

JUNE 1991 • £2.99

# ATARI ST USER

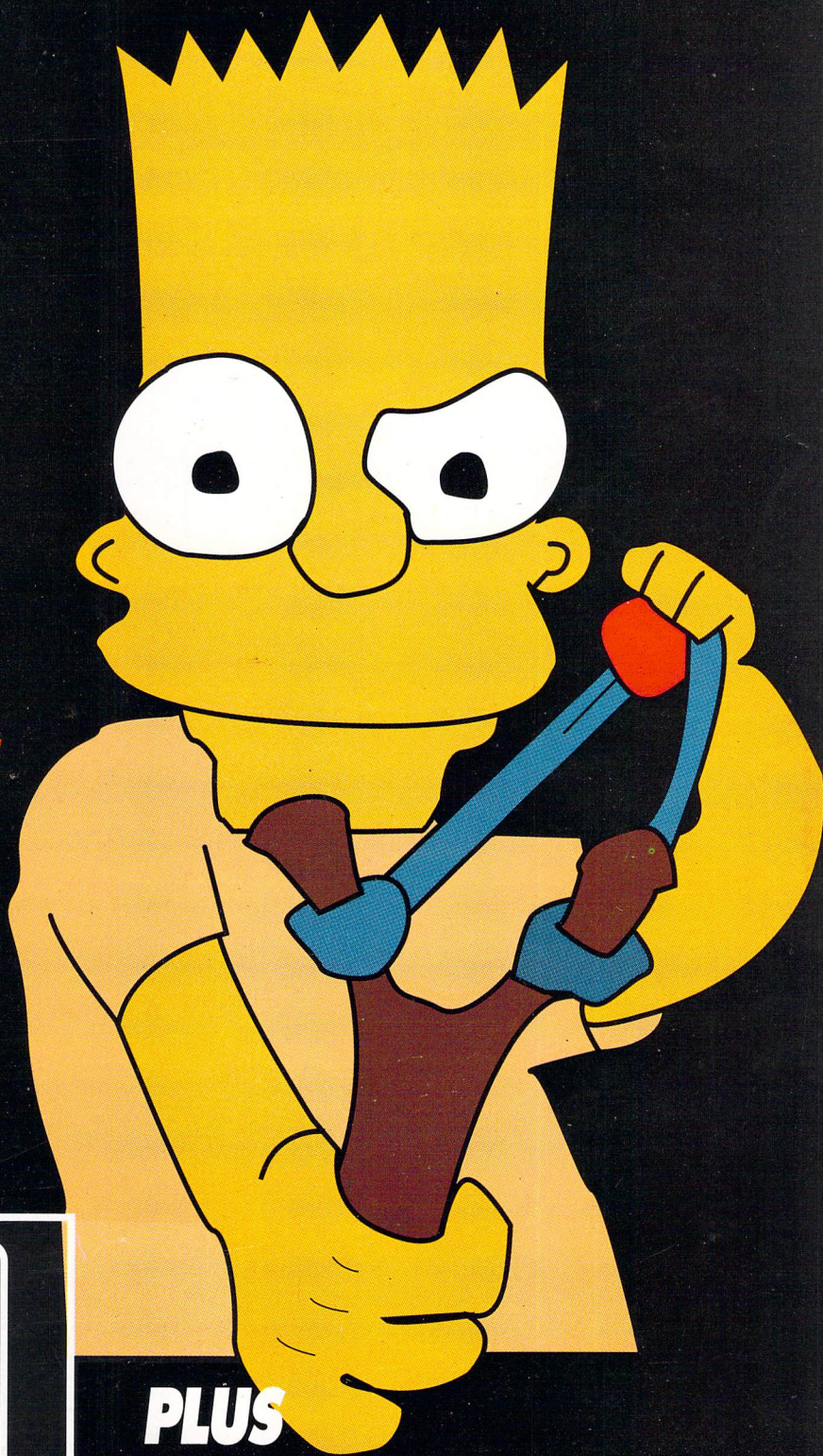
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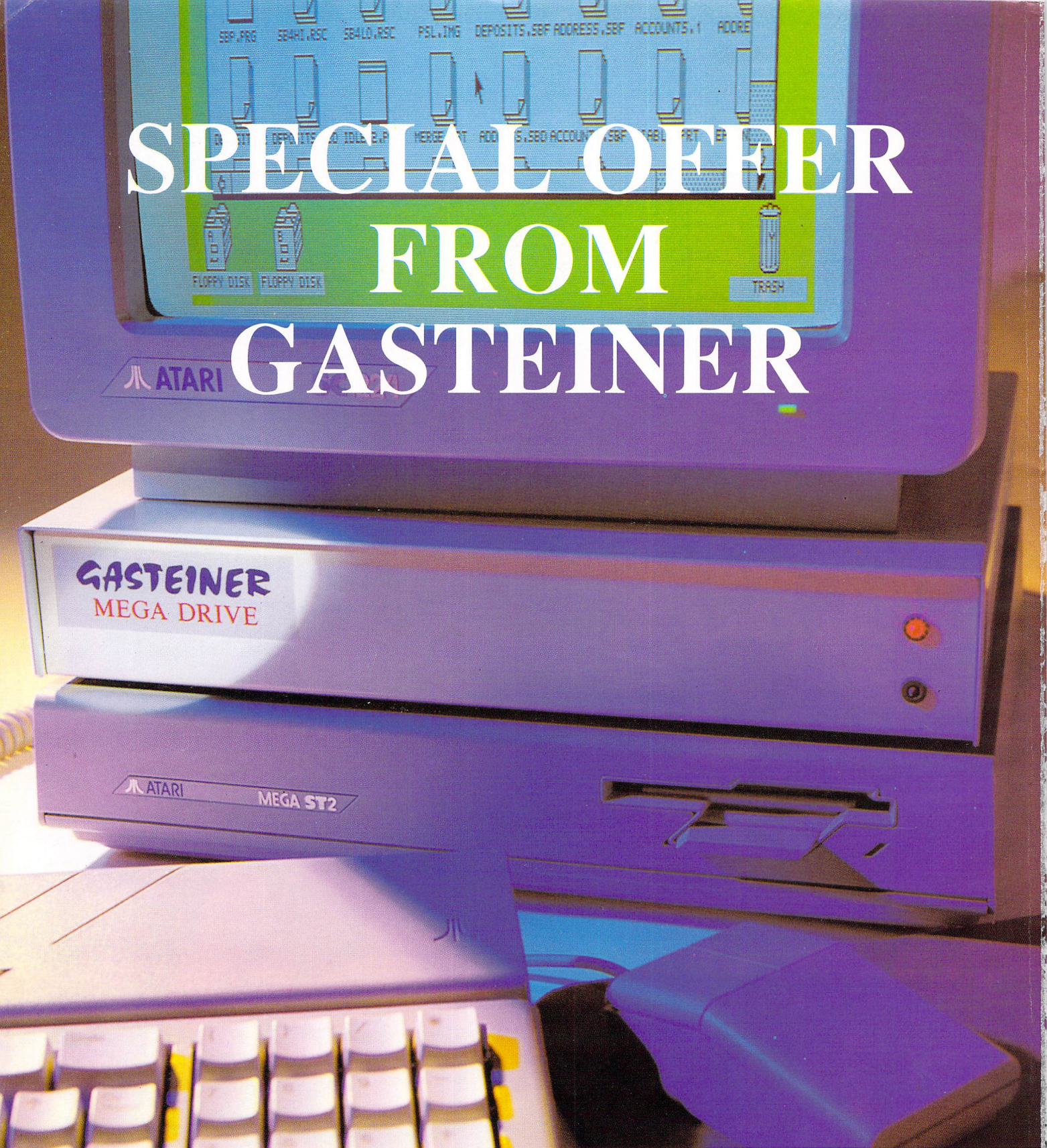
## PLUS

- Move over IBM, look out Mac!  
The ST hits the business market
- Reviews: art, music and business  
packages, programming books,  
new joystick and more
- All the latest ST news

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PUBLICATIONS





A photograph of an Atari Mega Drive computer system. The monitor is at the top, displaying a file manager interface with icons for folders like 'SBF.PRG', 'SB4H1.RSC', 'SB4L0.RSC', 'PSL.TMG', 'DEPOSITS.SBF', 'ADDRESS.SBF', 'ACCOUNTS.1', 'ADDRE', 'DEPA.LTS', 'IDLE.B.P', 'MERGE.PT', 'ADD', 'S.SBF', 'ACCOUNT', 'SBF', 'TABEL', 'PRT', 'EP'. There are also icons for 'FLOPPY DISK' and a 'TRASH' can. The Atari logo is visible on the bottom left of the monitor bezel. Below the monitor is the Mega Drive console, which is light blue. It has 'GASTEINER MEGA DRIVE' printed on the top left and 'ATARI MEGA ST2' on the front left. A floppy disk is partially inserted into the front-loading drive. In front of the console is a keyboard and a mouse.

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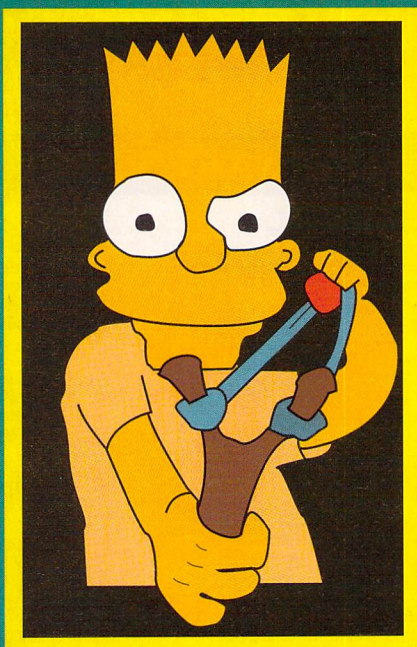
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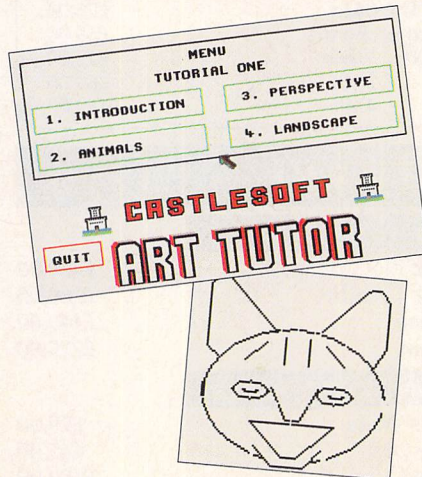
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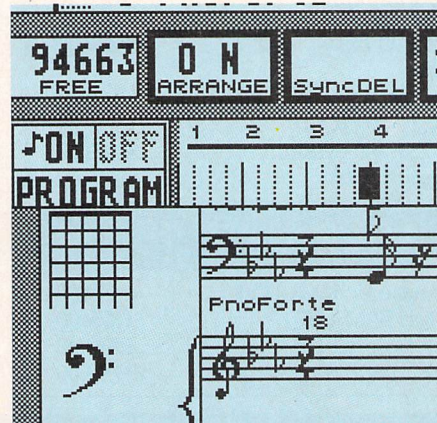
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**See pages 88-89**

There's a great new team at work on the games pages. They're lean and keen, and have been hunting down the hottest games for review, plus the latest news and tips

In this issue you'll find Disc, Turrican II, SWIV, Builderland, Battle Bound, and Tom and the Ghost, plus Trade Secrets, Games News, and Playtest Extra.

Get straight into it...

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**THE ATARI ST USER COMPETITION**

## WIN ONE OF 15 COPIES OF TURRICAN

Before the latest version takes over, you'll need to make sure you don't miss out on the awesome original. And to win a copy you just have to be a teensy bit creative...

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## PLAY TEST

### Reviews



### plus

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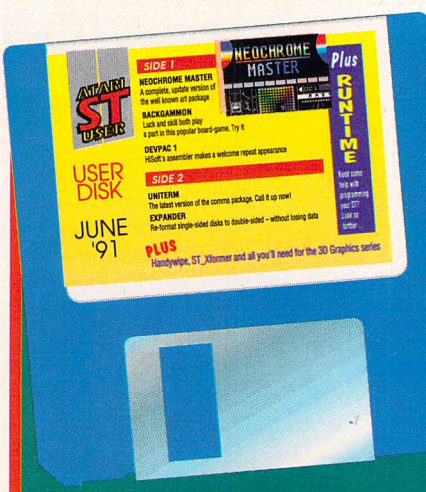
### Gallup Chart Top 20

KEY  
NE = New Entry  
NE = No Entry  
▲ = Up place  
▼ = Down place

RANK	TITLE	PUBLISHER	REVIEW
1	PORTERHOUSE	CHANGING	4.5+
2	LITTLE PUFF	CHANGING	4.5+
3	PRINCE OF PERSIA	CHANGING	4.5+
4	PRINCE OF PERSIA	CHANGING	4.5+
5	PRINCE OF PERSIA	CHANGING	4.5+
6	PRINCE OF PERSIA	CHANGING	4.5+
7	PRINCE OF PERSIA	CHANGING	4.5+
8	PRINCE OF PERSIA	CHANGING	4.5+
9	PRINCE OF PERSIA	CHANGING	4.5+
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14	PRINCE OF PERSIA	CHANGING	4.5+
15	PRINCE OF PERSIA	CHANGING	4.5+
16	PRINCE OF PERSIA	CHANGING	4.5+
17	PRINCE OF PERSIA	CHANGING	4.5+
18	PRINCE OF PERSIA	CHANGING	4.5+
19	PRINCE OF PERSIA	CHANGING	4.5+
20	PRINCE OF PERSIA	CHANGING	4.5+

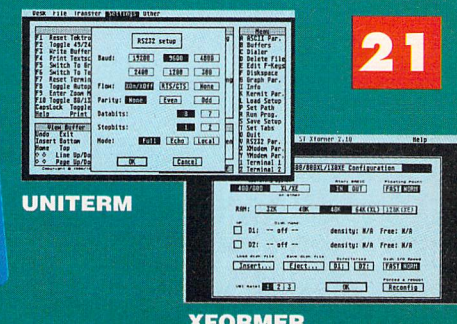
## Mega TURRICAN COMPETITION

Win one of 15 copies of the original Turrican by completing the competition. The rules are simple: play the game, score as high as you can, and enter your score in the competition. The winner will receive a copy of the game. The competition is open to all Atari ST users. The deadline for entries is 31st December 1991. For more details, see page 37.



## COVER DISK

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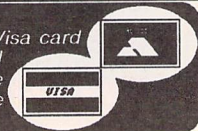
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A LONG-ESTABLISHED British games manufacturer with an annual turnover of nearly £20 million and profits of £1.3 million has threatened to take a small non-profit making public domain library to the High Court over software which it says infringes its copyright.

Libraries around the country were shocked at the news of the giant J W Spear & Sons plc taking action against the South West Software Library. And it's now likely that as a result ST users will find public domain libraries reluctant to include in their catalogues software which might lead to similar action.

The move follows the distribution of programs which Spears say people are likely to believe are endorsed or licensed by the firm. They claim that this could have a substantially damaging effect on their reputation and on customer goodwill.

The games at the centre of the trouble are Scribble and STRabble, both of which have been available from several public domain libraries for the cost of a disk, and which resemble the board-based word game Scrabble which is played by millions all over the world.

The Australian shareware program STRabble, with a dictionary of 45,000 words and which can be played by up to six players was the main cause of the row. It can run on any ST with no less than a megabyte of memory and

# Games giant sues PD library

a monochrome monitor. The other program, Scribble, has been included in the library's catalogue as "a filler" for a long time but has never been popular in this country because it is a German program without an English dictionary.

Since the action, the library has been forced to remove both programs from its catalogue. Proprietor of the South West Soft-

ware Library, Martyn Dryden, said that anybody ordering one of the disks gets a letter saying that the library is unable to supply the program.

The South West Software Library has also agreed to pay Spear's substantial legal costs. Said Dryden: "We disagree with Spear. Our customers know perfectly well that this is user-written software and not a Spear's prod-

uct. It's not appropriate for PD libraries to get lawyers... as a spare time business run by enthusiasts we can't possibly afford £150 per hour lawyers."

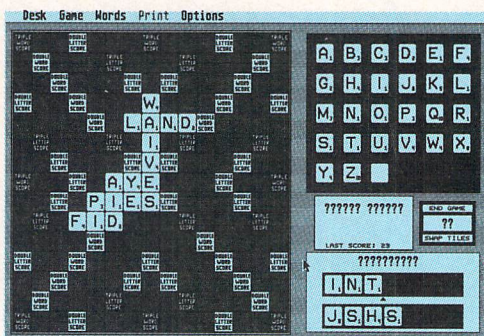
A Spear's spokesman was unwilling to say how the firm discovered the software but said that more than 150 Scrabble clubs around the country operate as the eyes and ears of the company.

From his Enfield office, Spear's spokesman Jeremy Small said that he would not comment on the case because it would be discourteous to the South West Software Library but added that because payment had not been received the case was not fully resolved.

Speaking about similar action being taken with other libraries distributing such software Small said: "The firm is not prepared to accept people infringing our trade mark, which is worth millions [of pounds], and we spend a fortune protecting it.

"The Thermos trade mark has been considerably weakened by continual infringement. It's our policy to protect ours", he added.

**Distribution of the public domain program STRabble led to the threat of the South West Software Library being faced with High Court action for infringement of the Spear's Scrabble trade mark**



READY for take off on the ST is the computer's first airliner simulation which promises to set new standards in flight simulation on home computers.

A320 Airbus will, for the first time on an ST simulation, offer a night-time option which will include airfield approach and runway lighting.

The Thalion (010 49 5241 12049) program will be based on the infamous fly-by-wire passenger jet that made news headlines when it landed in trees during a fly-by at a French air show soon after its maiden flight.

The simulator has been written

## AIRBUS ON ST

by an ex-Luftwaffe pilot who has decided to display only the left-hand part of the control panel and windows, as this is the only part normally seen by the captain during flight.

Part of the program will have pilots taxiing the Airbus from the airport departure stand to the runway threshold, following an airport Follow-Me van to ensure

that the correct route is taken.

Engine sound is described by a company spokesman as being very realistic and an indication of how realistic the simulation is comes when the aircraft lands – as the reverse thrust is activated the Airbus' nose dips.

Flying the plane using instruments only is a major part of the program, and once users become familiar with flying the Airbus they will be able to operate the aircraft to its true weather limits – a runway visual range of zero – at suitably equipped aerodromes throughout Europe.

The simulator will be accompanied by a 200-page manual and a copy of the Pooley Flight Guide, a publication used by professional pilots which details airfield approach and departure aids. For planning routes a map with a smaller scale covering land from Bodo in Norway to the southern tip of Italy is included.

Pilots will start as trainees and gain points for successful flights. Eventually they will move over to the left-hand seat and become captain, at which point the disks can be returned to Thalion for checking and the official captain's wings from the German national carrier Lufthansa will be sent out.

All hazards faced by commercial pilots when they make their regular trips into the multi-million pound simulators can be tried out in A320 Airbus. Engine failures, emergency diversions, wind shear and the Instrument Landing System (ILS) failing during landing in bad weather among other things give the program lasting appeal.

A320 Airbus will cost £34.95 and is expected to be available by September.

Also expected from the German software house soon is an ST version of its Tower FRA program. Putting you in control of the skies above Frankfurt, some of the busiest airspace in Europe, it will be the only program of its type now that the earlier and more basic Kennedy Approach is no longer available.



**ST users will soon have their first opportunity to fly an airliner simulator. It will be based on the A320 Airbus (pictured above) and sponsored by Lufthansa**



# Psygnosis snatches awards

THIS year's European Computer Leisure Awards were awarded and presented on the first day of Europe's leading trade show.

Atari ST User was one of the leading international computer magazines to nominate entries for the awards. Games house Psygnosis walked away with pride after winning awards for software publisher of the year and computer game of the year for its hit program Lemmings.

Lemmings also won the Merseyside firm an award for being the most original game, while its sister program Shadow of the Beast II won best graphics and best sound. Best animation



**Islington's Business Design Centre hosted the European Computer Trade Show from April 14 to 16**

went to Dragon's Lair II, Turrican won best action game, while brain-teasing games The Secret of Monkey Island and Klax picked up awards for best adventure/role playing game and

best mind game respectively.

Origin's Ultima VI won an award for best packaging and F-19 Stealth Fighter won best simulation for games house Microprose.

Atari won an award for console of the year with their Lynx but, sadly, they missed out on home computer of the year which went

to Commodore for their Amiga 500 machine.

In the non-games/technical excellence categories Deluxe Paint from Electronic Arts was the best art package, and Europress Software picked up best home education package for Fun Shool 3.

The show itself was dominated by games. Almost every major firm from Europe had stand space while most other companies attending the event had a connection with the leisure section of the market.

Supporting the serious side of the ST were Digita International – which is soon to announce details of Home Accounts 2 – SDL, HiSoft, Pandaal Marketing, with its new DAATAsound sound sampling package, and Naksha.

## Regrouping the forces

ATARI ST USER, launched by Database Publications in 1986 and which last year moved to Interactive Publishing, is now to come under the banner of Europress Publications Limited. This is a result of the restructuring of all companies within the Europress Group.

Chairman Derek Meakin, who founded the group 21 years ago, said: "With the creation of new subsidiaries in recent years, all with different names, there was a growing danger of the parent group losing its identity. From now on all companies forming part of the group will appear under the Europress banner."

Other companies in the group are Europress Interactive, Europress Software (formerly Database Software and Mandarin Software) and Europress Trade Publications (formerly Specialist Retail Press).

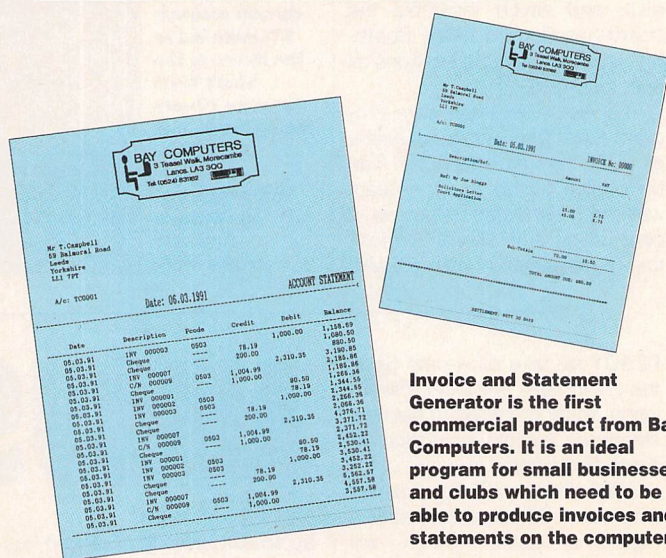
Richard Williams has been appointed publisher, with responsibility for both Atari ST User and Amiga Computing. Other key personnel are Claire Walls (editor), Terry Thiele (art editor), John Butters (news and features editor), Marc Young (technical editor), Jane Conway (sales and marketing manager), and John Burns (circulation director).

