell with *Oscar* and *Add* with *Oscar* from AB Software, and *Pre-school KidProgs* are excellent packages. You'll find reviews of these in the May 1988 issue of *Atari ST User*. *Spell Book*, another package worthy of consideration, is reviewed in this issue on Page 77.

seem to get booted when in the AUTO folder.

I have tried other non-Gem programs in the AUTO folder and some seem to work – *MonST*, a HiSoft program is a typical example. Others seem to work partially and some seem to be ignored.

Could there be something wrong with my ST or is there something essential that a program should, or should not, contain before it will operate correctly from an AUTO folder? – **J.H. Taylor, Sunderland, Tyne and Wear.**

★★★

I AM having a problem which I don't think has been dealt with in the pages of *Atari ST User* and which may be of general interest to your readers.

It concerns the automatic running of PRG programs by placing them in a folder labelled AUTO.

I understand from *The Atari ST Explored* by John Braga that all you need to do is open the folder and place the program in it. I have done this with various programs and when the machine is switched on the disc drive whirrs as though it is loading the program. However, at the end all that happens is the menu screen returns and it has to be loaded 'by hand', so to speak.

In *Tricks and Tips of Atari ST* by Data Becker there is a section on auto-running a ram disc. It states that when the desktop is saved the auto-run information is stored in *DESKTOP.INF* – I have noticed in my attempts that the number of bytes in *DESKTOP.INF* does increase, but the only result is as stated above.

I have looked in folders of commercial

software which do auto-run – *Flight Simulator 2*, for instance – and they do not seem to contain any further information than mine. I would be most grateful if you can explain where the difference lies. – **John Davies, Sale, Manchester**

★★★

CURRENTLY with my PD Home Accounts program, I have to click on Basic and run my program from it. If I put Basic in an AUTO folder I end up in low resolution. Could you tell me how I can run a file from an AUTO folder and obtain the program in medium resolution? – **Mal Bannister, Bury St Edmunds, Suffolk.**

● Files in the AUTO folder are run before Gem is initialised, so should not access. The file extension must be PRG – all other files are completely ignored.

Apart from these conditions there aren't any restrictions on the programs. We would suspect the software rather than a fault with the micro.

The information stored in *DESKTOP.INF* has nothing to do with auto-running files. It does however, store the current desktop set up, including the current screen resolution. Save the desktop in medium resolution and it will boot up in medium resolution.

You can't auto-run Basic but you can install it so that it is loaded automatically when you double click on a Basic program. To do this click once on *BASIC.PRG*, go to the Options menu and click on *Install Application*. Type BAS where it says Document type and click on OK.

Save the desktop and you never need load Basic again. Double-click on a Basic file to load it and Basic.

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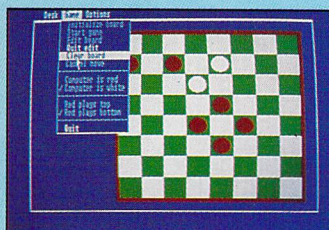
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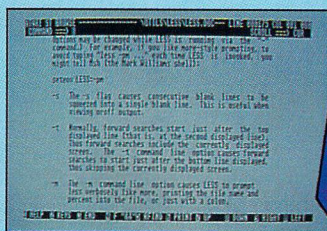
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November issue: Reviews: Knight Orc, Deathstrike, Sidewalk, Tai-Pan, public domain comms, MicroStuffer and Mirage. Create GFA Basic menus. Listings: DIY comms program, memory editor plus Diamond Mine – a multi-screen arcade game.

December issue: Reviews: Forth, sound samplers, four-headed printer, Pascal, Terrorpods, Addictaball, Impact and much more. Listings: Knight on the Tiles and multi-formatter. Construct your own printer driver, choosing a word processor.