Richard Williams said: "With the new company structure and more staff we are ideally placed to make Atari ST User even better value in terms of editorial content, free disk programs and advertising power."

Michael Meakin becomes managing director of the group's holding company, Europress Ltd, with Tim Roberts promoted to group financial controller.



**Atari ST User now falls under the Europress Publications banner. Clockwise from top left the team consists of: John Butters, news and features editor; Terry Thiele, art editor; Marc Young, technical editor; Claire Walls, editor; and Richard Williams, publisher**



**Invoice and Statement Generator is the first commercial product from Bay Computers. It is an ideal program for small businesses and clubs which need to be able to produce invoices and statements on the computer**

## THE GENERATION GAME

SMALL businesses and clubs using the ST for accounts work will welcome a new package, Invoice and Statement Generator, the first commercial program from the author of two popular shareware titles.

The program from Bay Computers (0524 831162) is controlled through the mouse with keyboard and is described by the firm as being simple to use. It is configured so that letter-headed paper can be used, rather than needing to print the user's name and address each time.

Head of the firm and programmer of the software, Brian Campbell, said: "It has come about due to the large number of

requests that I had for a program to be as simple to use as my previous programs but covers the creation of invoices and statements".

At least one megabyte of memory and a high resolution monochrome monitor are required. The firm recommends that the program is installed on a hard disk drive for speed and efficiency.

A demonstration program is available from public domain libraries and the full version can be obtained directly from Bay Computers for £29.95.

Shareware programs from Campbell have included Pools – Expert Results Predictor and Personal Database.



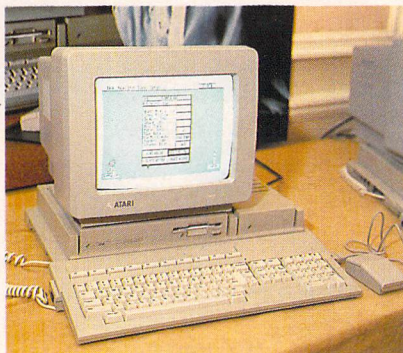
# Serious ST gets support

ST USERS are among those set to benefit from the services of new company System Solutions (071 252 7775), which has been set up with the aim of supplying and supporting the serious side of the Atari market.

The company will sell professional software and hardware, including the new Mega STE and TT030 computers. In addition to the UK, products will be distributed in mainland Europe and North America.

System Solutions has already secured exclusive distribution rights to several products, including a library of more than 100 Calamus fonts, a suite of graphics programs and hardware enhancements.

One of the first ranges of products to be sold will be new accelerators from the USA. They will be aimed at commercial users using Mega STs and will enable an ST to outperform the TT. The cheapest is the 24MHz



The new Mega STE range will be among an exciting line up of products to be distributed by System Solutions

68030 T30-24, which will have a price tag of £938.83 and at the top, running the ST at an incredible 40MHz, is the £1,526 T30-40 which has a maths co-processor and adds four megabytes of memory to the computer.

The firm is staffed by a team of seven people from various backgrounds, headed by Karl Brandt from the Atari Workshop who has a technical background with Atari computers and becomes

the managing director and technical director.

Speaking of the need for the new firm Karl Brandt said: "In the UK you have a situation where there's very little being done for the professional [ST] user.

"There's a need to promote Atari in the corporate sector – a mail-order company cannot cope. Somebody can tell us their requirement and we'll set it for them."

## Falling Stars

FOLLOWING last month's lead by Citizen Printers, printer manufacturer Star Micronics (0494 471111) has reduced the price of many of its models in its professional series.

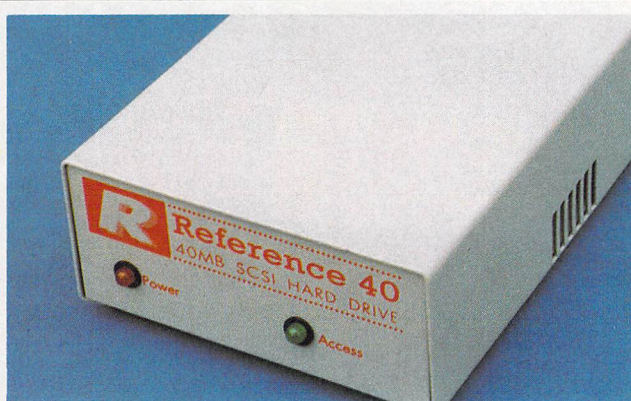
The LC-15 printer has had its price slashed by £100 to £299, the FR-10 by £60 to £399, the FR-15 has a new price tag of £499, a reduction of £100, and the XB24-10 has had £100 knocked off taking it down to £499.

In addition to the fall in price, Star has decided to include a free colour kit and ribbon with its FR-10 and XB24-10 models.

### DO YOU KNOW SOMETHING WE DON'T?

ALTHOUGH Atari ST User has scores of contacts in the ST world we need you. If you have some hot news ring John Butters on the newsdesk now on 0625 878888.

All information supplied will be treated in the strictest confidence and if it's really good a small financial reward will soon be coming your way.



The Reference range of ST disk drives from Evesham Micros has a storage capacity of between 40 and 100 megabytes

## HARD DRIVIN'

AMONG the latest products for ST users from Evesham Micros (0386 765500) is a range of small hard disk drives boasting a storage capacity of up to 100 megabytes.

The Reference disk drives have high-speed NEC SCSI mechanisms and an ICD controller board and software. The drives are available as either 40 or 100 megabyte versions and both have internal cooling fans to prevent overheating.

The drives' light grey casing measures only 10.5cm by 19cm by 5cm, making them some of the smallest available for the ST. The software supplied with the drives is compatible with all issues of Tos up to 1.4 and makes use of the extra features in that version. The drives are supplied formatted.

The 40 megabyte Ref 40 is priced at £399 and has an access time of 28 milliseconds and the Ref 100 with a 27ms access time costs £599.

## ARChive

We brush the dust from the history books to take a look at what happened to the ST in this month...

### FOUR YEARS AGO

Austrian firm Vogler Software struck a deal with Software Express for its products to be distributed in the UK. Among the products was the Jack series of small utility packages... The first dedicated ST training centre was set up on the south coast of England... 150,000 words were put into Kuma's thesaurus package K-Roget... Easy Draw 2 included facilities to flip and mirror images, enhance type size and range, import Ascii text files and make use of new printer drivers...

### THREE YEARS AGO

Programming software Aztec C was one of many products that HiSoft licensed from overseas developers. It generates fast, compact programs with ANSI-standard libraries as well as Unix and ST-specific libraries... A combined technical analysis and portfolio management system called Share Master became available for the ST... Atari bundled £400 worth of software with a 520STFM computer for their summer promotional package... 520STs started to receive double-sided disk drives. The reason for the change from single-sided drives was believed to be the result of supply difficulties which had caused many problems for Atari...

### TWO YEARS AGO

Technical manager of Atari, Les Player, left the firm to head the UK base for German software house GFA... A report issued by Intelligent Electronics/Dataquest found that Atari's share of the UK personal computer market had increased two-fold in 1988... LCL's Micro French course became available for the ST and was targeted at anyone needing to get to grips with French from beginner, up to GCSE level...

### ONE YEAR AGO

Staff at TAM enjoyed a £1,000 win after their ST package The Tipster suggested that the 100-1 Norton's Coin would win the cup... Atari's CD-ROM was shown to more than 100 software developers at a two-day conference for the computer giant... A line up of high quality fonts was released for the PageStream desktop publishing package by New York-based Dennis Palumbo... PC Speed became available for the Mega ST and STE machines...



# DISCOUNT SOFTWARE

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### For The Atari ST

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10 .....	6.95
20 .....	13.00
SONY BRAND MF2DD 3.5" DISCS	
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20 .....	18.95

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Timeworks DTP Tutor .....	24.95
Easy Draw 2 .....	36.95
Supercharged Easy Draw 2 .....	59.95
Mini Office Graphs .....	15.95
Deluxe Paint ST .....	44.95
Canvas .....	10.95
Degas Elite .....	19.95
Spectrum 512 .....	22.95
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Cyber Paint .....	39.95

**TIMWORKS DTP PROGRAM  
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full versions of both programs  
for only  
**£99.95**

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Prospero C compiler .....	74.95
Lattice C v5 .....	99.95
Hisoft Devpac V2 assembler .....	39.95
Prospero Pascal .....	74.95
Nevada Cobol (CPM) .....	33.95
Hisoft Wercs .....	21.95
Hisoft Wercs Plus (inc GDOS) .....	33.95

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-------------------------------	-------

Personal Finance Mgr Plus  
MJC price **£29.95**

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Prodata see "Specials" .....	55.95
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B. Base 2 by B. Ware .....	11.95
Super Card 2 by B. Ware .....	24.95

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Protext .....	(see Specials)
First Word Plus .....	49.95
Word Writer ST .....	36.95
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#### MISCELLANEOUS SOFTWARE

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Replacement for GEM desktop with many added enhancements	<b>OUR PRICE £29.95</b>
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Flexidump Plus .....	31.95
Forget-Me-Clock 2 cartridge .....	24.95

#### SPECIALS

##### NEW!! PROTEXT version 5

Still a very fast, non-GEM wp package, but now benefits from pull-down menus and better mouse control (although all current key press commands are still available), holds up to 36 documents in memory, newspaper style columns, new Collins dictionary, new file selector. Still the best wp for using your printers fonts and effects, rather than waiting for "graphic font" print outs.  
**1 mb required.**

**RRP £149.95 OUR PRICE £99.95**

##### NEW!! PROTEXT version 4.3

For 512k machines, now benefits from the pull-down menus and some other features of version 5  
**still only £64.95**

##### Naksha Upgrade Mouse

280 dpi replacement mouse  
includes mat & mouse house  
**MJC Price £21.95**

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STOS Maestro .....	15.95
STOS Sprites 600 .....	9.95
STOS Games Galore .....	13.95
STOS Maestro Plus .....	52.95
Game Makers Manual (book) .....	11.95

##### CUMANA CSA 354

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quality external second 3.5"  
Double sided disc drive,  
INCLUDING PSU AND CABLE  
**£71.95**

##### PRODATA

Arnor's database has excellent data layout facilities, including a wide range of printer effects, 10 indexes per data file, and uses many of Protext's editing commands

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##### MJC PRO-PACKS !!

Protext v5 and Prodata	<b>£149.95</b>
Protext v4.3 & Prodata	<b>£114.95</b>

##### DEMO DISKS

For Protext v5, v4 or Prodata  
**£5 each**

(cost deductible on purchase of appropriate program)

##### THE COMPLETE COLOUR SOLUTION

**VIDI-ST AND VIDI-CHROME ST**  
The best value video digitiser available for the ST. Grabs mono images in 16 shades from any domestic VCR with a composite video output can be saved as NEO or Degas files for use with other graphic or D.T.P. software

NOW PACKAGED WITH

##### VIDI-CHROME

Colour software upgrade for VIDI.  
Uses a mono or colour video camera with the supplied Red, Green and Blue filters to digitise in 512 colours on an STFM or 4096 colours on an STE

**RRP £119.95 OUR PRICE £89.95**

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Splitter to ST adaptor **£4.95**

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Quartet V1.5 - Stereo 4 voice music synth incs over 100 sounds .....	36.95
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ST Replay 8 - Cartridge + editing software + effects .....	59.95
Replay Professional - As Replay 8 + Midi control software .....	99.95
STOS Maestro (software) - Music editing software for STOS .....	15.95
STOS Maestro Plus - As Stos Maestro + sound sampling cartridge .....	52.95
Playback - Cartridge which gives STEREO sound on STFM .....	24.95

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##### NEW

##### DISNEY SOFTWARE

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factfiles are data for Quiz only. 10 other topics available	

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# WORLD NEWS

*The international ST scene is dominated this month by the latest from the huge CeBIT show in Hanover*



THREE major product announcements by Atari made this year's Hanover CeBIT show the place every ST user wanted to visit.

Generating most excitement were two new notebook-size models, the STPad and STBook, both only slightly bigger than an A4 sheet of paper and less than four centimetres thick.

STBook comes with one or four megabytes of memory and a 20 megabyte hard disk, which is expected to be boosted to around 100 megabytes by the end of the year.

It is powered by eight alkaline batteries, which recharge auto-

board. Instead it uses a two-button stylus as the input device. Atari President Sam Tramiel claimed: "The major advantage is that Tos, the operating system, lends itself for pointing and clicking". Handwriting recognition software in Tos will enable users to simply write to their STPad. Since hard disks are not robust enough, two four megabyte memory card drives are included. STPad is expected to hit the shelves by late September at a price of about US\$1500.

The third major Atari launch was the resurrected CD-Rom drive which, with both RS232 and SCSI ports, is expected to cost about US\$400.

Sam Tramiel said: "We now feel that the market is ready to go in CDs and CD-Roms so we are pushing very hard on the software development and we'll be pushing sales starting in June/July".

There was good news for TT users too. The firm announced memory expansions with eight megabytes of ram going on sale for US\$1,400 and 16 megabytes for US\$2,800.

A major software product now ready to ship for the TT is Unix 5.4. The documentation is being put together and Atari is shipping the developer's version and machines to universities. Sam Tramiel sees the Unix 5.4 release as a major event for the company.

Unix 5.4 with a 210 megabyte hard disk will sell for \$1,600. The complete system which includes an eight megabyte TT, 194 large screen mono monitor and 210

megabyte hard disk costs \$4,000, the network version \$4,500.

The developer package also comprises VFS, XWindows 11.4, Motif, C and C++ versions 1.37 while the network version includes TCP/IP, BSD sockets and remote file sharing.

Sam Tramiel promised: "We're committed to the ST and TT series and Tos. Our R&D efforts are major and you'll be seeing many new products coming out from us in the next 12 to 18 months".

## Midi systems

Because the ST is the Midi computer, most music companies opted to attend the Frankfurt Music Fair instead. However, some of the larger firms were at Hanover.

Steinberg showed Cubase working under proprietary M\*ROS Midi multi-tasking system and Synthworks SY77/TG77. C-LAB displayed Notator notation, Aura music education and Midia analysing programs.

CCD (010 49 6123

1638) demonstrated the long awaited version 1.0 of the Tempus Word wordprocessor-cum-DTP package as well as version 2.03 of the Diskus floppy and hard disk tool.

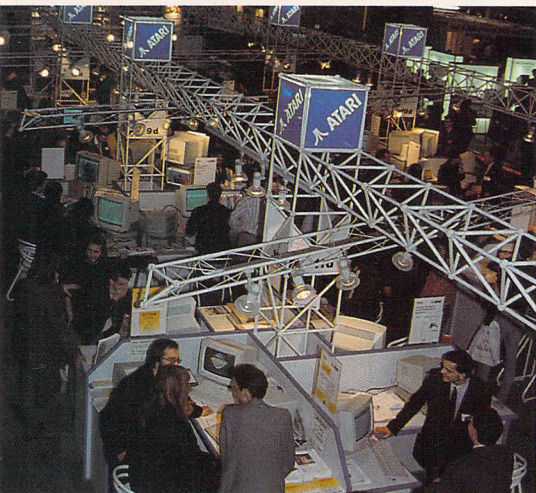
On the DMC (010 49 6123 73881) stand Calamus SL, the colour reincarnation of the famous DTP package, was running. The recommended output device is the HCS colour printer, for which DMC wrote the driver.

Application Systems Heidelberg (010 49 6221 300002) demonstrated version 2.1 of their Mac-like wordprocessor Script which costs DM298 (£100). But the main attraction from the firm was the new Phoenix database which costs DM398 (£150).

Victor (010 49 4153 52323) is looking for a UK distributor for its 1st Base database which runs either as .ACC or .PRG and costs DM248 (£90).

The makers of 1st-Card, LogiLex, a Hypercard-like expert

**Turn to page 15**



**The Atari area at CeBIT was pretty vast. In addition to Atari, many third party firms supported the ST at the exhibition**

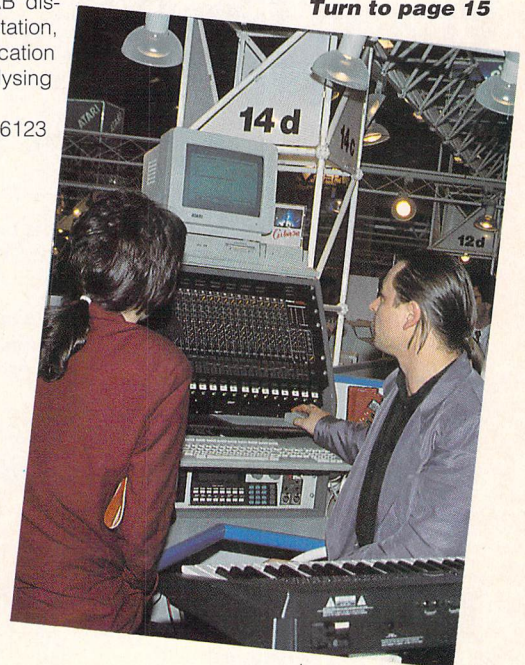
matically when the computer is connected to the mains. If the batteries run down, data will be retained for five hours before being lost.

The display is a 640 by 400 liquid crystal display screen, and instead of the normal mouse control it uses a novel pressure sensitive input device Atari is calling Joypad – a trackball is too thick for the machine.

The most unusual aspect of STBook is that it does not have an internal floppy disk drive. To import data the machine will have to be linked to another computer or an external drive will have to be attached.

Production starts in July and it will cost about US\$2,000.

STPad is an ST without a key-



**Steinberg were there but a number of Midi companies decided to visit the Frankfurt Music Fair instead of CeBIT**



# Your Second Manual

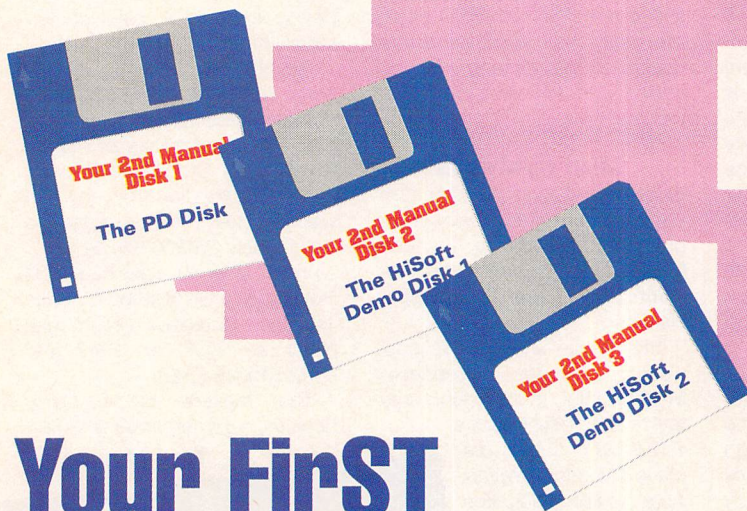
Would you like to get more from your ST? Like to learn about its innermost secrets: the mouse, the keyboard, floppies and hard disks, RAM disks, the screen, the desktop and how to change it etc? Do you want to find out which word processor to use, how to make a printer driver, which cable you need, how to log-on to bulletin boards, where to find public-domain software and much, much more?

Then look no further - Your 2nd Manual has all the answers. Written by Andreas Ramos, the man voted ST Man of the Year 1989 by ST World readers, Your 2nd Manual is a pleasure to read, with an informal, friendly style that makes it easy to learn about the true power of your ST computer.

But Your 2nd Manual has more than just the facts - it has concrete examples of how to mend a broken keyboard, how to recover lost disks, how to keep your mouse squeaking perfectly, even how to make your screen larger!

All this plus hints and tips on what to look for in a word processor, or a DTP package, or a paint package ... where to find Atari throughout the world, how to publish your own software and, as if all this wasn't enough ...

## 3 Free Disks!



## Your FirST BASIC

*the official guide*

The comprehensive reference guide and tutorial to the popular FirST BASIC package which is supplied with your new Atari ST computer.

- Full command reference for FirST BASIC
- Extensive tutorial, guiding you through using BASIC from first principles. Includes many examples plus how to use GEM
- Detailed descriptions of all the GEM and other operating system libraries supplied with FirST BASIC
- Concepts chapter which explains, in easy-to-understand language, the modern, structured aspects of FirST BASIC
- Many technical appendices giving a fascinating insight into the workings of the Atari ST

Use the order form to obtain Your FirST BASIC and we'll include a mouse mat (with the ST ASCII set printed on it), completely free of charge

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## Public Domain Disk

*A disk full of goodies including:*

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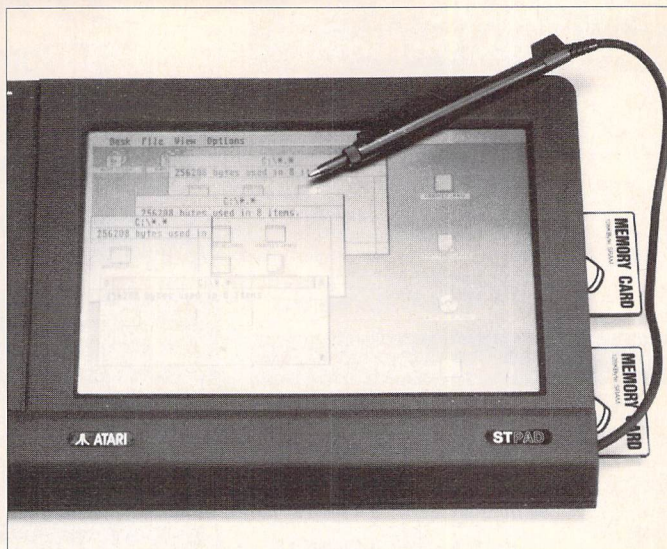
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**Special  
Offer**





**By the end of this year ST Notebook is expected to have a 100 megabyte hard disk and four megabytes of memory**



**STPad made its first appearance at the Hanover show. Expect to see it in the UK early next year**

### From page 13

system DM298 (£100), showed 1st-Lock, an encryption/decryption program to protect data from prying eyes and TT graphic program Janus. Signa Publishing (0252 341600) is responsible for UK distribution of Janus.

Gadgets by Small demonstrated the 68030 SST accelerator which makes the ST fly at 33MHz and the MegaTalk multi-function board with AppleTalk, Serial and SCSI ports. The firm also had its established Mac emulator, Spectre GCR, on show.

Riemann II from B&N (010 49 5231 68302) is an innovative programming system designed to solve mathematical equations. Leonard Tramiel has shown interest so it may even be picked up by Atari before too long.

The perennial Biodata ran BioNet 100, a network enabling an ST to access PCs, Macs and other systems. A TT/ST can be used as both server and client and a VMS version will be available within six months.

Again, Signa Publishing has more information. PAM's NET is another heterogeneous network for multi-platform access. PAM

Software (01049 6131 476312) will supply both software and hardware for a reasonable DM1098 (£400).

For the Portfolio is FolioTalk which comes with a cable for connection to an ST. Eickmann Computer (010 49 69 763409) sells the complete package for DM98 (£35) and is looking for a British distributor.

MAXON (010 49 6196 481811) showed MultiGem, a multi-tasking program for the ST. At a price of DM159 (£55) it will run up to six parallel Gem applications.

Repro Studio ST from Tradelt (010 49 6071 41089) is a program for grayscale and halftone lithography including various graphic processing tools and vector graphics.

TmS (010 49 941 95163), another graphic programming giant, showed TmS Vektor auto-tracer which converts doodles into vectors as they are drawn. Price, DM598 (£200).

SciLab (010 49 40 4603702) showed their SciGraph presentation graphics software which sells for DM599 (£215) and BigScreen which at DM89 (£30) treats any normal monitor as a

window into a 1280 by 960 virtual screen.

All of these graphic programs are at their best using graphic expansion cards offering 256 colours out of 16 million on large screen monitors with resolutions up to 1280 by 960. X/software (010 49 8334 1411) displayed a range of Unix software for the TT

such as X/GemOnX to emulate Gem under X Windows and are working with DMC to port Calamus to Unix.

In all, more than 4,500 exhibitors from 41 countries packed into the 300,000 square metres of exhibition space at CeBIT, and the show attracted 600,000 visitors.

## New sales supremo



ATARI Corporation is generally identified with the Tramiel brothers, who breathed new life into the ailing games consoles and home computer company with their "Power without the price" philosophy and the launch of the sensationally successful ST.

But not many people realise that Atari would not be where it is today were it not for the efforts of another man, Alwin Stumpf.

As head of Atari Deutschland, Stumpf was largely responsible for establishing the ST as a serious machine in the largest European market, building a quarter of Atari's worldwide turnover and transforming the company's games and hobby image.

Without him all the pace-setting serious software from Germany may never have seen the light of day. Stumpf's role has now been recognised at the corporation's Sunnyvale headquarters and the man from Germany has been promoted to president of worldwide sales.

Based in California, Stumpf will have two priority tasks – spear-heading Atari's determined drive to make up the territory lost in the crucial North American market and masterminding the marketing of Atari's latest supercomputers, the TT and Mega STE.



**DESPITE** the ever-increasing number of ST word and document processors and desktop publishing programs hitting the market, one program that just refuses to surrender to the up and coming opposition is Signum.

Perhaps not the easiest of applications to handle, it nevertheless continues to expand its user base among those looking for the ability to compose complex documents – perhaps involving scientific formulae – in unrivalled output quality.

Signum fonts have become a kind of industry standard on the ST, being

## BODONI UP TO DATE

supported by a whole range of arts packages and font editors, and now literally thousands are available, both commercially and in the public domain.

Many, however, lack the typographic refinement of truly professional fonts, as well as the more unusual character symbols required by specialist applications. Enter professional typographer and ST user from Munich, Dr Wolfgang Scheppe.

Desperate for a body text font

capable of living with the best, Scheppe set about creating a Signum version of the classic Bodoni typeface, sparing no effort to achieve maximum faithfulness to the original – which he examined using a 200-year-old original print acquired in Parma, the birthplace of Giambattista Bodoni himself.

Scheppe's Bodoni is not only beautiful but also extremely versatile. It features all Indo-European languages, from Russian to Sanskrit,

from classic Greek to Portuguese, plus a wealth of phonetic and mathematical symbols in the total package of 27 fonts.

Signum fonts can also be used by the Script wordprocessor and the Fontkit Plus font editor makes it easy to convert them into Gdos for use in a gaggle of other text crunchers.

Dr Wolfgang Scheppe is in business as Semiotic Soft and should be able to reply to inquiries in English on 010 49 89 174587.



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**£179.00** Certified 'FORMAT GOLD' Refer to the Jan.1991 issue of ST FORMAT

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With its dedicated monitor input, this model combines the advantages of a high quality medium resolution colour monitor with the convenience of remote control Teletext TV - at an excellent low price!

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Monitor Switch Box - switch between colour / mono monitors without the need for unplugging. Low Price! ..... **£ 13.95**

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ALL OUR ST prices include mouse, user guide, etc. PLUS 5 Double Sided disks full of specially selected Public Domain software including paint program, two wordprocessors, games, graphics & sound demos, desk accessories and utilities.

## NEW! 520 STE DISCOVERY EXTRA PACK

Special new package including the Atari STE, now available at a special new price! Includes the STE with 1Mb Drive, 512K RAM, full digital stereo sound, PLUS extra software including:

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Citizen Swift-24 24-Pin COLOUR PRINTER	£ 279.00
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# THE

**Why do some  
games sell better  
than others?  
John Butters has  
been finding out  
how software  
houses get their  
titles to the top  
of the charts**

**A**lthough 95 per cent of ST owners fire up leisure software on their computers and there's a massive market for games, there can be little disagreement that software houses have to compete fiercely for sales.

More than a quarter of all games fanatics are school age children relying on limited pocket money and earnings from Saturday jobs to buy new software.

Nearly all games carry a price tag around £25, so a great proportion of children are unable to afford even a tenth of releases and so are forced to try to pick the best of the bunch.

In this very competitive market firms have worked hard to push their products before they've even reached the streets. Whatever type, from a fast action shoot-'em-up to wandering around the park looking for clues to progress further in an adventure, a game is likely to have spent a great deal of its production time in the hands of a marketing department.

Games have much more money pumped into their publicity than their software cousins in the business world, with double-page colour advertisements in leading computer magazines such as *Atari ST User* being only a small part of the marketing process.

Most games publishers spend varying sums to promote each of their products, with the marketing bill in nearly all cases being determined by the game's projected net sales.

Once that figure has been calculated they generally plough about 10



# MARKETING GAME

per cent of estimated net receipts into the campaign.

The marketing departments at software houses generally roll into action about three months before the product hits the streets to decide what is to be done to promote the title.

With computer games all the marketing tactics are pretty obvious – there are no hidden messages in background music like in supermarkets.

The story behind the game – the words on the insert card which paint, say, a picture of you being the only man left to save the planet from the nasties – is thought up by the programming team. In the case of film conversions the plot is largely taken from the movie.

This storyline plays a large part in deciding what material is created for the product. Artwork has to be designed for packaging and advertisements, and photographs are

taken of the programming team and screens from the program.

Sometimes posters, stickers, key rings and large books among other freebies are bundled with software in an attempt to make it stand out from the other 10 to 15 launches that month.

## ADDING VALUE

A book with brilliant photography and details and a cut-away diagram poster of the MiG-29 Fulcrum fighter were popped into the simulation of the same name, but it is doubtful whether a book would have worked so well with a Space Invader-type shoot-'em-up.

Advertisements in high-circulation magazines like *Atari ST User* are generally the most effective method of promoting a product because they are seen by a massive audience keen to hear of the latest games. They

first appear about two to three months before the release of the game and are printed in several European languages. The aim is to alert ST users that the game is on the horizon and so gives people, both young and not so young, plenty of time to save up their pennies.

Firms find that each of their products deserves an advertising campaign of a different duration, although most last for a maximum of three months.

Journalists often discover a firm's plans before they have been officially announced and these findings are reported in the games sections of the publication long before advertisements appear.

So how do games reviewers discover what large software houses are planning before anybody else? The answer lies in their relationship with each of the companies.

Reviewers are paid to find out what's happening in the industry, and because they spend much of their working time hanging on the end of a telephone can build a good relationship with games houses.

With this relationship secured writers may be told ahead of others what that firm plans to launch. Not all companies operate in the same way. Some don't say a word until the program is near completion, but many themes to games can be anticipated by the experts before they've been announced.

For example, it would have been unusual for coin-op hits such as the car racing game *Out Run* or *F-14 Tomcat* shoot-'em-up *Afterburner* to have missed an opportunity to be pushed into ST disk drives.

## IN GOOD TIME

Sometimes because of various licensing rules games are released in other countries before they arrive in Britain. Despite there being a much smaller ST user base in the States, that country sometimes has games launched up to a year and a half earlier than the same product in the UK.

Magazines find out what's happening around the world and so expect similar things to be under development in the UK within months. Deliberate leaks are another way that a firm can get its products publicised.

Games houses enjoy basing software on big films, even more so if there's also been a coin-op version. This works very much in the favour of software houses, who can expect to pay up to a quarter of a million pounds for the licence to such work, knowing they will benefit from the film's earlier publicity.

Once *Atari ST User* games reviewers have confirmed that a company is set to release a big game they try to get exclusive previews of the product.

Some software houses agree and enjoy pre-release publicity, but others prefer to wait until nearer the launch date before sending out copies of their new baby, probably to avoid any pre-release criticism.

Despite the computer press being well-informed of coming releases, some are



**The Teenage Mutant Hero Turtles is a fine example of a game that took advantage of the latest children's fad. If it had just been a normal release it is very doubtful whether it would have done so well**



**Long after the advertising campaign had been completed Falcon was still selling well**



missed. If that happens the firm's marketing executives ensure that editorial departments of less up-to-date publications are aware of the forthcoming release and send out review copies of the product.

With a fat mailbag of computer games each month *Atari ST User* reviews the cream of the month's releases.

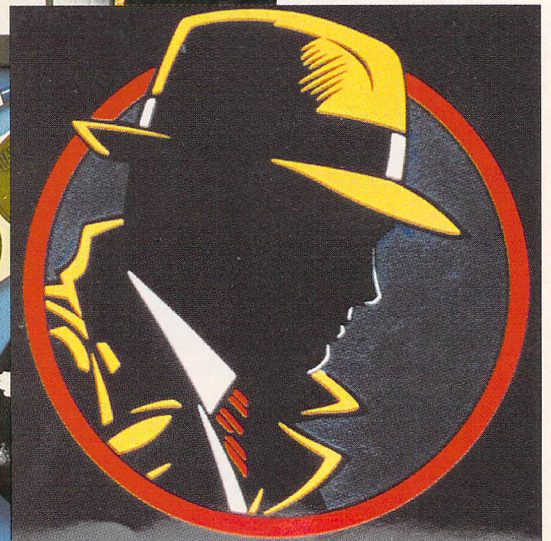
If it passes the initial quality test it will be given space in the magazine. Readers want to know what they are about, the quality of the graphics, sound and playability, and – more importantly – whether they are going to get their money's worth. It's the reviewer's task to fill them in on the details and save them from spending money on a product they'll regret buying.

## GIVEAWAYS

It's vital for games houses to keep a smile on the retailer's face. Software houses send to retailers promotional material which is similar to that sent to publications, but in addition to the normal T shirts and key rings they can expect to see a wad of posters come flying through their letterboxes just before a new product hits the streets.

Mobiles are another useful gimmick. Once they're hung from the shop's ceiling and the posters are used like wallpaper every customer will notice the product.

From time to time games receive a proper launch. It is not unusual for games reviewers, retailers and others in the industry to be offered



You might think a game on a theme like *Dick Tracy* would be fairly easy to sell with all the publicity the film received. But when every other software house is producing games on popular film and tv themes too, it's not so straightforward

One way of promoting a game is to send out goodies such as pens, T shirts, mugs, key rings, clocks and even a cactus



trips out at the software house's expense. They may be taken to cinemas where the original film is shown or perhaps a trip to a racetrack to build enthusiasm before the firm offers its latest driving simulation for review.

Other plays to get games under the spotlight are parties at times of computer shows and at Christmas – when more than 30 new games can be expected.

These tactics don't buy the opinions of games reviewers, but by building a closer relationship with the games houses the readers benefit more than individual reviewers. Companies are more inclined to offer large competitions and privileged information to

friends in the business than to those they rarely speak to.

As companies battle to survive they are nearly all being forced to cut back on unnecessary expenditure.

For the software houses one of the easiest targets is promotional material, which is why the *Atari ST User* team is now working in slightly faded T shirts!

Like any other consumer products, the promotional cost is always passed on to the customer, adding at least £2 to the cost of each

game. But without the marketing products will not sell as well. And that would mean fewer sales, so development costs would have to be spread out over fewer customers, increasing the cost of the product.

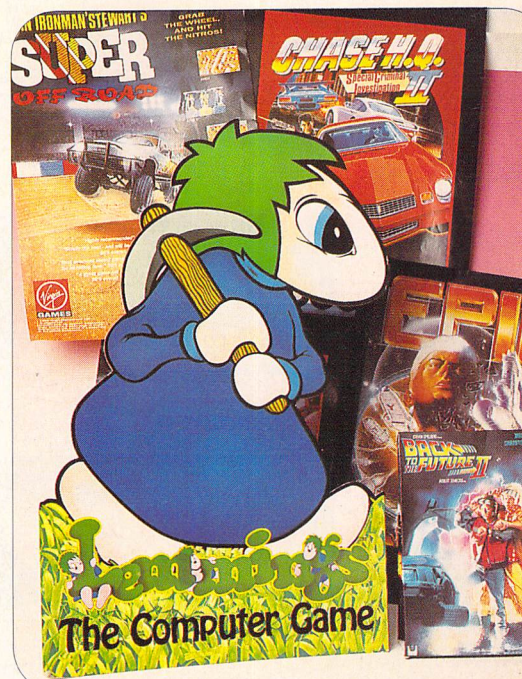
## Playing with Bart

Satellite television firm BSkyB is currently benefitting from the latest craze among the young, the cartoon family called *The Simpsons*. Every Thursday and Sunday evening its entertainment channel Sky One has children glued to their television sets to find out what the leading character in *The Simpsons* family, Bart, is getting up to.

Already two hit records have been based on the programme and progress is being made on a computer game on the same theme. It will be coming from the Ocean Software stable probably in the autumn, and is a superb example of a product that is going to take advantage of the television programme's popularity.

As well as the television aspect, the *Simpsons* will have the added benefit of a conversion, from the Acclaim Nintendo game *Bart Versus the Space Mutants*.

It is likely that the *Simpsons* will become an instant success, especially as the illustrations used for the cartoons bear a close resemblance to ST graphics and so can hardly fail in this area.



Retailers are sent product-specific material such as posters, mobiles and stands to promote new releases

## A POOR SHOW

Huge sums of money being pumped into promotion don't always reflect the quality of the game. Take, for example, one of this year's most anticipated releases, the *Teenage Mutant Hero Turtles*.

As firms cashed in on the craze with all manner of goodies from stickers to Action Man-type turtle models, software house Image Works was hard at work on producing the computer game based on the *Turtles*.

*Teenage Mutant Hero Turtles* was almost guaranteed to be a best seller before work had even started on programming. It had plenty of

hype, mainly due to its popularity among children hooked on the television cartoon.

The basic aim in the game was to rescue a news reporter kidnapped by a bully boy called Shredder, leader of the underworld Foot Clan, in an attempt to brainwash her into joining his group.

The storyline was fine and quite original, but the quality of the game didn't live up to expectations. Nick Clarkson, *Atari ST User's* former games editor, found it to be merely a "competent beat-'em-up" that because of the *Turtles'* fame, every kid in the land would want to play.

It had an average £24.99 asking price, but in the month of its release three other games had better overall review ratings. In that month children were rushing to the computer stores to buy a game that could have been bettered by others just because it was the latest craze.

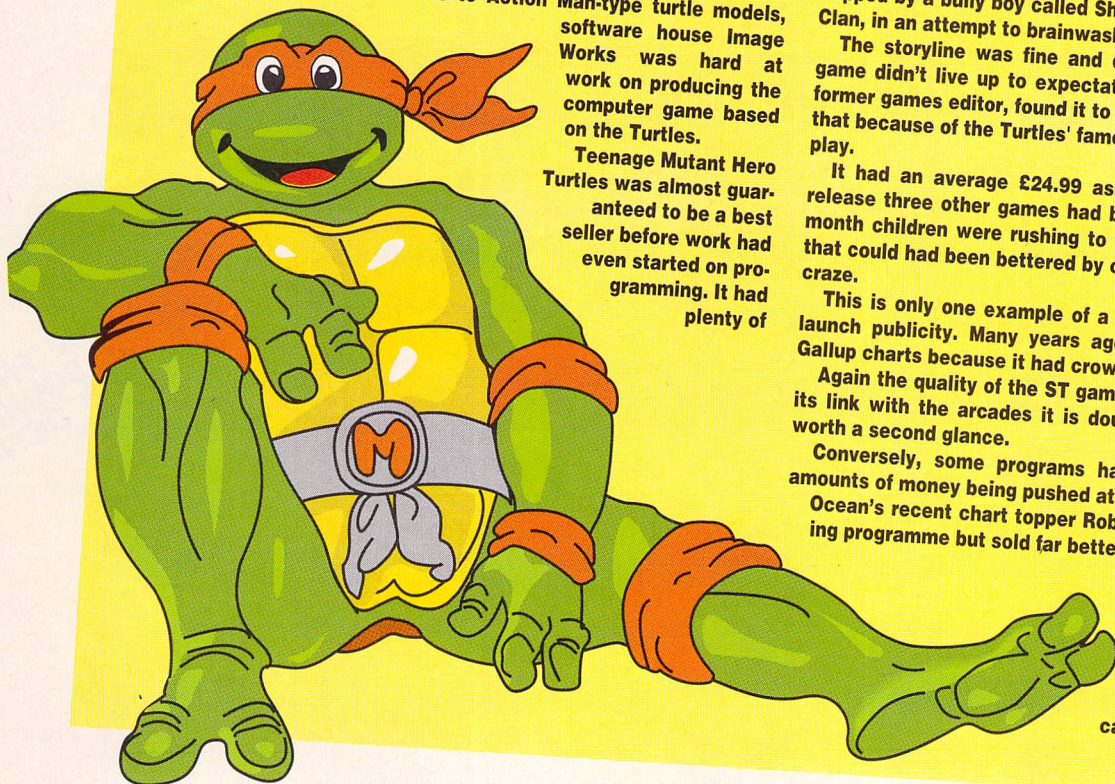
This is only one example of a game that has done well from pre-launch publicity. Many years ago *Out Run* shot to the top of the Gallup charts because it had crowds hugging the coin-op version.

Again the quality of the ST game was poor, and had it not been for its link with the arcades it is doubtful whether it would have been worth a second glance.

Conversely, some programs have done well without excessive amounts of money being pushed at them.

Ocean's recent chart topper *Robocop 2* had only a normal marketing programme but sold far better than the firm expected.

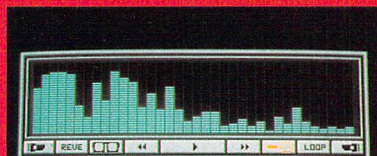
Other software houses can tell similar stories, like Mirrorsoft with the F-16 simulation *Falcon* which is continuing to sell well more than two years after its advertising campaign came to an end.



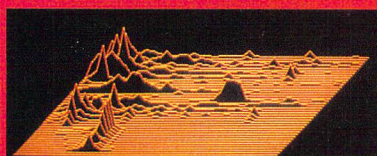


# MASTER SOUND 2

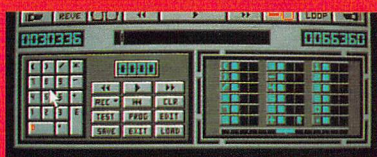
## SOUND SAMPLING HARDWARE AND SOFTWARE FOR THE ATARI ST & STE



36 BAR GRAPHIC  
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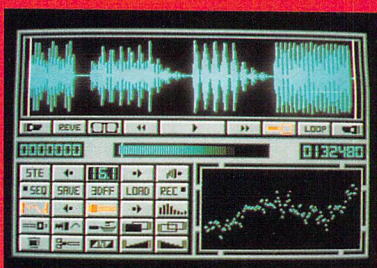
3D FFT DISPLAY SCREEN



SEQUENCER CONTROL PANEL



NEW STE CONTROL PANEL



MAIN EDITOR SCREEN  
WITH OSCILLOSCOPE

### WHAT IS MASTER SOUND?

Master Sound is a low cost, high quality sound sampler for the Atari ST & STE range of computers. The sampler cartridge enclosed in this package plugs into your ROM port on the side of your computer and allows you to record sounds from devices such as Personal Cassette players, Compact Disc Players etc. Once in the computer MASTER SOUNDS unique editor will enable you to edit the sound in practically any way you can imagine. Once you have the sound sample how you want it, you may incorporate it into your own Demo's or programs or use MASTER SOUNDS own built in sample sequencer to play back the sample in sequence with other samples!

### THE MASTER SOUND EDITOR

Incorporates the following facilities:

- |              |                                     |                |                  |
|--------------|-------------------------------------|----------------|------------------|
| * SAMPLE     | * PLAY                              | * LISTEN       | * LOOP           |
| * CUT        | * COPY                              | * OVERLAY      | * WIPE           |
| * FADE IN    | * FADE OUT                          | * VOLUME       | * REVERSE        |
| * SHRINK     | * FILTER                            | * MAGNIFY      | * TRIGGER        |
| * LOAD       | * SAVE                              | * SCOPE        | * REAL TIME FFT  |
| * VU METER   | * SEQUENCER                         | * MIDI TRIGGER | * 3D FFT DISPLAY |
| * AVR FORMAT | * STE VOLUME, BASS & TREBLE CONTROL |                |                  |

An impressive Spectrum Analyzer, Oscilloscope and 3D FFT display enable the user to monitor frequency content and volume with ease, and help you to ensure that the sample quality is at its best.

### THE MASTER SOUND SEQUENCER

Allows you to play back samples in a sequence. Up to 18 samples can be held in memory at once and sequences are as simple to record as tapping keys on the computers keyboard. Once recorded the sequencer can save the samples and sequence file out onto disc so that the files can be used in the sequence player provided.