January issue 1988: Reviews: Star Wars, Defender of the Crown, Screaming Wings, Bubble Ghost, Mortville Manor, Ranarama, Chessmaster 2000, Ogre, Barbarian, Epson EX-800, Mark Williams C, Graf Tablet, Pro Sprite Designer. Listings: User port software, Printer buffer, The Golden Crown.

February issue: Reviews: Midi Maze, Star Trek, Indiana Jones, Nord and Bert, K-Word 2, TextPro, TuneUp, Fortan, PaintPro. Listings: Alternative function key definer, Sliding block puzzle. Features: Atari ST User show report, Gallery, adventures with Brillig.

March issue: Reviews: Tempus, PD Disc Utilities, PCB Designer, WordPerfect, Winter Olympiad, Wrestling, Tanglewood, Marble Madness, Backlash, Bubble bobble, Frost Byte, UMS, Bad Cat Leisure Suit Larry. Listings: Palette switching, accessory selector, mpg calculator. Features: Magnetic Scrolls, Tynesoft and US Gold interviews.

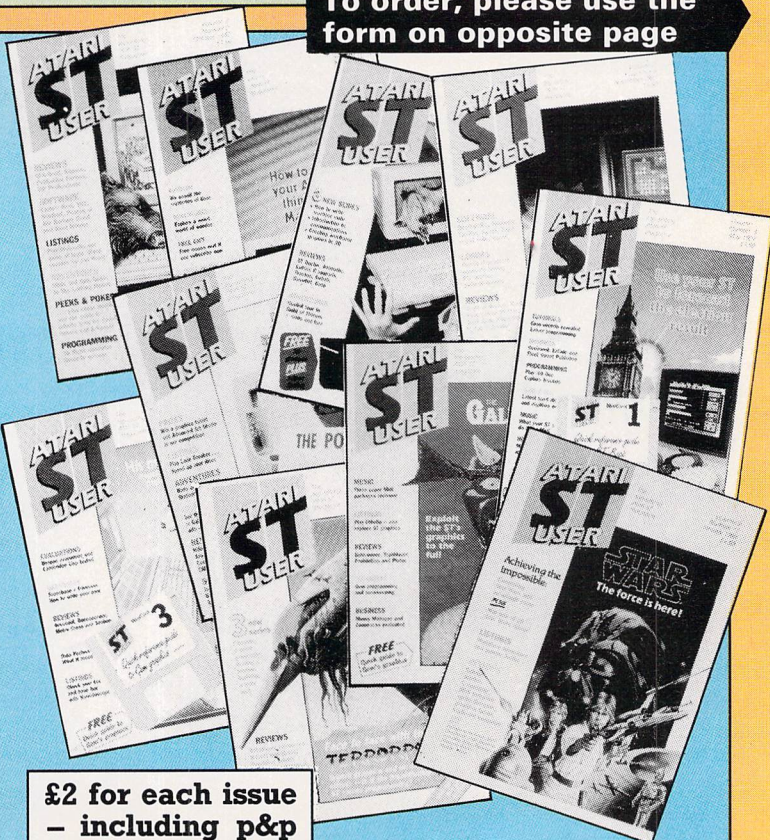
April issue: Reviews: Captain Blood, Eco, Super Sprint, Black Lamp, Wizball, Skyriider, Solomon's Key, Bard's Tale, MCC Assembler, Protecht, True Basic, A Magic digitiser, GFA Vector and Companion. Listings: Mandelbrot upgrade, custom keyboard, disc verify. Features: Gallery, adventures, product guide.

May issue: Reviews: Gem-Forth, PD Forth, Partner, Quick-List, Certificate Maker, Creator, Timeworks DTP, MasterPlan, Grafix. Features: Transputers, Music, interviews with Pete Johnson and CRL, Adventures. Listings: Dynamic relaxation, Mouse designer, prime numbers.