### THE MASTER SOUND DEMO

Allows you to play back your own sequenced sounds created by the editor while displaying picture files. This is great for creating your own public domain demo discs without having to be a computer programmer.

### ADVANTAGES OVER MASTER SOUND 1

- \* Midi compatibility allows you to playback samples at different frequencies from an external midi keyboard with a midi-out socket.
- \* Additional STE options include Volume, Bass, & treble controls Playback via the STE's built in sound sockets.
- \* New 3D Fast Fourier Transform display allows you to see the samples frequency composition in a 3D display.
- \* Volume down option
- \* Choice of filters
- \* Choice of compression ratios
- \* Enhanced sample frequencies up to 30 KHZ
- \* Sequencer can now handle variable frequencies from 3 to 16KHZ



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UPGRADE FROM  
MASTER SOUND 1  
PHONE FOR DETAILS

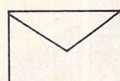
## ATARI ST MASTER SOUND ORDER FORM

Master Sound is £39.95 post & packing £1 (all prices inc V.A.T.)



**BY PHONE  
WITH  
CREDIT CARDS**

**(0726) 68020**



**BY POST:** with Cheque · Postal Order · or Credit Card

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Credit Card Type ..... Expiry Date .....

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# COVER DISK

**Here it is – well over 1Mb of stunning games, sexy demos, fascinating utilities and scintillating features, all on one disk! And if you live and die to program, you'll find what you need in RunTime.**

## SIDE ONE

### NEOCHROME MASTER

Almost every owner of an ST must have heard of Neochrome, the graphics program given away with early STs.

The program has now been updated, and a host of new features have been added. You may never have to buy another art program!

### BACKGAMMON

An absolutely brilliant rendition of everyone's favourite board-game.

This one appeared in our public domain feature in the April issue and since then, we've been inundated with letters asking where to get it. Look no further!

### 3D GRAPHICS

All the source code and executable programs you need to follow this month's 3D Graphics feature.

### DEVPAC 1

A repeat appearance of HiSoft's free code cruncher so that you can follow Andrew Tyler's scintillating 3D graphics feature without spending a penny.

### RUNTIME

Got a programming problem? The answer might be only a mouse click away. Turn to page 30 to find out.

## SIDE TWO

### UNITERM

The very latest version of the world-beating PD comms package hot off the electronic presses. It's practically melting the Disk.

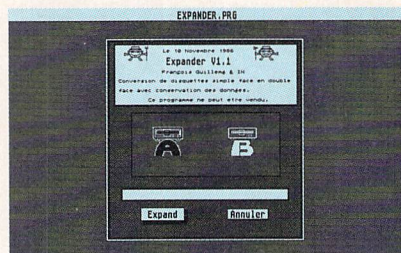
### ST\_XFORMER

The phenomenal response to last month's ZX81 emulator has forced us to put this little gem on the Disk for you.

It's another emulator, but with a difference – this one can run all those Atari 8-bit programs you've been wondering what to do with for so long.

### EXPANDER

A really neat utility from France which enables you to re-format a single sided disk to double sided without destroying all of your valuable data!



### HANDYWIPE

The ST's memory has a nasty little habit of becoming clogged. Perform a lot of Desktop operations, and you'll soon find that you're running out of memory.

Now you can double-click this handy utility and restore your ram.

## How to handle all these goodies

### TRIED AND TESTED

We put a lot of hard work into finding the very best games, demos and public domain programs to put on the Disk and check it thoroughly for viruses and other nasties.

Do bear in mind however, that although we test every item on the Disk with the huge variety of STs here at the offices, we cannot guarantee that every program will work as intended with every configuration available.

If you do discover a program which works strangely or not at all, then please don't hesitate to

tell us about it so that we can publish updates or further instructions.

Where we know a program will not work with a particular configuration, but is one which we feel the majority of you would want and will be able to use, we'll make note of the fact on the Disk pages.

### IF IT DOESN'T WORK

If you're the unlucky recipient of a Disk which won't work at all, send it to Stanley Precision Data Systems, Unit F, Cavendish Courtyard, Sallow Rd, Weldon North Ind Est., Corby, Northants, together with your name and address and we'll replace it.

### THAT'S MY PROGRAM!

We also try to ensure that all of the programs distributed on the CoverDisk do not breach copyright and all programs on our Disk are distributed in good faith. If however, you discover a program which you feel infringes a known copyright, then please tell us so that we can take appropriate action.

We cannot be held responsible for software which does not perform to the programmer's specification, nor can we assume responsibility for any instances of copyright infringement.



## ST\_XFORMER

The ST is just about the best computer around if emulation is the name of your game. Macs, PCs, CP/M, the Beeb – it does 'em all. Problem is, why should you emulate CP/M for example, when your ST is already the best small computer on the market?

Emulators change your beautiful machine into something you didn't choose and would probably rather not use, if it wasn't for the annoying fact that the office has a PC, or your school has a Mac.

ST\_Xformer however, is an emulator with a difference. This one enables you to run all that wonderful old Atari 8-bit software in which you invested so much cash.

You see, that's the problem with 16-bit computers. To get one, most of us had to give up using our 8-bit computer – 400/800/XL/XE – and that means abandoning a considerable investment in hard and software. We know from our mailbag that a lot of you upgraded from Atari's earlier computer offerings and that you still hanker after using them, even if they don't really compare with your mean and hungry ST.

So that poor ol' 8-bit gathers dust at the bottom of your toy-box and its use becomes nothing but a rosy memory. Not any more – the golden 8-bit days of yore have just returned, and with a vengeance! ST-Xformer turns your ST into a fully working 8-bit Atari which is able to run games written in both BASIC and 6502 assembler, easily and without fuss.

Unfortunately, to achieve this with such breathtaking accuracy, the program requires that your ST is equipped with at least a megabyte of ram memory. There is, however, an earlier, half-meg version of the emulator and if there's enough interest, we'll gladly put it on the Disk. For now though, those of you with 1040s, Megas and the like are the only STers who can use ST-Xformer.

The program is archived on Side Two of the Disk. Double-click the SIDE\_2 folder, double-click XFORMER and drag the XFORMER.ARC file, together with the de-archiving utility ARCX.TTP to a blank, newly-formatted disk.

After de-archiving, you should have the following files, STXF21.PRg, STXFP.PRg, DEMODISK.SD and STXF21.DOC. The first file is the program itself, the second is an 8-bit to ST software transfer utility,

**Configuration: STs with  
1Mb or more  
Filename: STXF21.PRg**

STXF21.DOC is the comprehensive documentation for the program and DEMODISK.SD is a bit image of a standard density 8-bit floppy disk.

Running the emulator is simple. Double-click STXF21.PRg. Before proceeding to the emulation however, you must select parameters to set up the emulator to make the most of your system.

When the program runs, and you're presented with the standard GEM menu bar, drop down the XFORMER II menu and select the Atari 800/XE option. A set up dialog is displayed from which you can choose a variety of memory and disk configurations. To get you started however, try the following.

Set Operating System to XL/XE, BASIC In, Floating Point Normal and 64XL RAM and click on the D1: button on the middle left of the dialog. Now move to the lower half and click on the Insert... button. When you're prompted for a drive, select D1: and DEMODISK.SD from the resultant file selector. This 'inserts' the bit image of the standard density 8-bit floppy into the emulator's 'drive'. Back at the main dialog, click on OK.

After returning to the GEM menu bar, drop down the XFORMER II menu again and select Continue.... The screen darkens for a few moments, to be replaced, after a brief pause, by the familiar old 8-bit screen.

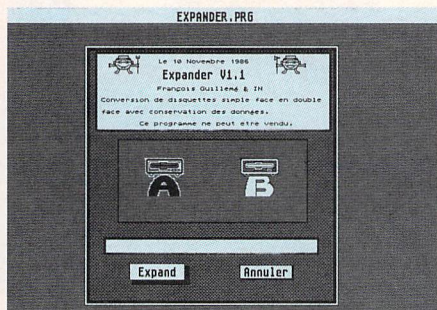
At this point you have a 64K XL sitting in front of you just begging to be explored. You can load DOS as normal by typing DOS at the cursor. Press Return and the Atari DOS 2.5 menu is loaded and displayed.

Go on, select some of those options. They all work exactly as they should. You can get a directory of the disk (DEMODISK.SD, the disk image you loaded on the Xformer set up dialog...), load binary files, or return to the cartridge – in this case BASIC.

There are some sample 8-bit programs on the Disk for you to load and run, and comprehensive instructions in RunTime for getting your hands on a whole lot more.

Obviously, if you've never owned an Atari 8-bit, all this may seem a little strange at first, but with the aid of the RunTime doc files, you'll soon be finding your way around.

For those of us who were 8-biters first time around, it's a return to paradise...



## EXPANDER

**Configuration: All STs  
Filename: EXPANDER.PRg**

Expander is one of those neat little utilities that sits around for months gathering silicon dust and which you think you'll probably never use. Then comes the day when a single sided disk containing valuable data needs to be converted to double sided to give it increased storage capacity.

Normally, of course, you'd have to copy all the files off the single sided disk and reformat it to double sided. Expander lets you reformat a disk to double sided without removing or destroying the data already there!

It's safe and secure too. In hundreds of tests we haven't been able to lose a single byte of data while converting all our dreary old single sided disks to glorious 720K double sided disks. Had a few hiccups with an STE, but it worked well 99 times out of 100.

Expander is on Side Two of the Disk. Double-click SIDE\_2, and you'll find the program in the EXPANDER folder. Double-click EXPANDER.PRg to run it. A dialog appears from which you choose a floppy to expand. Click the drive you want, then click on EXPAND. A double sided disk is yours.

Quit by clicking the ANULLER button.

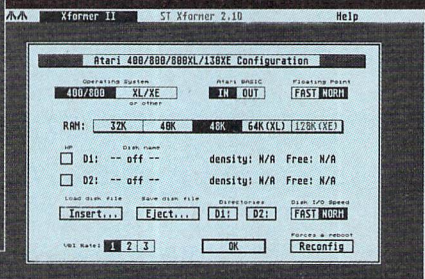
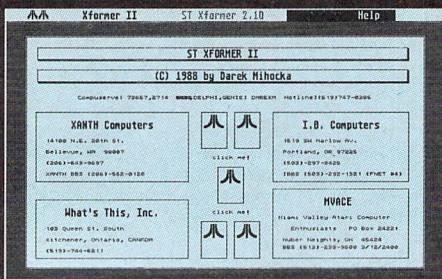
## NEOCHROME MASTER

**Configuration: All STs. Colour only  
Filename: NEOCHR02.PRg**

Neochrome has always been a popular graphics program, not least because of its public domain status. Now it has been updated to include many of the features previously missing.

Draw pictures using all 512 colours from the palette at once! Rotate blocks through any angle. Featuring full STE support this just has to be one of the best pieces of PD software to come our way in a long while. We were so impressed we couldn't wait to share it around!

Neochrome Master is in the folder called NEOCHROM.V2 on Side One of the Disk. To run Neochrome Master, double-click on the folder to open it, then double-click on the file called NEOCHR02.PRg. For full instructions, double-click on the file READ\_ME.DOC – but the best way to learn is to run the program and experiment.





The very latest version hot from the programmer's fingertips. And it's so huge, we're giving you half this month and half next.

That doesn't mean you can't run Uniterm right away, though. Everything is included to get the program running. All we've left out are the little refinements that you'll notice when you've used the program for some time and had a chance to explore it.

We'd like to have included the entire thing in one go, but even archived it requires more than 400K! Put that lot on and you don't get much else on an 800K floppy disk.

But why the fuss, what's so special about Uniterm? Well, as any ST comms enthusiast will tell you, Uniterm is the best public domain communications package bar none. This is the big one, bursting with features including macros, telephone directories, full mouse control and more.

Uniterm first appeared several years ago and since then, the program has grown to become the de facto standard by which all other public domain offerings are measured. And now you can use it too, courtesy of your favourite ST magazine's CoverDisk. Uniterm

## UNITERM

**Configuration: All STs**  
**Filename: UNITERM.PR**

is accompanied by an extensive electronic manual which you can print out, load into a word processor or read by double-clicking it and SHOWing it on the screen. Here's a tutorial to get you going.

Uniterm is on Side Two of the Disk. Double-click the SIDE\_2 folder, double-click the UNITERM folder and drag the file UNITERM.ARC to a blank newly-formatted disk. You should also copy the de-archiving utility ARCX.TTP from Side One to this disk.

De-arc Uniterm (if you don't know how, read the box on these CoverDisk pages) and you should have the UNITERM.PR, UNITERM.RSC, UNITERM.MAN and UNIEDIT.PR files – all you need for now.

Make sure you have a modem connected to your ST's RS232 port, double-click UNITERM.PR and the program will start. The screen clears and you'll be regaled with what appears to be an error already, a dialog saying something like "error loading setup, restoring original values" – don't worry, this is all normal.

Click OK on this dialog, the screen clears again and you'll find the Uniterm main screen. To get on-line, press the Help key.

Drop down the settings menu, select RS232... and enter the correct communications protocols for the bulletin board or modem you're trying to contact. These will usually be something like 1200 baud, 8 bits, no parity, 1 stop bit. Click OK to apply

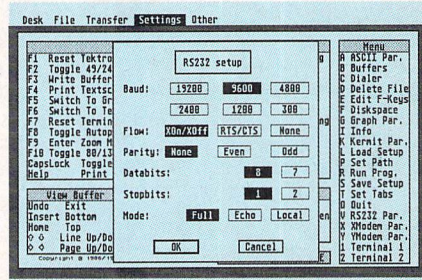
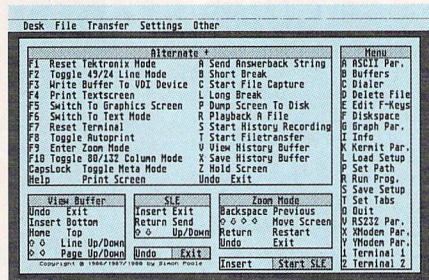
the new settings. Drop down the Other menu and select the Dialer... option. Enter the name and telephone number of your desired contact in the relevant columns (don't worry about the macro column for now) and check that the correct command strings for your modem are displayed at the bottom of the dialog.

The default commands are Hayes, but you can type in whatever suits your equipment. Click OK to apply these settings.

Drop down the File menu and select Quit Menu to return to the Uniterm main screen. Click the right mouse button. A menu pops up onscreen with, on the left, a list of built-in options and, on the right, your newly-entered BBs.

Click on this name to start Uniterm dialling. When contact is made, follow the prompts you usually receive from the BBS. You can quit the program when on the main screen at any time by pressing Undo.

And that's it. There's a manual on this month's Disk (in the UNITERM.ARC file) so that you can find out what else the program can do. Have fun!



## BACKGAMMON

**Configuration: All STs. Medium resolution**  
**Filename: BGAMMON.PR**

It's here, the brilliant rendition of the popular family favourite which first appeared in our public domain special feature. Lots of you wrote to us, requesting the program on the Disk and, always willing to listen with a sympathetic ear to your requests, we've done just that.

Backgammon works in medium resolution colour only, but for those of you with a mono monitor, it works perfectly with the BigColour colour emulator we featured on the CoverDisk a few months ago. The program plays a mean game of backgammon and is aware of all the 'official' moves including, of course, blot hitting. The only thing missing is a doubling cube, but then it's such a good game, you probably won't notice!

Backgammon is on Side One of the Disk. Double-click the GAMMON folder, then double-click BGAMMON.PR to run the program. The screen display clears, you're presented with a few instructions, click once and away you go.

You play white and have to move clockwise up and around the screen in order to bear off in the upper right quarter. The ST plays black and you'll have your hands full stopping it from bearing off first. Click the counter to move then click the desired location. The counter is moved. If you don't have a legal move, click on the dice to roll them again (although you will, of course, forfeit your turn).

Backgammon works well with the colour emulator too. Just run BigColour from an Auto folder first, set the screen preferences to Medium resolution, then run the program.



**\*HandyWipe-by John Eidsvoog\***  
Stick this program in your floppy AUTO folder. It will continue rebooting until the hard disk auto-boots!

Quit

COLD RESET

## HANDYWIPE

**Configuration: All STs. Colour and mono**  
**Filename: HNDYWIPE.PR**

There's something decidedly funny about the ST's ram. Oh, there's plenty of it, and you can cram lots into it, but after messing about the Desktop for a little while, you'll sometimes find that the memory is filled up – even if there's apparently nothing in it!

This means that very often, large programs simply refuse to run even though there's more than enough ram installed in the machine. The solution is to switch the machine off then on again to clear the ram. Pressing the reset switch is no good, all that does is to perform a warm-reset. Trouble is, all this switching on and off doesn't do the machine any good at all.

What's needed is a handy little utility that will perform a software-based version of the on/off switch toggle, but without the accompanying problems of silicon fatigue. And that's just what HandyWipe provides.

The program is on Side Two of the Disk. To use it, open the SIDE\_2 folder by double-clicking on it, open the HNDYWIPE folder in the same and double-click the program to run it.

After a moment or two, a dialog appears asking whether you'd like to perform a cold reset. Click the relevant button to do just that. The screen is blacked-out and the ST is completely reset, including clearing the ram. You may have a little trouble with this one on an STE. It worked fine with a 1040 STE, but...



# RUNTIME

**The definitive lexicon of programming from those  
in the know: professional ST programmers**

Once again RunTime provides the answers to your programming problems.

## CODE CLINIC

June's Code Clinic sees Mathew Lodge pondering the question of whether to use VDI or Line\_A, solving some GDOS problems and helping with digitising through DMA.

## FIRST STEPS IN BASIC

BASIC is always best for beginners and with this comprehensive tutorial, you'll soon be up there with the best of 'em, writing complex

programs in everyone's first programming language.

Peter Phillips continues his explorations of BASIC showing more of the all-important keywords and how to get the best from them in your own programs.

## 3D GRAPHICS

Busy boffin Andrew Tyler's been hard at it again to bring you the fourth in his great series about creating stunning three dimensional graphics on an ordinary ST.

From first principles the humble genius

has taken you to graphics of staggering complexity, and included on every CoverDisk there's a full selection of his much sought after programs – so that you don't even need to type them in!

## STOS PROGRAMMING

That most popular of columns the STOS tutorial goes from strength to easily-programmed strength. This month there's further in-depth analysis of the maze game and more tricks, tumbles and turns to be had from the STOS language.

## WRITING IT FOR RUNTIME

How many times have you read RunTime and thought that you could add some valuable programming knowledge to what's here already? We certainly have some expert writers offering their programming secrets in RunTime, but there's always something else to learn about and something else to discover with the ST. And that's why we need you.

That's right, if you have some in-depth knowledge of the ST – some little programming secret that you're sure others would benefit from, or some special way to achieve a particular effect – then we want to hear from you.

We're not chasing brilliant writers. If your copy is a little messy we can tidy it up for you. What we do require however, is a comprehensive understanding of the ST and the topic you're attempting to write about.

This is a fantastic opportunity for an unproven would-be ST writer to make his or her mark on the ST community. A chance in a lifetime. You'll have the honour of appearing in the world's first ST-exclusive programming magazine and we'll pay you handsomely to boot!

Interested? Then why not write to us here at RunTime? Send an outline of your feature ideas, together with a little background about yourself and copies of anything you've written (published or not) and we'll take it from there. Move it!

## YOUR DISK NEEDS YOU

Here at Atari ST User we're always on the look-out for new programming talent. ST owners the world over love to program their machines and we love to publish the fruits of those programming efforts – many of which rival commercial offerings.

If you've written a program which you think would be interesting to other readers, send it to us. Sure, it's easy to be discouraged, "they'll never publish this..." and you'd be right! We can't publish programs we don't receive, OK?

Whatever language you've used, BASIC or assembler, Pascal or C, send it to us, we'll evaluate its potential and if it's good enough for the Disk – why, we'll even pay you!

If you're going to send a program, here's what to do.

- Check that it works and that it's as bug-free as you can get it. May sound obvious, but you know your own code. An inexperienced user might press one wrong key and send the whole thing scampering away for cover.

- Make sure that it's ALL your own work. Don't rip off code from anyone else then send it with your name. We'll send it back with the forces of law and order...

- Include full instructions.

- Include your name and address.

- If you want the disk back, include a stamped addressed envelope.

- Include a signed declaration bearing these words "I agree to indemnify Interactive Publishing against all possible litigation arising from the use of my software". If you're under 18, get your parent or guardian to sign it too.

This last point is very important and we cannot even consider your software without it. Then once you've sent a disk, be patient. We get lots of submissions and we give each one careful consideration.

## GETTING STARTED

RunTime is a disk-based magazine program with articles providing programming help, hints and much more.

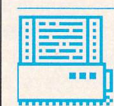
The magazine appears on Side One of the Disk as RUNTIME.PRGM and to read it just double-click on it. You'll see a screen with the Atari ST User logo on the left and a list of menu options on the right.

These menus contain the titles of all the programs, articles, games and utilities on the CoverDisk. Click on a menu option and the article will be loaded and displayed on the screen. If your monitor isn't very clear you can print out the article.

At the foot of the screen you will find several icons. Here's what the main ones do.



This is the icon which enables you to return to the opening Main menu. Click this if you want to stop reading the current feature.



Use this icon if there is a particular page of the feature which interests you and which you wish to have on paper.



If you need to print the entire feature, tutorial and so on, this is the icon you need. Click here to send the complete feature to your printer.



Often, as you're reading a feature there'll be an associated picture to help illustrate a point. Click on this icon to see the picture.



Everyone, even learned programmers, needs help occasionally. If you find that some friendly advice is needed click the cross.



# USING THE DISK AND RUNNING RUNTIME

## Follow these instructions for absolutely trouble-free CoverDisk use

Here it is, all you've ever wanted to know about using the CoverDisk and getting the most from it.

- Insert the CoverDisk in drive A: of your machine. This is the internal drive on most STs, although some of the very old machines have an external drive.

- Turn your ST off for about 10 seconds. This will clear any programs which may be in the memory. Turn your machine back on to boot up with the CoverDisk.

A Desktop with two disk drive icons and a single open window will appear. If you're using a colour monitor or TV, your ST will boot in medium resolution.

- Move the mouse cursor over the RUNTIME.PRG icon and double-click on it to start the program. RunTime will run in medium res on a colour monitor or high res on a mono monitor. It will NOT run in low resolution.

- When the RunTime program is up and running, you'll see the opening menu screen. From here you can access all the different sections of the magazine.

- The main menu has four buttons. Click on each of these once – not a double-click. The three top buttons will take you to other sections of the magazine, such as the programming articles or program documentation.

The button marked QUIT TO DESKTOP will exit the RunTime program and return to the normal ST Desktop.

- Selecting any button will load the text file from the Disk into the user-friendly text reading screen. Again, click on the button once, and wait for the file to load.

Selecting the MAIN MENU button will take you back to the RunTime start-up screen.

- When you've read the file, or printed it out, you can go back to the menu to select another file.

### NOTES FOR HARD DRIVES

If you've read all you want to, go back to the main menu and select QUIT TO DESKTOP to exit RunTime and return to the ST Desktop to continue exploring the Disk.

If you have a hard drive and boot up from the CoverDisk, your Desktop won't have any icons for your hard drive partitions. It's better if you boot the hard drive in the normal way,

## HOW TO DE-ARCHIVE FILES USING ARCX.TTP

ARCX.TTP is a de-archiving utility which we include so that you can make use of any archived programs and text files which we've included on the Disk.

Why do we archive some files? So that we can cram as much as possible onto the Disk, that's why! The archiving program ARC is a tried and tested utility which has been around for a number of years and which enables many users to make the most of the limited disk space available to them.

ARCX.TTP, the utility used to extract files from archives, is not however, for the faint of heart. Beginners can be particularly intimidated by the program's user interface but as with any aspect of computing, if you take a deep breath and follow the instructions, all will be well. Here's how to use ARCX.TTP...

The .TTP name extender of ARCX.TTP stands for Tos Takes Parameters, and means that the ST's operating system, TOS, requires you to type in some parameters such as location and name of file before the .TTP program can do its stuff.

ARCX requires the exact location and name of the file you want to de-archive before it will work correctly. If incorrect or incomplete information is typed in, you're simply returned to the Desktop.

Let's say for example, that you've formatted a disk in your B: drive ready to receive the archived file from our CoverDisk. Your A: drive contains the CoverDisk with the archived file and the ARCX.TTP program.

Drag the archived file (let's say it's called TESTFILE.ARC – archived files always have the extender .ARC) onto your newly-formatted B: disk (you do this to ensure that there will be enough space for the files which will be extracted from the archive). Double-click

ARCX.TTP. A dialog appears bearing a dotted line for you to type in the location and name of the archived file you want to de-arc. Now type in this

**b:testfile.arc**

and click OK. The screen will clear while ARCX.TTP searches the B: drive for the file TESTFILE.ARC (note that ARCX.TTP isn't case sensitive, you can use upper or lower case characters...).

If the file is found a line of text appears at the top of the screen with the first file in the archive, say FILEONE.TXT, and a message offering you 'yes/no/quit/all'. The line looks like this

**FILEONE.TXT (Yes/No/Quit/All)**

Pressing the first letter of each option (only one, obviously!) will result in the action being performed so that if you decide to de-archive FILEONE.TXT, pressing Y will result in the message 'EXTRACTING' appearing on-screen and the file being de-archived. Simple, right? (But only if you know how...).

Always remember when using ARCX.TTP that you must type in the exact location including drive designator (ie a: or b: or c:) and filename with extender for the archive file you want to de-archive. Here's another example.

If the archive file TESTTWO.ARC had been on the C: drive in a folder called TEXTS inside another folder called OLD, then the parameter line would look something like this

**c:old\texts\testtwo.arc**

meaning please de-archive the file 'testtwo.arc' which is on the C: drive inside the folder 'texts' which is inside the folder 'old'. And that's all there is to it.

then put the CoverDisk in the floppy drive.

Once this is done, open a window on drive A: by double clicking on it. Use the window slider bars to find the RUNTIME icon then follow the instructions above for using the program.

It is possible to copy the entire RunTime program to the hard disk to speed up the time it takes for text to load. If you do this, remember to copy all of these three files: RUNTIME.PRG, DM.RSC and MENU.INF.

You must also copy the whole of the TEXT folder to the hard drive. This folder contains all the text files for RunTime – both the folder and the files it contains must be copied.

These three files and the TEXT folder must be copied to the same place, ideally the root

directory of the C: drive. RunTime looks in the same directory for its RSC and INF files and the TEXT folder. If these cannot be found, the program won't run.

## SIDE TWO SERVICE

If you own a single-sided drive, and you're dying to get your hands on the goodies on Side Two of the CoverDisk, don't despair! Just send a cheque or postal order for £1.50 to Atari ST User Disk Offer, Europa House, Adlington Park, Macclesfield SK10 4NP. We'll put the programs from Side Two onto a single sided disk and send it out to you. It's that simple!



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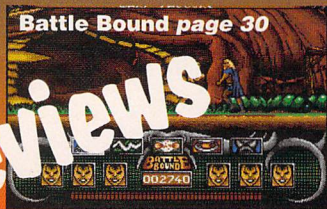
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# PLAY TEST

Reviews



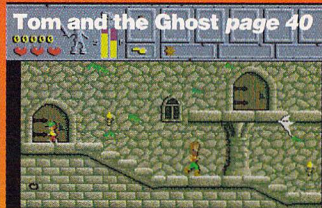
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Mad computers, Mutant Metal, Supercars, Metal Masters and more. The latest from the industry on what's coming your way, soon...

## TRADE SECRETS.....42

We'll tell you ours if you'll tell us yours. Hints and tips on the games that frustrate you...

## PLAY TEST EXTRA..45

Second Post and User Recommended. It's the very last word in hot releases!



## Gallup Chart Top 20

### KEY

NE = New Entry

RE = Re-entry

▲ = Up places

▼ = Down places

RANK		TITLE	PUBLISHER	RRP
1	+4 ▲	FANTASY WORLD DIZZY	CODE MASTERS	6.99
2	NE ▲	LITTLE PUFF	CODE MASTERS	6.99
3	NE ▲	FINAL WHISTLE	ANCO	12.99
4	-3 ▼	STEVE DAVIS WORLD SNOOKER	CDS	9.99
5	-3 ▼	F19 STEALTH FIGHTER	MICROPROSE	29.99
6	-3 ▼	SPEED BALL 2	MIRRORSOFT	24.99
7	+12 ▲	SUPER GRAND PRIX	CODE MASTERS	9.99
8	NE ▲	SUPER SCRAMBLE SIMULATOR	KIXX	9.99
9	RE ▲	MOONWALKER	KIXX	7.99
10	-6 ▼	WORLD CLASS LEADERBOARD	KIXX	7.99
11	-5 ▼	TREASURE ISLAND DIZZY	CODE MASTERS	4.99
12	RE ▲	K DALGLEISH SOCCER MANAGER	ZEPPELIN	7.99
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19	NE ▲	R-TYPE	HIT SQUAD	7.99
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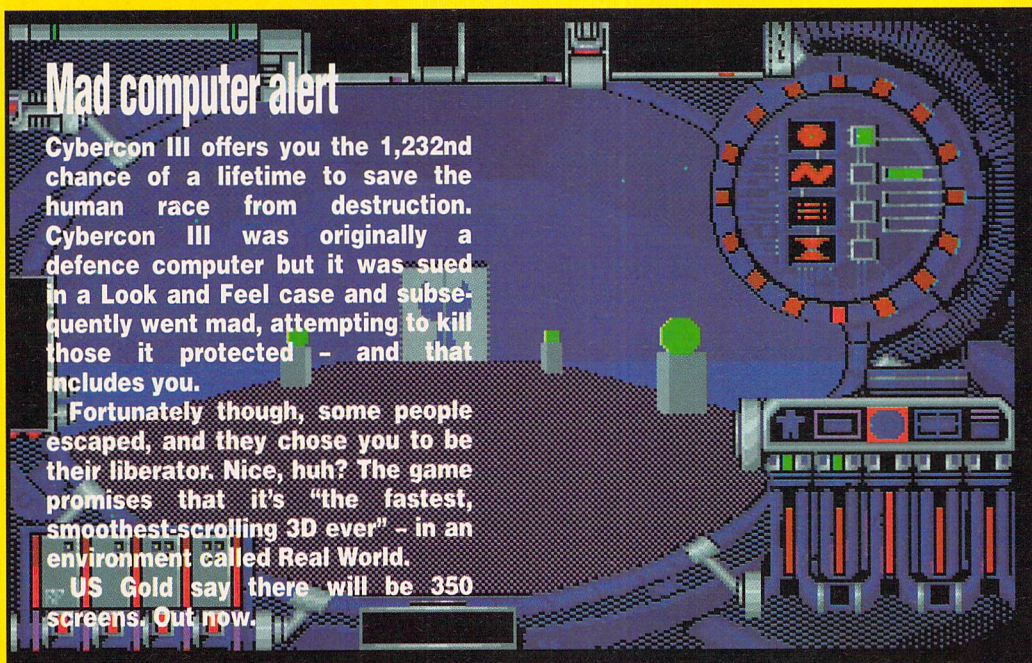


## Mad computer alert

Cybercon III offers you the 1,232nd chance of a lifetime to save the human race from destruction. Cybercon III was originally a defence computer but it was sued in a Look and Feel case and subsequently went mad, attempting to kill those it protected - and that includes you.

Fortunately though, some people escaped, and they chose you to be their liberator. Nice, huh? The game promises that it's "the fastest, smoothest-scrolling 3D ever" - in an environment called Real World.

US Gold say there will be 350 screens. Out now.



## Elementary my dear wotsit

When you fork out all that dosh for a luxury cruise you don't expect people to start dropping dead, do you? Well, budding Poirots can get on the ship of death - or rather, load up Cruise for a Corpse from US Gold. I wouldn't sign for a holiday with that title... £24.99.

## Gremlin go heroic

Down in the dungeons, something stirred... fortunately for me, it was only Ian Richardson, Gremlin Graphics' PR man, holding a pic of their biggest ever title to date. Heroquest shot to success in the Christmas market last year, and Gremlin are the lucky people responsible for the computer version.

As we reported a couple of issues ago, the game is to be backed by some

pretty heavy advertising and PR, and if this screenie is anything to go by, it should prove to be massive.

Roleplaying fans should check it out - although for a fiver less you can get hold of the board game itself. £24.99, this Easter - and it's less fattening than an egg. And a bit of gossip - I wonder who will get the licence for the modules for Heroquest? Look no further...

## Flick free

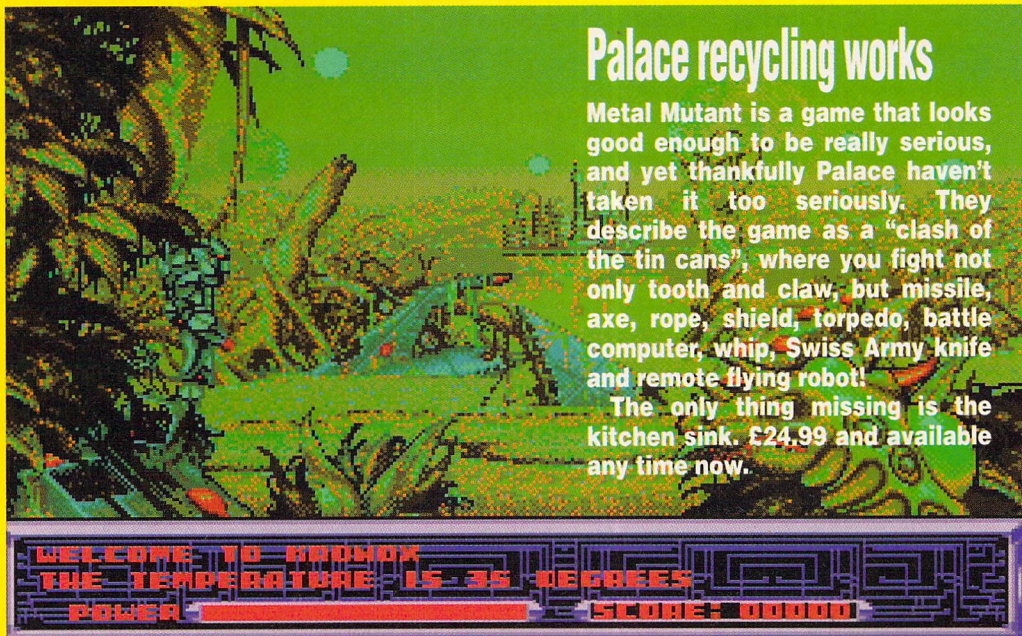
Gremlin Graphics bite back with a sequel to Switchblade. The title? Switchblade 2.

Apparently more imagination went into the game than the title, but if you need more proof, check it out yourself. For £24.99 you'll get a licence to cut people into long strands of tagliatelle.

## Palace recycling works

Metal Mutant is a game that looks good enough to be really serious, and yet thankfully Palace haven't taken it too seriously. They describe the game as a "clash of the tin cans", where you fight not only tooth and claw, but missile, axe, rope, shield, torpedo, battle computer, whip, Swiss Army knife and remote flying robot!

The only thing missing is the kitchen sink. £24.99 and available any time now.



## Virgin's Wonderland halved

Alice fans rejoiced last year when Virgin Games announced that they would be producing Wonderland, a superb graphical adventure, on the Atari ST. Sadly for 520ST owners, the game would require at least 1Mb of memory.

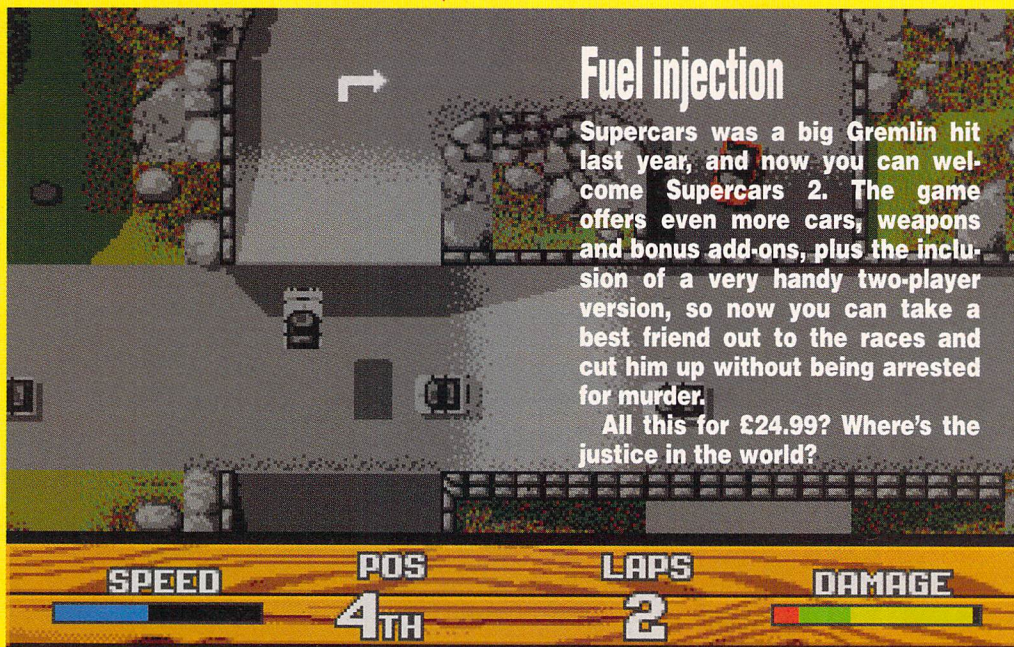
Well, the good news from Virgin this week is that Wonderland will also be available as a 0.5Mb game for the ST as well. You only get the graphics and text windows, but the system remains as close to the larger original version as possible. Look out for it soon, priced at £24.95.



## Kick a panza

Ow! Me against a tank, that's hardly martial arts is it? Well, if the truth be known, it's actually human versus human, in the ancient and noble (from a considerable distance) art of Kick Boxing.

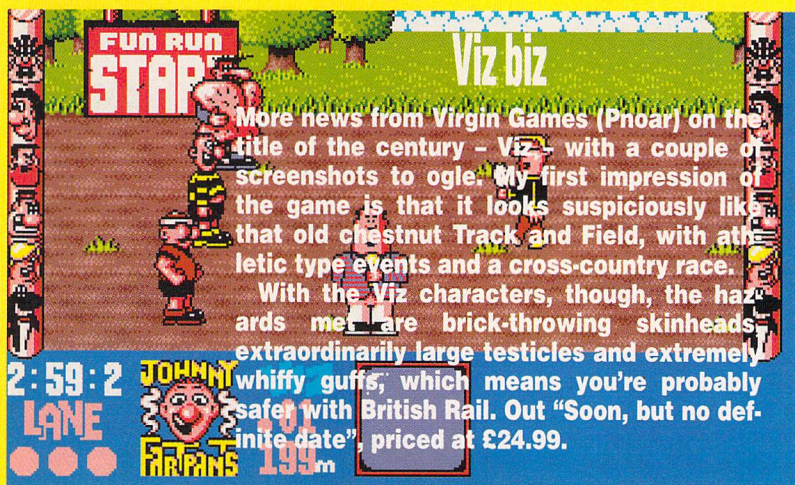
It's never been done before now (to my knowledge) on any computer, so prepare to be educated. £24.99 is a lot less painful than the real thing, so write out your cheques to US Gold.



## Fuel injection

Supercars was a big Gremlin hit last year, and now you can welcome Supercars 2. The game offers even more cars, weapons and bonus add-ons, plus the inclusion of a very handy two-player version, so now you can take a best friend out to the races and cut him up without being arrested for murder.

All this for £24.99? Where's the justice in the world?



## Viz biz

More news from Virgin Games (Phoar) on the title of the century - Viz - with a couple of screenshots to ogle. My first impression of the game is that it looks suspiciously like that old chestnut Track and Field, with athletic type events and a cross-country race.

With the Viz characters, though, the hazards met are brick-throwing skinheads, extraordinarily large testicles and extremely whiffy gufts, which means you're probably safer with British Rail. Out "Soon, but no definite date", priced at £24.99.

## Vietnam revisited

We've had a few pics of the latest news from Domark - but few details. Watch this space! 'NAM promises to be the greatest attempt at recreating the Vietnam war.

Those of you with an artistic bent should check out 3D Construction Kit. The latest Tengen titles, Skull and Crossbones and Hydra should bring the magic of the arcade to your home. Look for them in your shops anytime now...

## Activision moves into Europe

Activision have been moving in mysterious ways recently. There have been rumours here in the UK about them closing up shop and then others that they weren't.

Well now, here's the official story. There's been some kind of a reshuffle it seems and now Activision have moved their operations to France from where they can launch their latest titles to a waiting world. Look out in coming months for R-Type II, Deuterios, Hunter, Shanghai II and Beast Busters.



## Infogrames get heavy

Muscling in on the action any time now will be Metal Masters, the latest hit from French masters Infogrames. Stonk around, blast everything to bits, and stonk around some more inside the hulking shell of a massive metal robot. A shame that Comic Relief hasn't got them to do an event. £24.99, and it should be out as you read this.



**This one just doesn't quite make the grade despite some superb graphics. The sound isn't convincing, there's too little variety and it lacks depth. It's a fair attempt, but try again CRL.**

**T**he sun glints off my sword as I march across the land. Towards me a group of evil-looking foot soldiers approach. I run to cover the ground between us, but one of them is loading a crossbow.

He brings it up to head height and I see his eyes glinting through the sights. His knuckles whiten and flex and the bolt sails towards my chest...

Commuting in the middle ages was a very different affair to what it is today (although some would

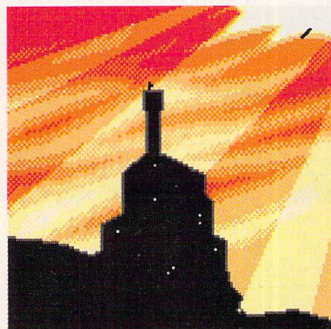
say they are equally dangerous...). The warrior Calumn, fresh from rescuing the Lady Charlotte, decides to head from the city in order to usurp the evil tyrant Golem.

This was not an easy decision to make because this particular journey involves trekking across three huge landscapes: the Great Plains, the Bridge of Fire and the

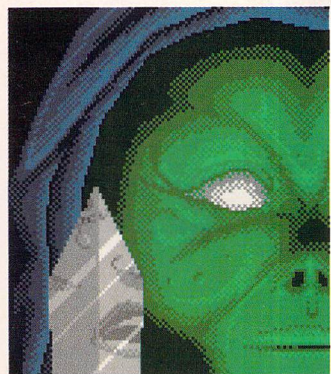
**CRL £24.99**

Land of Golem into the Temple of Pain. Still, when Calumn gets an idea into his head it takes an army of mad monsters to shift it.

Oddly enough, that's exactly what Calumn has to face. Golem has quite a menagerie at his disposal. The first of them are the



Calumn, hero of the highest order, goes in search of his beloved

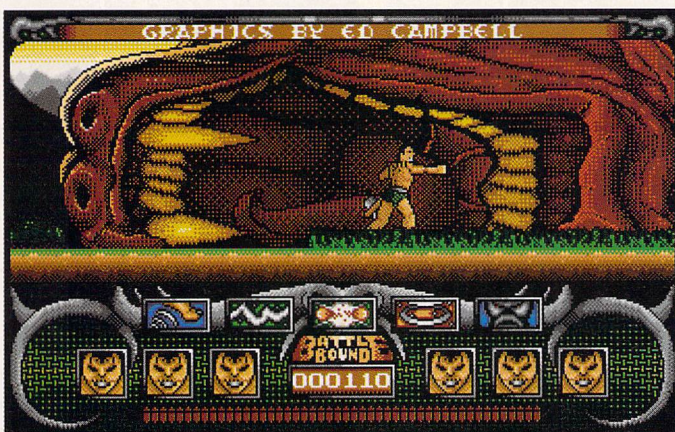


So that's what a Golem looks like. It looks like a purple people eater to me!



Calumn, musclebound and handsome, and not a pair of Levis in sight!

# BATTLE



Calumn, fighting fit, enters the graveyard of the beast, and boy is he mean!



Isn't that whatsisname from Beauty and the Beast? He's even more ugly in real life!



You axe murderer! Police! There's a mad hero on the loose!