June issue: Reviews: Power Basic, Campus CAD, GFA Draft Plus, IMG Scan, Ruby View, Pascal, Modula-2, Carrier Command plus a whole host of other games and adventures. Features: Atari DTP in action. Learn to draw with ST Art. Help with adventures from Brillig. Listings: Keep track of your discs with Mapper.

July issue: Reviews: Superbase Professional, Lispas, Skyplot, GFA Artist, AB Animator, Quantum Paint, Juggler, Pascal, Panasonic printers, K-Expert. Games tested: Northstar, BMX Simulator, Trantor, Road Wars and many more. Features: Music on the ST, Gallery.

August issue: Reviews: Supra Drive 10Mb floppy disc, Star LC-10 printer, Digicalc, Spectrum S12, Data Manager, Share Master, Devpac II, Workbench, Word Up, Protecht, Word Writer, Thundercats, Vixen Plus many more games. Features: Midi, adventures, gallery, Telecomsoft interview.



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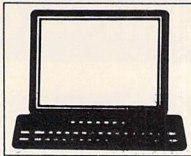
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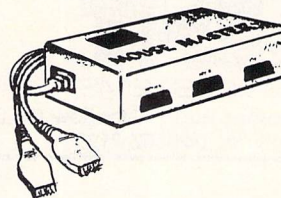
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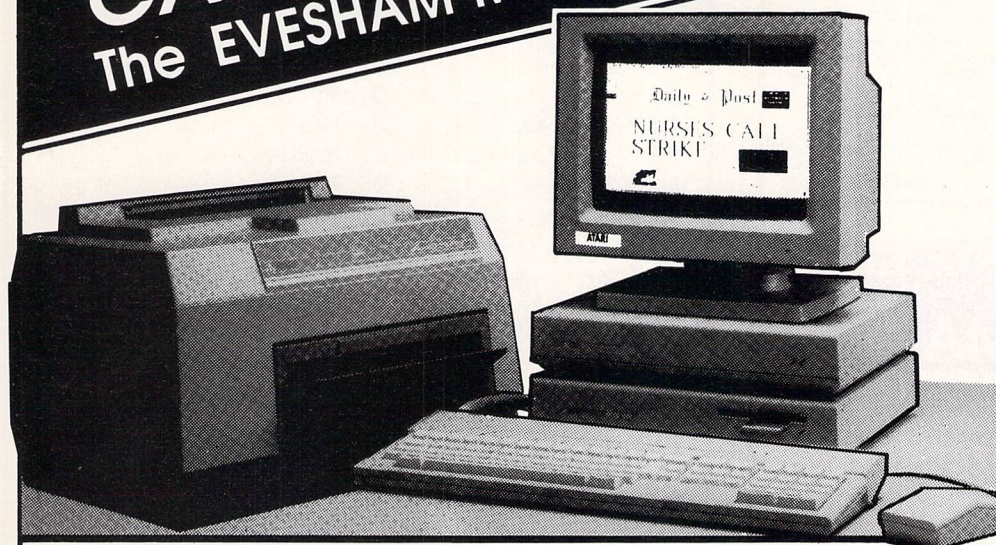


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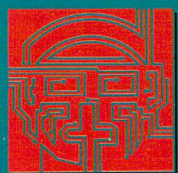
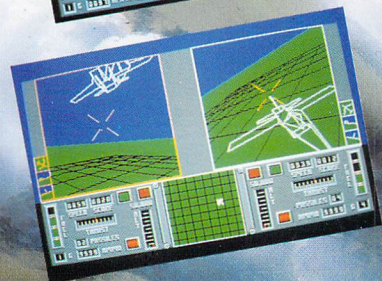
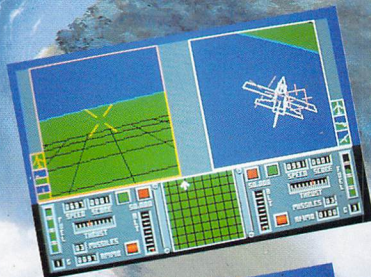


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