**GRAPHICS 85%**

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**GAMEPLAY 66%**

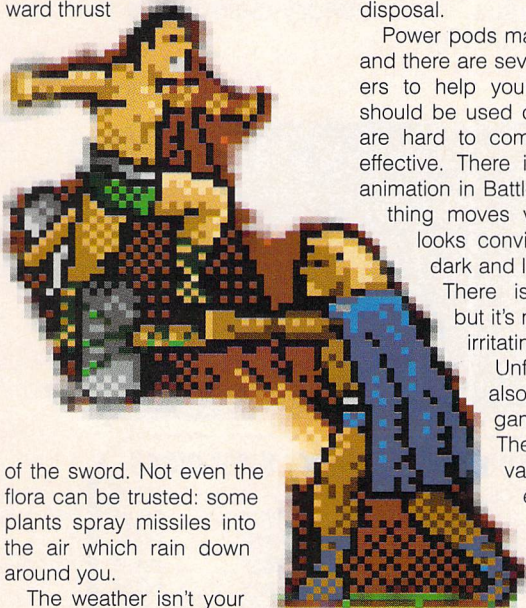
**OVERALL 62%**



# BOUND

soldiers. Most are armed with various kinds of hand-held weapons which they are very handy with. This doesn't mean that they're a match for Calumn – they tend to be little more than fodder. However, they become dangerous when they team up with other monsters.

Some soldiers carry crossbows which can do serious damage from within range, while the footmen close in to put the boot in. Then there are the slugs. These are really nasty. They're small for a start, and can only be destroyed by a downward thrust



of the sword. Not even the flora can be trusted: some plants spray missiles into the air which rain down around you.

The weather isn't your average either. In certain places rocks fall from the sky to smack you on the head and shoulders. Get to the end of the level and the rain starts to fall. Pretty soon the whole screen begins to be filled with floodwater.

When it reaches waist height a giant slug emerges to attack you. This is not your common-or-gar-

den-variety giant slug. This one has an antenna which zaps lightning bolts at you. You can duck under these or jump them but the best way to treat the slimy beast is to hit it on the antenna a lot. Hitting it anywhere else is useless – your axe will only bounce back and hurt you.

Calumn is superbly muscled and has chiselled features. His loincloth stands out proudly. But he has brains as well – one of the rare few (including me) to be blessed with both brains and brawn. He puts his brains to work too, having magical powers at his disposal.

Power pods may be picked up and there are several magic powers to help your cause. These should be used carefully as they are hard to come by and very effective. There is some superb animation in Battle Bound. Everything moves very nicely and looks convincing, if a little dark and lacking in colour. There is a soundtrack but it's monotonous and irritating.

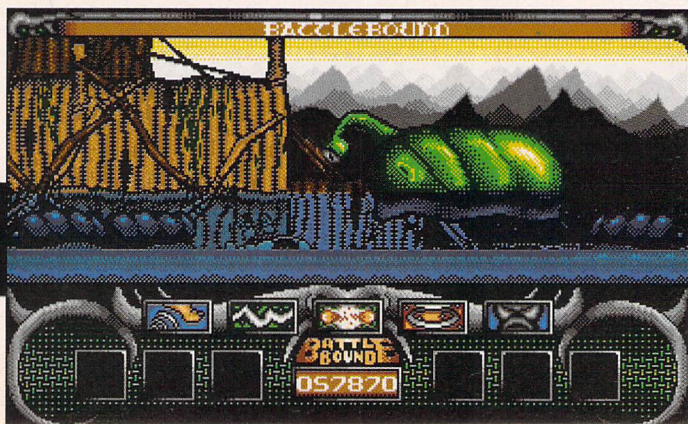
Unfortunately that also sums up the game pretty well. There's just too little variety in it. And even though the final sequence with the rain provides a nice break in the action, it comes far too late to make any difference.

I think that the time for games like Battle Bound has passed now. It's a bit too shallow to survive in today's market place.

Nice try – but CRL will just have to try again.

**Richard Penhaligon**

**Alas, you didn't make it. Calumn the brave is now Calumn the slug pellet**



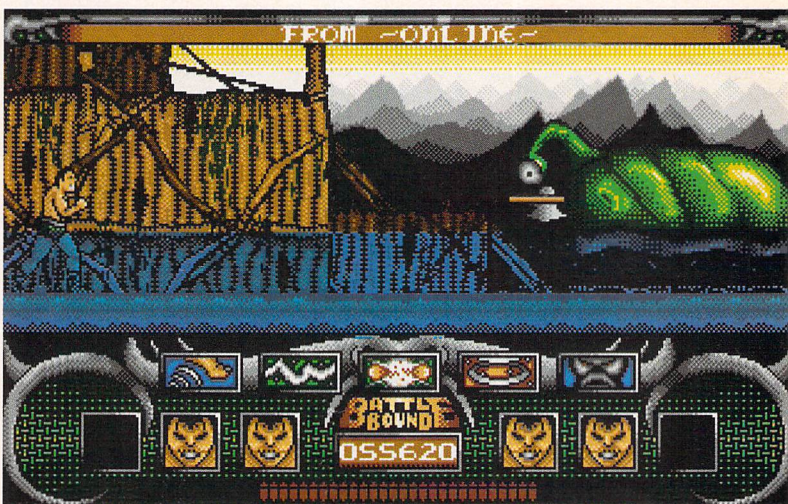
**Engaged in combat as the cowardly crossbowman shoots at you**



**Those slugs are a good natural source of vitamins, minerals and magic bonuses**



**Say it with flowers. These plants however, say it with bombs, and they're deadly**



**Oh my God! A giant slug! And if you thought cats had a lot of lives, wait until you take this on...**





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**There are games which overwhelm you with difficulty and still aren't particularly compulsive. Turrican II isn't one of them though. It has the lot - superbly animated graphics, a rousing soundtrack and FX, and a grab factor that could break your arm. It's so addictive it should carry a government health warning. If you only buy one game this month, get Turrican II. You won't feel cheated.**

GRAPHICS	90%
SOUND	78%
GAMEPLAY	96%
OVERALL	90%

# TURRICAN II

**RAINBOW ARTS £24.95**

**T**he original Turrican was a huge success for Rainbow Arts about a year ago. Its unique mix of exploration, collecting and pure blasting action made it universally appealing.

Twelve months on, Turrican II is with us, and while it's nothing new, it is a superb shoot-'em-up.

You begin standing on a platform, all alone with just a small blaster for company. That soon changes though, as you encounter the first of hundreds of waves of attacking mutants.

The mutants are a varied bunch. Even their shape does not offer any clues as to their purpose, with similar mutants doing

There are hives which produce swarms of beelike aliens.

These are fairly small and particularly difficult to hit as they move about erratically. They will kamikaze into you without a moment's hesitation.

You're not defenceless against their attacks, though, being deceptively powerful.

Your pitiful blaster may, thankfully, be upgraded to bigger and better things, including a triple shot laser, a hot powerbolt launcher and a rapid-firing homing missile launcher. These add-ons

disposal is the rapid pulse laser. Holding down fire for a couple of seconds activates this power, and the beams may be directed around the screen while your man stands impassively still.

This is very useful in tight corners where you're surrounded by fast-moving mutants.

Contact with aliens drains Turrican's energy, represented by a bar at the bottom right. If this burns away to zero you lose one of your lives, although extra energy, and indeed lives, may be picked up.

Also dotted around are diamonds. You need to collect as many of these as possible because for every 99 accumulated you get a chance to continue the game where you last expired.

There are the usual mid- and end-of-level guardians to contend with. The first of these is a huge robotic brute that fires a massive laser and jumps up and down a lot. His jumping causes stalactites to fall from the ceiling and rain down onto Turrican's head, and his stamping attack drains masses of energy.

He may only be shot in the head and you'll have to do plenty of dodging. A mere taste of things to come...

There are hundreds of screens on eight world levels. Each must be explored fully to get the best from Turrican II, as many secret ways and weapons may be found by the adventurous player. One thing is for sure: this game is not going to be completed at the first attempt. You're going to have to put in long hours on the joystick to get the better of these aliens.

The good news is that the game is good enough for you to want to do it.

**Mathew H. Jones**



**An eye for an eye, a tooth for a tooth. They draw first blood and you're a warrior. Get to it soldier!**



**Niagara? Victoria? Nope, but Turrican should avoid getting too carried away by the beauty of it all**

different things. Some look like ED309 from Robocop and run around, shooting and jumping at you.

Some look like the original rockets from the arcade classic Scramble, but instead of merely launching sedately into the sky, they rain down in deadly arcs.

Hit fire and space together (fun if you're a distance from the keyboard!) and every type of weapon blasts over the screen in an impressive fireworks display - this hides you from view - and anything mortal in its path is more or less dogmeat, guaranteed.

The other form of attack at your





**Yes, it's a mean game of soldiers, this one, but unlikely to have the same impact as its possible 'relative', Silkworm, a previous Storm offering. SWIV is compulsive and best played with a partner. Graphics are of arcade quality and the sound effects are crisp and convincing.**

# SWIV

**STORM £24.99**

It's hot and dirty in the seat of my jeep. No Suzuki pony-  
pose Yuppiemobile this. Nope, it's the ultimate in power-packed military four wheelers.

Waving a salute to my chums in the 'copter, I adjust my sunglasses and grip the steering wheel in anticipation of a rough ride behind enemy lines.

Fans of shoot-'em-ups may well have come across a previous Storm offering, Silkworm. That featured a helicopter and a jeep

in a madcap race across desert terrain, blowing the heck out of anything that moved.

What was different about it was the inclusion of a truly playable two-player mode (I always got into fights about who had the helicopter).

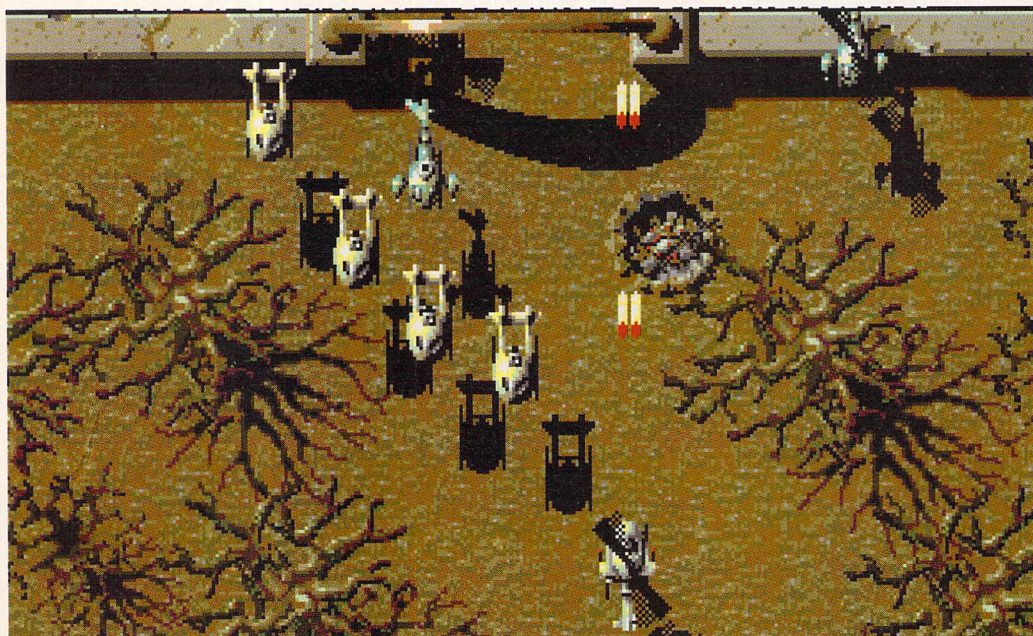
It was long rumoured that SWIV stood for Silkworm IV. Storm vehemently denied these allegations, and after all there is little evidence to suggest it. I mean, SWIV's only a two-player game featuring a helicopter and a jeep

and you do have to shoot the odd thing. Where's the similarity there?

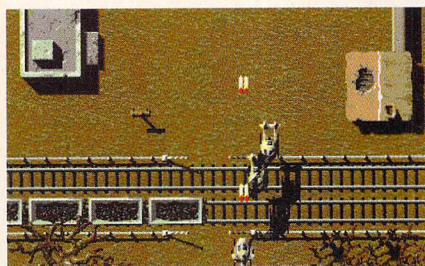
It seems that Storm finally admitted it. Sarcasm aside, SWIV's a pretty mean game of soldiers. I don't think it will have quite the same impact as its, shall we say, relative, but it is a challenging and addictive shooty.

Plot. You really need one? Well, you have to shoot things. Lots of them. And you have to do them in from either a helicopter or a jeep. Get a friend and his joystick on your side and you can increase your firepower and baddy bashing capability but then you'll have to share the loot.

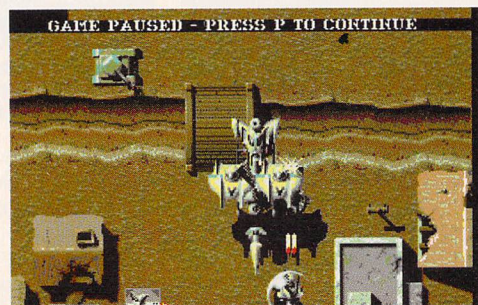
The game scrolls down the screen. You start in the relative calm of no man's land, just outside enemy lines. Almost before you've warmed up your joystick fingers a small squadron of planes has swooped in for the



Things start easy. Just helicopters and maybe the odd tank or two to worry about



Industrial action isn't enough to stop this train. Just nuke it!



The chopper's shield won't last forever, and that Goose plane means business. Shoot it in the middle for a quick end to the battle

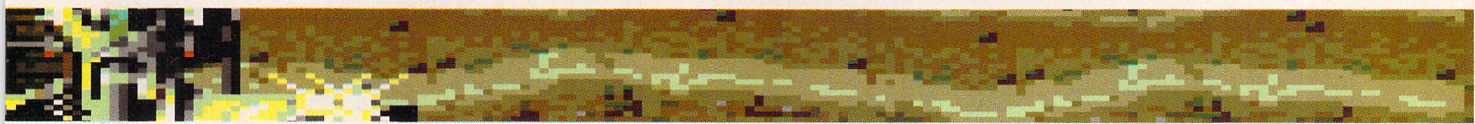
**GRAPHICS 85%**

**SOUND 80%**

**GAMEPLAY 88%**

**OVERALL 85%**





straight over things. It has to find a way around obstacles though it can jump over the smaller ones.

However, this weakness is made up for with 360 degree firing capabilities. Hold down the fire button and you control the jeep's direction, release it and you have the gun turret instead – a control method that works with practice.

The 'copter is the flying eye and so can go straight over any ground obstacles. You'll come a cropper from airborne enemies more often though, because the jeep can only be attacked by bombs or missiles, while the chopper can be hit by general

attack. These can be dispatched with a few deft flicks of your trigger and several rather insipid bolts of fire from the nose of your chosen form of transport.

Things don't stay this easy, and I have blisters on my joystick hand to prove it. You begin with five lives and believe me you'll need them all.

Swift black jets scream into your line of fire with deadly accuracy. Small helicopters hover just up the screen and open up with missiles. SWIV rockets home in on your heat image and threaten to blast you into metal toothpicks.

Both the jeep and the chopper have their own strengths and weaknesses. The main weakness of the jeep is its inability to go

by general flak. Also you can only fire forwards (up the screen) which means you'll have to fly behind things to shoot them – bad news when enemies come down the screen.

It's not all doom and gloom though. As in all games of this type, power increasers are available for collection at certain points. This usually means killing large and dangerous enemies outright.

Collectables available to you include spreading rockets, powerful beam guns and firebolts. Shields may also be collected to give you a minute's breathing space. At various stages of the



**Can you spot the gun emplacement?**

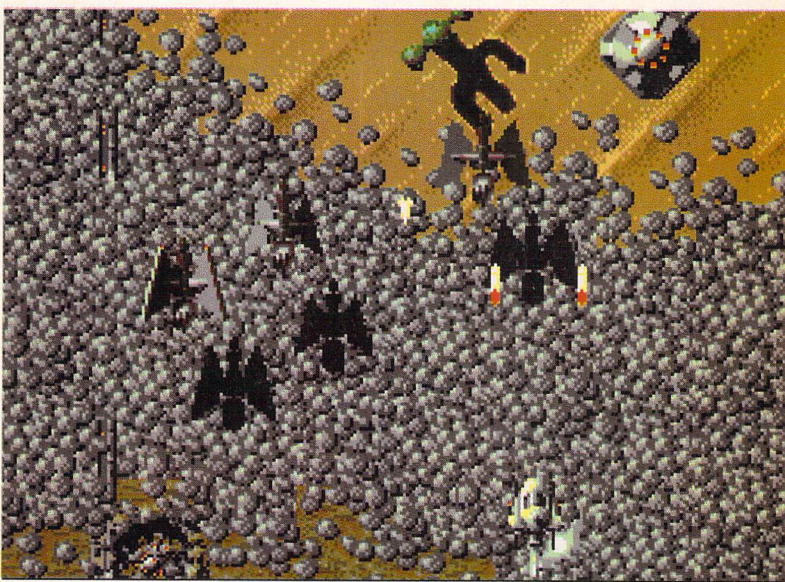
game the enemy regroups and produces a huge robotic flying machine capable of inflicting extreme damage. This needs to be shot in the centre many times to kill it and if you're lucky enough to beat it you'll be rewarded with power pods. Die off completely and it's time to start again – unless you use another of the five credits and carry on the fight where you left off.

SWIV is excellent fun to play

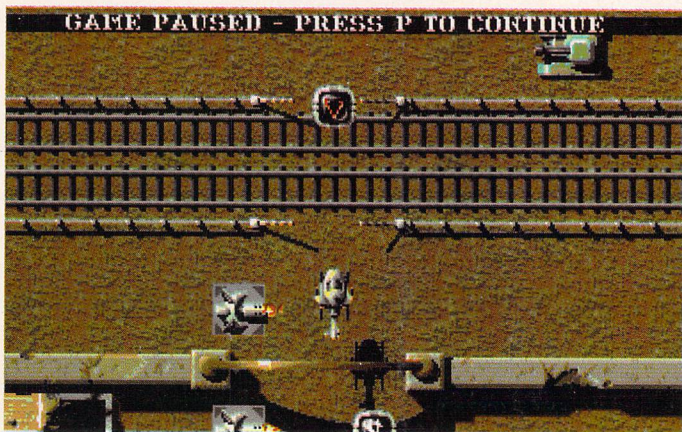
and extremely compulsive. When played in a team it's better yet as you'll find many alliances formed with your friend. That lasts as long as there are no power pods onscreen when there's a mad greedy rush to grab them!

Graphics are of arcade quality and the sound effects are crisp and convincing. Fight the good fight – buy SWIV. You won't be disappointed.

**Colm McNeill**



**Things get more confusing now. Metal birds? Next you'll be telling me there's a pyramid ahead!**



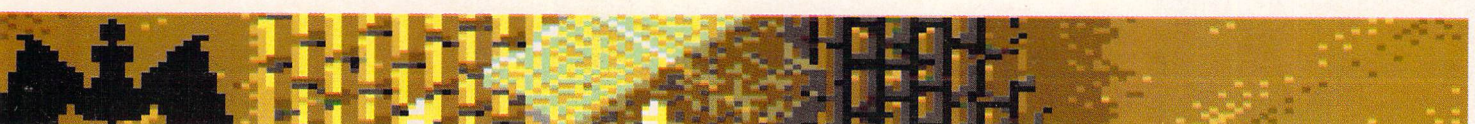
**The tokens grant extra weapons. Shoot them to change between points, spreading and speeding firing**



**Huh! Well I don't believe a Sphinx is going to make an appearance...**



**Holy mackerel! Deadly planes! Is there no end to the enemy's ingenuity?**





**The hero is on the cute and sugary side, the monsters don't look that fierce and even after long and perilous treks into Builderland you often get sent back to the start. But Builder is an original idea and remains quite compulsive for some time**

# BUILDERLAND

**LORICIEL £24.95**

**G**old blocks floating in the sky? Giant killer sheep? And what's that tree come to life for? Well, if everything stopped rearranging itself around me as I watched I might be able to figure it out. Better lay off the mushrooms I guess...

Your hero (who wishes to remain anonymous) has a mission. It is to rid Builderland of its evil forces and restore peace and goodwill to all. Why it disintegrated in the first place is a mystery but who took it is not. The monsters are back – they get the blame for everything, it seems – and they mean business, again.

Your task is not merely as simple as controlling the hero. Nope, you have to guide this single-minded young community figure through the landscape.

He's too busy worrying about his goal to bother with the niceties of life, like avoiding falling off cliffs or walking into fires. It's up to you to ensure his mission is one of mercy for more than just the local undertakers.

Your hero never loses his smile as hazard after hazard presents itself. You control a box. This must be moved over objects and then the fire button picks them up. Moving the box to another location and pressing fire again moves that block.

There are different kinds of objects and each has a different role. Stairs help the hero to reach heights he would otherwise be too short for. Iron blocks fall into holes to plug them and gold ones float in the air and form a magical bridge.

There are uplifters and down-lifters to scale the very high cliffs and bombs to blow up strategic blocks or objects. Bonus items may be gathered en route to help the little guy's cause.

Boots make him run faster, knives may be thrown and potions make him invincible. Don't misuse them though as you'll need every benefit possible to succeed. In



**The cast. From left to right; Superted, The Blob, Mr Tickle, you, a demon, an ogre and a monster**



**Stairs help you to get over things but how do you fill those gaps?**

**Knock the rocks on to the monster's head to defeat it. You need to get its heart – the flowers are the key**



the middle of each level are cottages. These must be rebuilt and entered to do battle with the monsters. You have to shoot them or push boulders onto their heads to kill them.

Problems occur when the screen scrolls across and items vital to the mission are missed. You then have to commit suicide

and go back a certain way. And it's here that the game lets itself down.

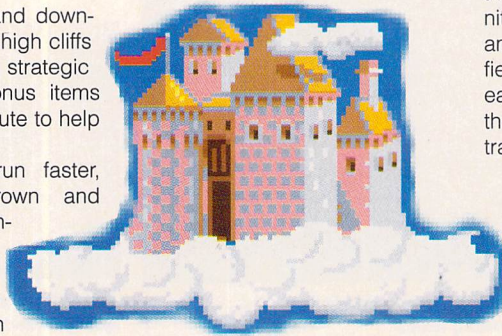
Even after a long progression the game often puts you right back again. I even killed off the monster four times in one game because I got stuck later on and had to come back.

There's bags of character in the graphics. The hero is definitely cute on the side of sugary and the monsters don't look that fierce to me – Gold Ski eaters, the lot of them. And there's a seriously cute soundtrack too.

Builder is a nice, original idea but it's a shame that you get sent back so far every time.

Quite compulsive for a time though and puzzle fans might like to try it out.

**Otis Hall**



**GRAPHICS 79%**

**SOUND 65%**

**GAMEPLAY 67%**

**OVERALL 63%**



# MEGA TURRICAN COMPETITION!

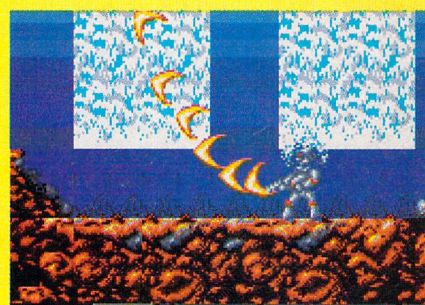
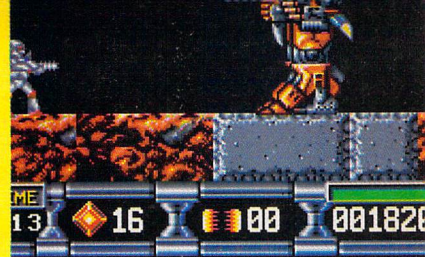
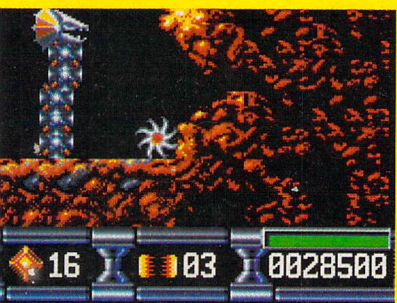
*If you've read the review (see page 41 in this issue) you'll have seen just how good a game the new Turrican 2 is. But if you've been around for a year or so you'll also know about the world-beating original - Turrican.*

*We felt that you ought to get hold of it just to set you in the right frame of mind for the sequel so here's your chance to win one of 15 copies. The winner will also get a Rainbow Arts Goody Bag with tons of T shirts, mugs, posters and stuff like that to show off to your mates.*

*What do you have to do? Simple. Draw us a pic of Turrican blasting his way through hordes of alien bad guys. We'll print the best of them, along with details of the winners, in a future issue.*

*What are you waiting for? There's a whole universe out there just waiting to be rescued.*

*Get your masterpieces in to me at this address: Oh Turrican, You're Such a Hero, Atari ST User, Europa House, Adlington Park, Macclesfield SK10 4NP. Entries must be received before 15 June 1991. The winner will be announced in the September issue.*





**The sci-fi film Tron features an incredible "Discs of Tron" fight sequence. A game based on this sequence entered the arcades soon after the film's release, but passed into obscurity. But now, it's back, revamped and with lots of new features that make it a delight to play. Graphics and sound effects are excellent. In fact, it's so good, it wins our Game of the Month title!**

**GRAPHICS 88%**

**SOUND 74%**

**GAMEPLAY 93%**

**OVERALL 92%**

**D**ough? What sort of name is that? Then I see the 20-stone mound of blubber standing on the causeway across from me. I see his eyes gleam as he winds up for his throw. The buzzer sounds and a disc of pure light hurtles towards me...

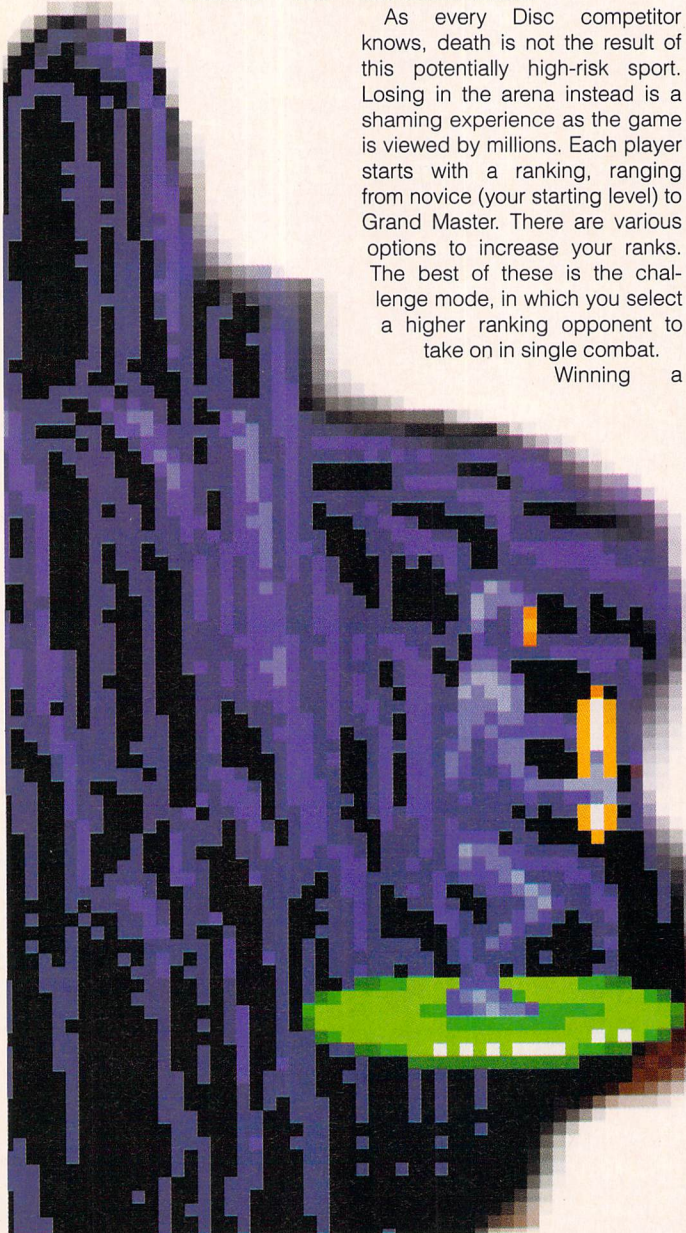
OK. Hands up who remembers Tron? The cult sci-fi movie was widely acclaimed for its futuristic graphics and imagination.

Tron freaks, though, will tell you that the best thing about it was the "Discs of Tron" fight sequence. A game based on it appeared in the arcades that

year but it soon passed into obscurity. Until now. Because those awfully clever Loricel people have revamped it for the Nineties. Disc boasts loads of new features, over thirty players with individual playing strategies and some really nice graphics and sound effects.

As every Disc competitor knows, death is not the result of this potentially high-risk sport. Losing in the arena instead is a shaming experience as the game is viewed by millions. Each player starts with a ranking, ranging from novice (your starting level) to Grand Master. There are various options to increase your ranks. The best of these is the challenge mode, in which you select a higher ranking opponent to take on in single combat.

Winning a



# DISC

**LORICIEL £24.95**

challenge effectively increases your rank if the opponent is of a high enough class. Then come the competitions.

Championship pits you against all of the other players one by one in ascending order, while tournament gives a random player as an opponent in each round. As you progress, the game automatically saves your character's details to disk and so you can gradually progress through the ranks.

But what of the game? Well, the idea is to defeat your opponent by either banishing him to the lower depths of the playing area, draining his energy or beating him on points after the time runs out. A point is scored for hitting the opponent with your colour disc or knocking out part of his playing area.

The latter of these is done by hitting the symbols on the boards above it. According to the symbol, ranging from Hexagon to circle, the board has a limited number of hits.

Hitting a circle symbol makes the corresponding square on the opponent's playing area vanish. This effectively gives him less space to manoeuvre around and by knocking the square from under him you can knock him into the abyss.

You're not defenceless against the enemy discs though. As a disc speeds towards you you can pull out a shield and deflect it back to its destination. Doing this changes it to your colour.

If your disc is returning you can automatically catch it by standing in its path as it shoots back to you. As there can be up to four discs each the game can really become hectic!

The graphics are reminiscent of the Tron film, with great animation of the characters. Sound in the game is quite limited but excellent, with 'swish' sounds as discs are launched and a





Choose a player from the motley bunch of novices. I'm not that ugly in real life...

scream if you lose! If you've got friends around you can also challenge them to a two-player game which makes for some interesting verbal abuse!

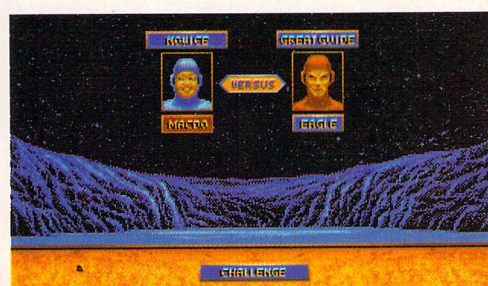
I was pleasantly surprised by Disc. I had half expected to be very disappointed by it, as the

idea is so old. But Loriciel has done such a brilliant job of the game I can't say anything but this: sports fans should buy it, and two-player game freaks will love it. I rate it game of the month!

**Mathew H. Jones**



Defence training. Learning to deflect those red discs will save your skin more than once



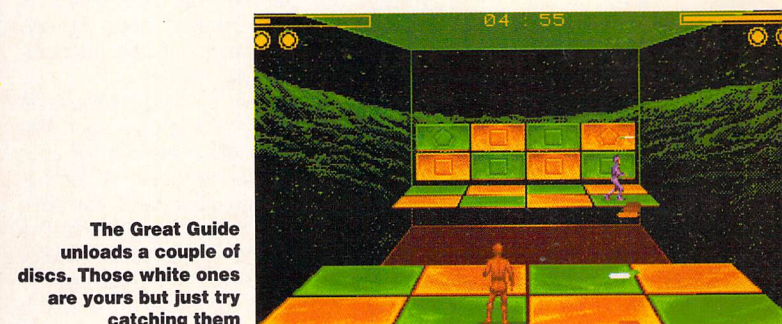
Challenge mode, and you've picked on the worst guy of all. The Great Guide will delight in pummelling you without mercy



In training. Initially, hit the question mark as it moves around the symbol boards



Now aim at the unarmed Lori. You coward! But the skills gained here will see you right in time



The Great Guide unloads a couple of discs. Those white ones are yours but just try catching them



Spike's a more balanced opponent. You've got a chance of advancement now



**Poor little Tom is all alone in a creepy castle after his mum is kidnapped by poltergeists. A friendly ghost takes him on a mission to save her. The art is to keep a balance between young Tom's happiness, and the seriousness of the mission. Some genuine imagination has gone into this game.**

**GRAPHICS 90%**

**SOUND 75%**

**GAMEPLAY 85%**

**OVERALL 82%**

**T**om and his mother Ellen are on holiday ghost-spotting in Scotland. While in a very creepy old castle, a bunch of poltergeists kidnap Ellen.

Tom is heartbroken, alone and afraid in the castle, when a benevolent passing ghost befriends him and takes him on a rescue mission to save his mother.

A ghost's work is never easy, and that's without the seesaw emotions of a young child to cope with. You play the ghost, and have to manipulate Tom using burgers, milkshakes, teddies and a golden whistle to keep him happy.

Both Tom and the ghost have energy meters. The ghost's energy is sapped by carrying heavy objects and Tom's by contact with the vicious undead that patrol the castle. Tom isn't defenceless however. Being an American, he always carries his baseball bat and if he's in a good enough mood he will take a swing at the marauding spooks.

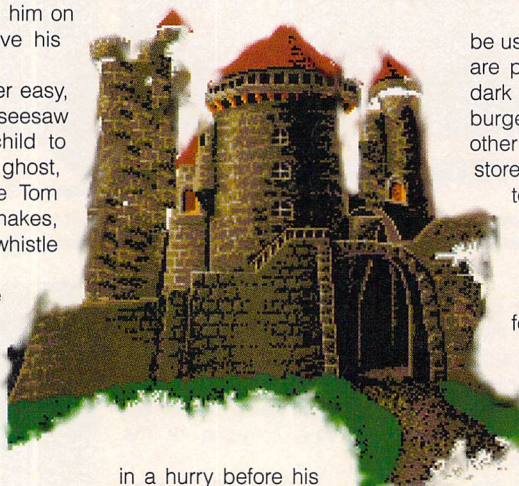
The ghost's energy is shown in the form of a suit of armour. The better condition the armour is in the better the ghost is feeling. Tom, on the other hand, has obvious psychological problems. The principle of these is loneliness, because like every budding little President, he misses his Mom.

You've got to keep a careful balance between Tom's happiness and the seriousness of the mission in order to succeed. Tom shows his mood by behaving in different ways. If he's bored, he starts blowing bubbles with his gum. This should be taken as a heavy hint that he wants to get on with the search! Tom is not always a good boy and may get into mischief. A battle soon makes him aware of the gravity of his position again though. He can get very hungry, and should he start daydreaming about hamburgers it's wise to get him some fast, but don't overdo it or you may find out that chuck is not just an Americanism for Charlie.

And if Tom starts sulking in the corner, you've got to lift his spirits

# TOM AND

**UBI-SOFT £24.95**



be used in the early stages. There are potions, keys, the lighter (for dark places), a magic harp, extra burgers and shakes and many other items to collect. They are stored in the status area at the top of the screen.

Double-clicking on the fire button highlights one of the item boxes and the relevant item may be selected for use. Click on the item you need and it is activated, often with unpredictable results!

Some items have a very strange effect when used and should be approached with caution. A disk found in the castle allows the game to be saved if you so desire. It's a good idea, as Tom and the Ghost is a big game.

It's lots of fun to play, and there are some really good graphics. Tom is especially cute, despite all of his tempers and sulks, and the ghosts all move around their atmospheric surroundings nicely.

Sound is well used, with a range of effects and a tune that may be switched off (phew!), and the screen is full of colour all the time.

Controlling Tom and the ghost

in a hurry before his depression gets the better of him.

There are times when you have to leave Tom, to explore further reaches of the castle. This has a bad effect on him but you may summon him with the whistle. If he's in a cheeky mood he may just shake his head, though, so watch out.

There are many objects along the way that can be used to help the quest. The ghost may arm himself when he has the power, and fight the enemies himself.

Carrying anything takes its toll, and some of the weapons can't



**The start. Tom looks upset but a teddy will make him feel a little more chirpy**





# THE GHOST

together is tricky. Try lacing your shoes while juggling to get the idea. Nothing's more irritating than trying to fend off a posse of phantoms only to find that Tom is off playing somewhere.

Having said that, it gives the game a fresh and challenging aspect, and you'll probably have less hair when you leave your ST than when you sat down to it.

Possibly the most important aspect of the game is its originality. There's a rare spark of imagination here – something which has been sadly lacking of late. Arcade adventure fans will love it.

**Colm McNeill**



Tom scarpers as a ghost appears. A quick blast on the whistle will bring him back



Tom swings for a ghost and hits a home run! Watch his physical strength rating though



Ghosts everywhere! Tom's baseball bat has its work cut out for it

A puzzle: how do you get past the gate? Elementary my dear Tom!



A witch, lurking above. Well, more likely loitering with intent, really

This juggler's not as jolly as he looks! Reminds me of Ronald McDonald...



# TRADE SECRETS

Trade Secrets has until now been a sort of advanced playing guide. Well, starting this month, Trade Secrets will be just what it says - hints on games past and present, straight from the horse's mouth! We'll be torturing those poor, innocent software companies until they give us their inside information, cheat modes, back doors and short cuts - so watch this space!

If a game has been bugging you for ages don't fret, let us know and we'll see if we can drag the solution from the guilty software house!

## PICK 'N' PILE

This teaser from Ubi Soft can trip up the unwary, so here are a few hints to get you started. The early stages should pose no problems for time.

Remember that you may drop more rocks by pressing the right mouse button if you get stuck. A single rock with no pair may be disposed of by dropping a bonus block or diamond on it.

Two rocks may knock each other out if you drop the second from two or more squares above the first.

Diamonds are awarded if you make a really big score at once.

This is best attempted by setting up a huge stack of rocks on top of a bonus square. The rocks won't vanish until you swap one in the stack with the bonus at the bottom.

The more bonuses you include in the stack the bigger the multiplier and the better your chances are of clocking up diamonds.

On levels where time is short remember that you may move rocks around while others are dropping from the sky.

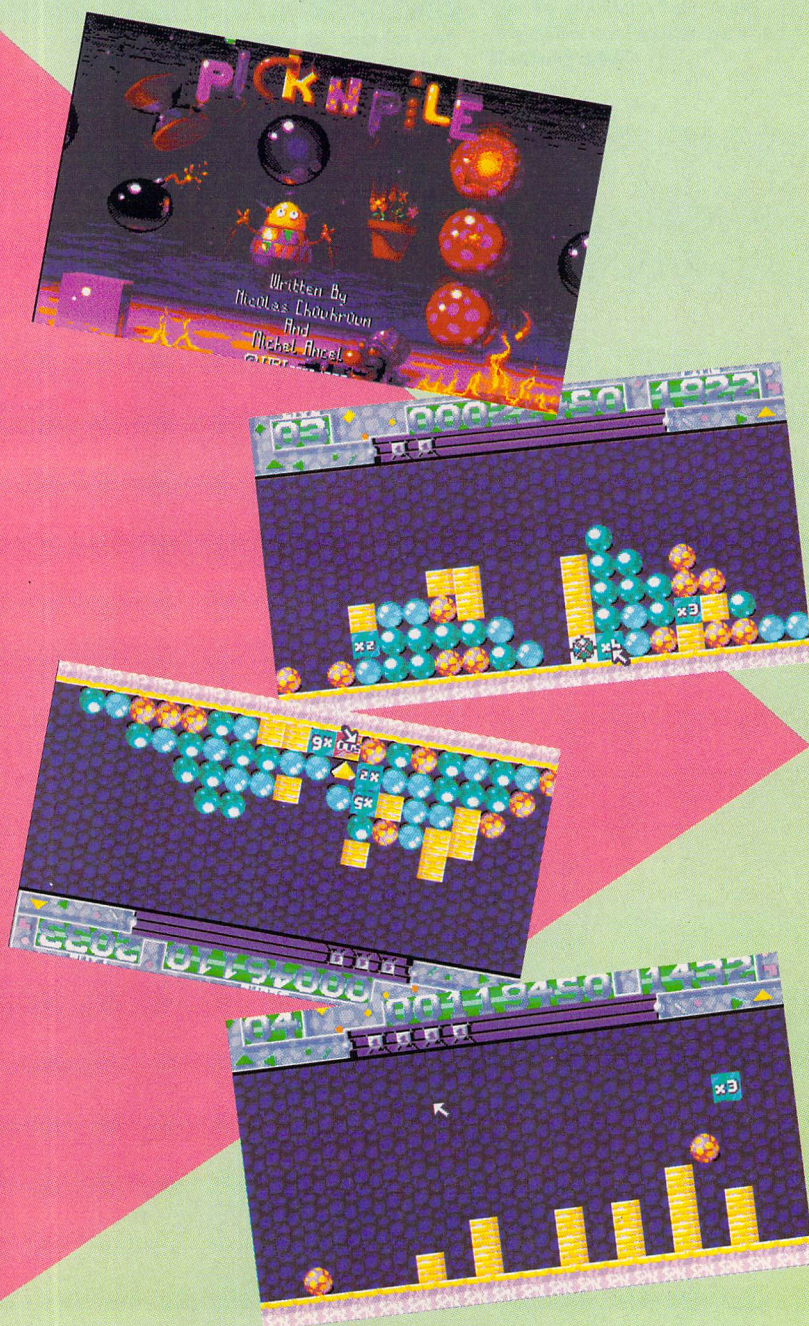
Never give up on these levels, because despite the frantic sound from the clock there may be time if you stay calm and get as much done as you can. Extra lives may also be earned in this way.

Skulls are a real pain, but they may be blown to bits with a bomb. Otherwise try to avoid them if at all possible. Potted plants may be detonated too.

Fire is best tackled by using the edges of the screen where the stacks are smaller and by swapping the fires for rocks of the same colour.

If you fill up the diamond collector you get a mega bonus score, so don't let any diamonds escape your clutches!

Most important of all, don't panic. The worst that can happen is you'll lose a life. Be prepared to experiment, and don't allow yourself to get angry or flustered or you'll keep on making the same mistakes.





# Ivan Stewart's Off-Road Racer



Here's a tip that could win you the race and earn a lot of cash. As soon as the green light shows, press fire to activate your nitro booster.

This gives you an extra edge on the other cars right from the start, which you may then build on. Don't use this technique if there's a corner right at the start though, as control on corners with the nitro is very tough.

The first upgrade you should buy is tyres, because the extra grip gives you a vital edge on important corners and lets you avoid many of the hazards.

Shocks are not that important early on; go instead for acceleration and top speed. Even

though they are costly they will pay for themselves in the long run.

If you're behind, don't panic. Don't use excessive nitros in an attempt to make up the ground because if you're that far behind you've probably lost the game already.

Burning nitros only gets you stuck in a hazard. A better tactic is to concentrate on driving safely to avoid crashing again and hope that the leader does something stupid and slips up.

Similarly, when you're ahead there's a strong temptation to use nitros. Don't unless it is absolutely vital, but make sure you stay clear of trouble.

## SIERRA GO ONLINE FOR HINTS

Stuck in Leisure Suit Larry? Can't get the ring in Hero's Quest? Then dial up the Sierra On-Line hint service bulletin board.

It's packed, as you might expect, with hints for completing their games, so if you're stuck and a modem owner, dial 0734 304227. You can get on to the system at 300, 1200 or 2400 baud rates.

Apparently the US versions of the helplines averaged 1 million calls per game. Lucky the number isn't prefixed 0898. Still, I reckon Sierra deserves a big round of applause for this move.



## Over to you

Chickieun Wong of Plymouth, Devon, writes in with this cheat for Outrun, an old but popular game.

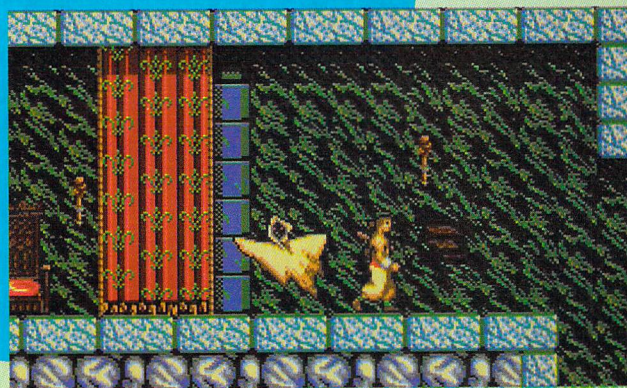
Once the car has started moving type STARION, then press S to skip levels or B for bonus time. Thanks for that, Chickieun. As you're a fast-lane man, a copy of The Ultimate Ride from Mindscape is on its way to you.

Horror Zombies from the Crypt is an up-to-the-minute game of creepy scenes and dark horrors. Undaunted by this, Paul Borgerson of Southport has played it to death, and come up with these level codes:

- LEVEL 2 - WOLFMAN
- LEVEL 3 - HAMMER
- LEVEL 4 - LUGOSI
- LEVEL 5 - NOSFERATO
- LEVEL 6 - GARLIC

Paul's also found a cheat mode. Type BOGEYEATER to access it! Thanks Paul, and enjoy your copy of Death Trap as you seem to like gory games. Maybe you can do us some tips on it?

Keep them coming in!



## EARN WHILE YOU LEARN

Until now there's been little incentive for you to slave away over a hot keyboard and send in your hints, tips and maps to us for publication. Seeing your name in lights is not enough in itself.

Well that's all about to change. From now on any contributor to these pages will be rewarded with one of the games of the minute. That's software worth upwards of £25.

Write us a solution, draw a map or send in a few cheats. We send you a hot new game, which you can then send in hints for. And so it goes on.

So what do you have to lose? Get those game guides in to me at this address: Game Guide, Atari ST User, Europress Publications, Europa House, Adlington Park, Macclesfield, SK10 4NP.



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# PLAYTEST **EXTRA...**

## SECOND POST

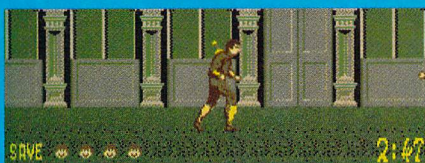
Where I come from we don't actually get a second post. However I do have a deadline, and sometimes there are games which miss it by mere minutes. In this case, the time lag is a few days.

### **FINAL COMMAND - UBI SOFTSPACE**

We've reached the final frontier with this one, but still, it seems, Agatha Christie has penetrated even its depths with mystery. You have been called to discover what went wrong with JUNAR G2.

To do this, you have to travel to Ipsos III to investigate. And if you think the places have weird names, check out yours - Agent YG30.

Great graphics, cool plot - check it out next month.



### **FISTS OF FURY - VIRGIN GAMES**

Play it again with four blasts from the past, but apparently STE owners will be disappointed - it doesn't work on it. Ha. The titles are Shinobi, Double Dragon II, The Ninja Warriors and Dynamite Dux.

Can you guess why it's called Fists of Fury? Looks to be good value for violence fans.

### **HILL STREET BLUES - KRISALIS**

Hill Street Blues the television series has received 59 awards worldwide. Hill Street Blues the game is unlikely to get quite so much attention but it certainly captures the spirit of the original show. You have the unenviable task of controlling the force.

As they go about their routine patrols and checks various crimes are committed. You must assign officers to the area, arrest suspects from photo-fit descriptions, fit them to existing unsolved crimes and put them in prison.

There's 10 squad members to utilise which have to combat drug pushers, murderous pick-pockets and muggers. Everything from radio contact to squad car control is down to you in a precinct that is an accurate replica of the one in the Hill Street Blues series.

### **LEMMINGS - PSYGNOSIS**

Quite possibly the cutest game ever, certainly one of the most addictive and original.

Not a furry rodent in sight, but a race of incredibly stupid creatures who walk off cliffs, into fires and seas. You have to manipulate them using icons to turn them into diggers, bombs, builders and parachutists! Superb puzzling action, so prepare to lose your sanity next month.

## USER RECOMMENDED

What do you mean, you didn't see our review? Going to miss that brilliant game? No chance. Here are a few games that you'd be absolutely Long Thin Yellow Fruit to miss out on:

### **PICK 'N' PILE - UBI SOFT**

Superb puzzling action and mind-numbingly addictive. Grab the rocks and stick them on top of other rocks. But watch out for the giggling heads, potted plants and time-bombs!

All of this and a vicious time limit to contend with. It's no wonder we recommend this to people who have trouble with sleeping too much and a proliferation of hair.

### **DEATH TRAP - ANCO**

If you go down to the crypt today, you're in for a big surprise...

In fact, cryptomaniacs will love this masterpiece of gore. Loads of ghastly levels, tortuous traps and foul phantoms. And watch out for the grabber from below!

Frantic, fast and filthy, Death Trap is an instantly playable game. Get it.



### **LOTUS ESPRIT TURBO CHALLENGE - GREMLIN**

Not a Porsche or Ferrari in sight, but check out the Lotus! Superb fast action driving game with bags of special features; hills, hairpin bends, a choice of gear-boxes and levels and loads of nice fast cars.

Driving freaks will freak out - particularly if they miss out. So make sure you don't.

### **PRINCE OF PERSIA - DOMARK**

Brilliant action in Arabia. Grab a sword and fight the hordes as you explore an Arabian king's castle that is fraught with pitfalls and dangers.

Don't tread too heavily or the floors might collapse and deposit you on a bed of spikes. You'll be tempted to sit and watch the amazingly lifelike animation - but don't forget, your girlfriend's life's at stake! Compulsive arcade adventuring.



# THE BUSIN

**D**oesn't Christmas seem a long time ago? The shiny new STFM or STE, that was such a source of excitement and wonder all those months back, is now sadly neglected.

The last end-of-level guardian has been sent packing, England have won the World Cup 47 times and the Amulet of East Barnsley has been recovered and returned to its rightful owner.

A revival of interest in ST gaming depends on someone shelling out 25 notes for the latest mind-pummelling block buster.

"Tut, tut," you mutter. "All that money...I knew it wouldn't last." Well, wake up Dad – or Mum, for that matter. That grey plastic box

**Atari is often criticised for underselling the ST as a serious machine.**

**Phil Trory has been finding out how the range performs in the business world**

cost as much as it did because under the sleek high-fashion exterior lies a computer.

It certainly is great at degrading the offensive capabilities of COXTOs (Creatures Of eXtra Terrestrial Origin) but it is also capable of some very serious applications.

If you run a small business, you have probably noticed that the administrative load is not proportionately less, compared to larger organisations.

The tax and VAT men are, if anything, more fussy about smaller operations and, if anything goes wrong you don't have 23 other subsidiaries to carry the loss. You can end up doing the real work that brings in the money during the day and balancing the books when the rest of us are asleep.

## BIG DEALS

You might have looked wistfully at PCs in shop windows, and turned pale at the prices, not only of the machines, but also of the software you need to get any useful results from them. If there don't seem to be too many discounts on offer, the reason is simple.

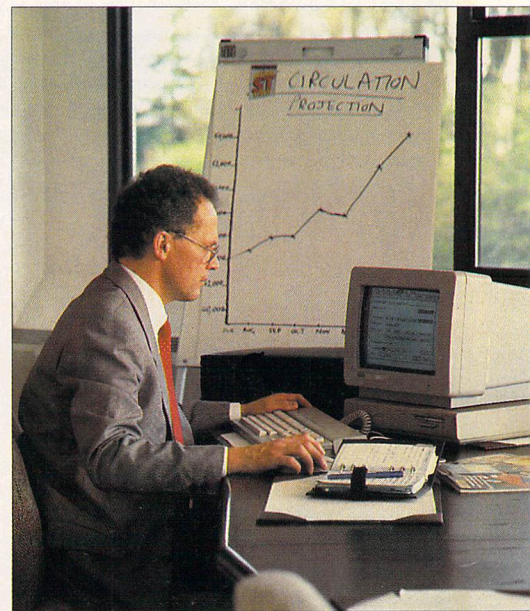
PC software is aimed at big companies and the suppliers are looking for big deals. Go in with an order for 200 copies and the price will tumble. Buy just one and you pay top whack every time.

Yet if you go to a dealer selling both PCs and STs, the chances are you will be directed towards the ST for games and the PC for business, despite the fact that your office needs may be met perfectly well, or even better, by an ST – and at a lower cost.

Tempting as it may sometimes be, don't shoot the dealer. Everything he sees, from reviews to advertising, tells him that the PC is the machine for the professional user.

So why would you buy an ST for business use? Is it just a poor man's Apple Macintosh; good for desktop publishing and graphics, but only if you can't afford the real thing?

The ST's marketing slogan is "Power without the



price", an indication that the Motorola 68000 processor can more than hold its own against the Intel 8088 used in the IBM PC XT.

The ST can even hold up its head alongside PC AT/286 machines, and it is only when you get to the newer 386 and 486-powered PCs that the Intel machines start to draw ahead.

Even so, for real power users Atari is now shipping the long-awaited TT which with its 68030 processor and massively expandable memory, competes as a graphics workstation with the Amiga 3000 and the Apple Macintosh SE30.

Budget PC systems are often based around old XT or 286 machines, whereas modern PC software generally needs at least a 386SX. On anything less it will run like a slug in porridge.

The PC's blank screen, with A> blinking in one corner, doesn't give you much of a clue about what to do next. To get the equivalent of the ST's Gem you have to buy the Microsoft Windows package and you'll need a 386 machine and between three and four megabytes of extra memory if you are to use it to the full.

You'll also need to know about the AUTOEXEC.BAT and CONFIG.SYS files, not to mention device drivers and memory managers. Alternatively, buy an ST, plug it in, stick

## OLD RIVALS

The ST has never broken into the business market in the UK on the scale that has been achieved in Germany.

Dealers and software producers blame Atari's marketing strategy, but Peter Staddon, Atari UK's new marketing manager, points out that British business has always played safe with PCs and that even Apple has struggled to get a decent market share.

"It would obviously be nice," he says, "to see Ataris on desks in all the major companies but the cost of achieving that sort of penetration would be enormous".

It is a cost that Commodore, Atari's arch rival in the games division, is apparently prepared to stand, claiming to be "the second largest shipper of computers in the world", which presumably includes a few C64s.

Commodore has launched a range of business-oriented PCs, from the PC10 XT, which includes a video tutor for the complete bozo, to the DT486-25C, which boasts a 32-bit Intel i486 microprocessor and will leave you a penny change from £4,700.

The Amiga isn't dead yet, either. "Designed for creative businesses and educators," according to Commodore's double-page ads, the new range is headed by the Amiga 3000/UX, based on the same chip as Atari's TT and running the industry standard Unix operating system, which has a cult following among computing professionals.

So what is Atari doing to fend off this activity by its major competitor? Sowing rumour and confusion would be the uncharitable analysis.

Having established the ST as arguably the best all round 16-bit home computer despite some deficiencies in the sound department, the launch of the STE, combined with continuing sales of the old STFM, left many people wondering which to buy.

Only with the UK launch of the Mega STE in May did it become clear that Atari sees the STE as the standard for the future.

Commodore's strategy is to establish its PC range in the corporate market place and to enhance the business credibility of the Amiga by association.

The danger for Atari is that it wouldn't be the first time a superior product has been defeated by a more aggressive competitor.

Without a big shift towards the business buyer, the ST could be left competing on price with games consoles.



# ESS LIKE ST

a disk in the drive and get down to work. The ST's abilities in DTP are well recognised, with software ranging from the budget-level Timeworks at less than £100 to the definitive Calamus at around £450.

There is strength, too, in word processing and ST users can make their choice from packages like 1st Word Plus and Arnor's Protex.

Word Perfect is available for the ST, Amiga, Macintosh and PC, although the latter accounted for 80 per cent of the 375,000 copies sold last year. Computer aided design is another recognised ST strength, with DynaCADD from Expressworks heading an impressive list of software.

In these applications, the ST is seen as an alternative to the Macintosh. Apple has cleverly positioned their machines in a marketplace where users are prepared to pay extra for something different.

There is little doubt that the Macintosh is a very nice piece of kit and there are some areas, like networking and drawing with 6.5 million colours, where it has the ST thoroughly licked. If you don't need any of these, the ST is better value for money and does the job at least as well.

## EASY AS 1-2-3

Spreadsheet packages are widely used by accountants and analysts to examine past performance, control costs and prepare plans for the future.

The most popular PC spreadsheet is Lotus 1-2-3, although it is being seriously challenged by Microsoft's Excel and Wingz from Informix. Dealers cite a shortage of quality financial software on the ST as the main reason for preferring the PC.

When I put this to Jon Day, director of Kuma Computers, his reaction was stronger than any family magazine would wish to print.

"How many spreadsheets do you need?" he asked, pointing out that Kuma's range covers all needs, from entry level K-Spread 1, up to K-Spread 4, which can read Lotus worksheet files directly, offers a range of graphing facilities and uses Gdos to give full control over report styles.

You have to go to Excel to find anything comparable on a PC or Mac. The ST is surprisingly well supplied with software for book-keeping and financial accounts. SageSoft, Digita and Equinox all supply packages catering for small business.

At the budget end, Double Sentry boasts 150 users, from a pottery on the Isle of Skye to an electronics company on the Isle of Wight. The

**Even budget ST packages such as Mini Office Spreadsheet are made easy to use by Gem**

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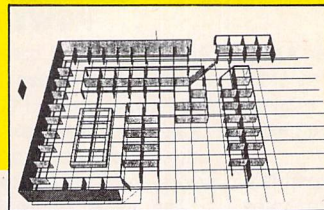
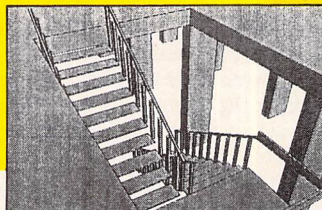
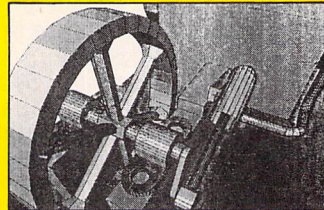
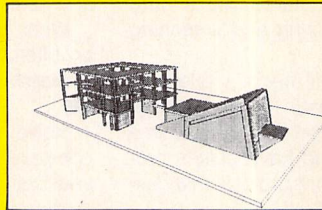
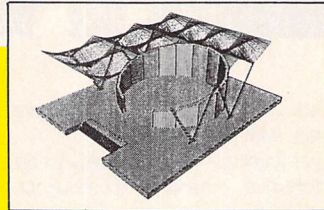
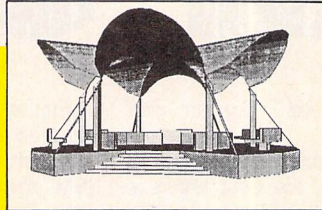
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# Master CAD



## *Elegance Without the Price*

Now there is a professional three-dimensional designing tool available for the Atari ST that is so remarkable it will establish the standard for years to come. This exceptional CAD package introduces a revolutionary concept in graphic design which allows the user to project any two-dimensional figure into a three-dimensional image. You can create astounding effects easily without spending endless hours building data matrices, or learning to manipulate a primitive and confusing user interface.

**Master CAD's** simple, *structured* interface lets you control the variables and parameters, select the best view to work from, define the projections planes, and build any object you want. After creation, you can use the object to build more complex drawings. *Auto Dimensioning* lets you calculate exact distances between points in a drawing, saving vast amounts of time. **Master CAD** uses the screen as a window into a larger workspace extending to more than 4000 kilometres in each positive and negative direction (or about 2,300 miles!!).

For a long time Computer design has been limited to experts who must spend as much time learning the machine and its language as they do studying design. Now **Master CAD** puts the power of the computer into the hands of the designers, regardless of their previous computer knowledge.

If you design for a living, or just want to experience the most advanced three-dimensional drawing tool available, ask your dealer for a demonstration, or place an order today.

**Master CAD** outputs to Hewlett Packard Plotters, HP COLOUR PRO, HP 7550, HP DRAFT PRO or to an Epson FX80 (or fully Compatible) or ATARI SLM804 LASER.

ST WORLD (October 89) said, "*Master CAD is a powerful, full featured CAD Program*"

**MASTER CAD REQUIRES 1 MEG OR MORE OF MEMORY.**



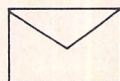
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would have liked. In 1984, Apple struck back with the non-compatible Macintosh. Jack Tramiel, the new boss of Atari, dismissed it as "a machine for boutique owners" and many pundits forecast that Apple could not survive outside the PC camp.

With hindsight it seems that the Mac, with its mouse and Graphical User Interface (GUI), was simply years ahead of its time. In 1987, IBM launched the PS/2, with a new operating system (OS/2), developed jointly with Microsoft, and its own built-in GUI (Presentation Manager).

Furthermore, it was all hedged about with

patents and copyrights so there would be no more clones.

The business community turned pale. What about all the millions invested in PCs, the existing systems, the software?

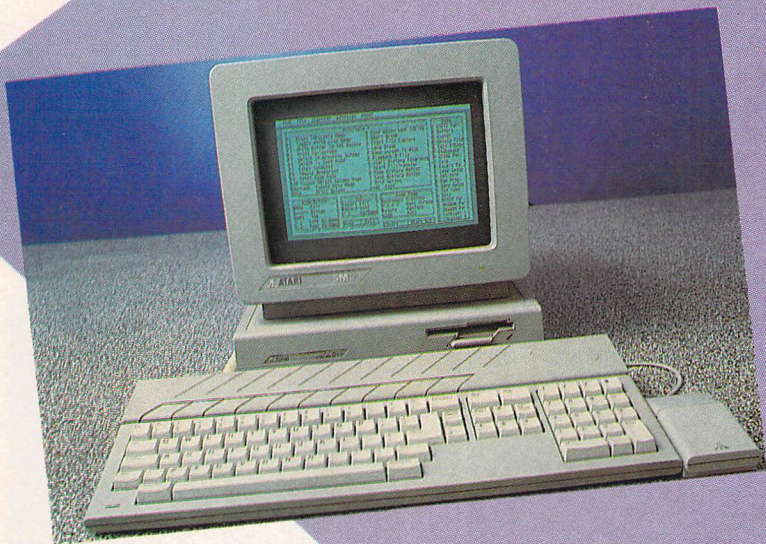
Ironically it was IBM's partner, Microsoft, that came to the rescue, releasing Windows, a GUI which would run under MSdos on a standard PC. The software developers carried on supporting MSdos and ignored OS/2.

Adding insult to injury, people who bought PS/2s ran MSdos on them. While total sales of OS/2 number around 300,000 the latest Windows version 3.0 has sold 2.25 million in

one year alone. Apple is already capitalising on IBM's deviation from its own standard.

As people start to realise that they don't necessarily need PC compatibility, the opportunity is increasing for non-standard manufacturers to sell better ideas on their own merits.

Now former Apple boss, Steve Jobs, has reappeared with his black, non-compatible NeXT workstation. The future is wide open and, according to Atari's Peter Staddon, over the next two years you can expect to see the Mega STE and TT pushing hard into the gap.



## THE HARD CHOICE

**For business use the standard 520 and 1040 STs are OK but by no means ideal. When you want to move the keyboard into a more comfortable position, the rest of the machine comes too, and if you are really lucky all the leads are still attached.**

**If you have the choice, buy a Mega, with separate box and keyboard. And what about the TT? If your business is heavy duty engineering or design, if you are a professional programmer or Simple Mind's recording manager, then you should be thinking about a TT.**

**You might also be keeping your ear to the ground for the tower version that runs Unix and saving to buy 26 megabytes of ram upgrade chips.**

**If you value your eyesight at more than £100 buy the Atari hi-res mono monitor, which will give a crisp, flicker-free display and has the lowest radiation output of any on the market.**

**You will probably also need a hard disk, unless you are prepared to limit your data and program storage to what can be fitted on one megabyte disks. For really professional output, you will need a laser printer, and some are creeping in below the £1,000 mark.**

**Make sure you have enough memory – you will need at least two megabytes to drive a laser. There are lots of other bits and pieces you could consider adding to your hardware set-up.**

**A modem, for example, will enable you to communicate with other computers far away, or access business information services such as Reuters, Dunn & Bradstreet and Extel.**

**If you frequently retype documents into word processors, how about a scanner, with optical character recognition (OCR) software? Then you just scan the pages you want and let the software turn it into a text file. A firm called Zephyr has even come up with a clever device called the STeFAX, which combines the functions of scanner, printer, fax machine and copier for STE users.**



# ART BREAK

## Bringing the National Art Gallery into your living room, this month we publish some of the entries we had for the graphics competition

Most entries for the graphics competition were very good, but unfortunately several of you chose copyright subjects, so they can't be printed. It would be helpful if future entries

were accompanied by details of the artist, including age group, reasons for the choice of subject and a brief description of how the work was put together, and the paint pack-

age used.

This will help us to judge your pictures fairly, particularly as we want to encourage youngsters and beginners.



### MARK MCDERMOTT - TRAIN

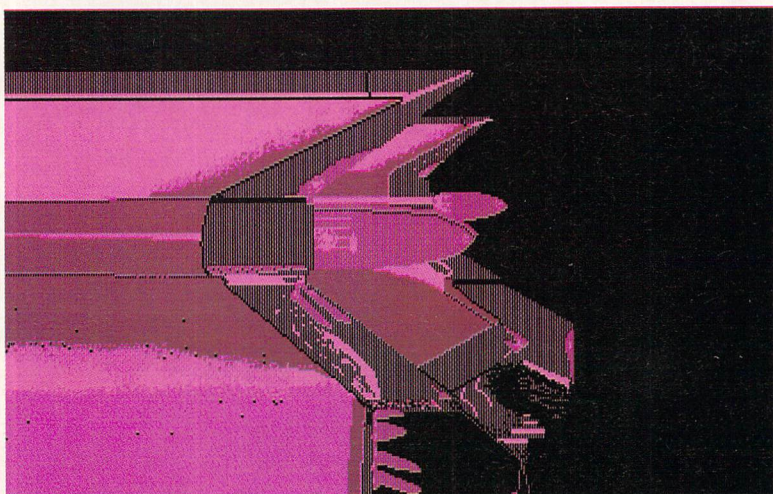
Mark seems to be an expert in silhouette. We love the warm colours and reflections and again the straight blocks of the train against the smoothed clouds and water.

Some nice touches in the water and the lit windows.

### C. VINCENTI - CADILLAC

This is an ambitious screen, with a good choice of glowing colours to depict the immortal tail fins - very suitable for the rear lights. The composition is reasonable, the eye being led out of the screen gives an impression of movement and a good attempt has been made to get the right perspective.

What other colour could a Caddy possibly be but pink, eh Mr V?



### C. VINCENTI - PLATE

Another entry from Mr Vincenti, this simple but attractively coloured licence plate took only a few hours to complete.







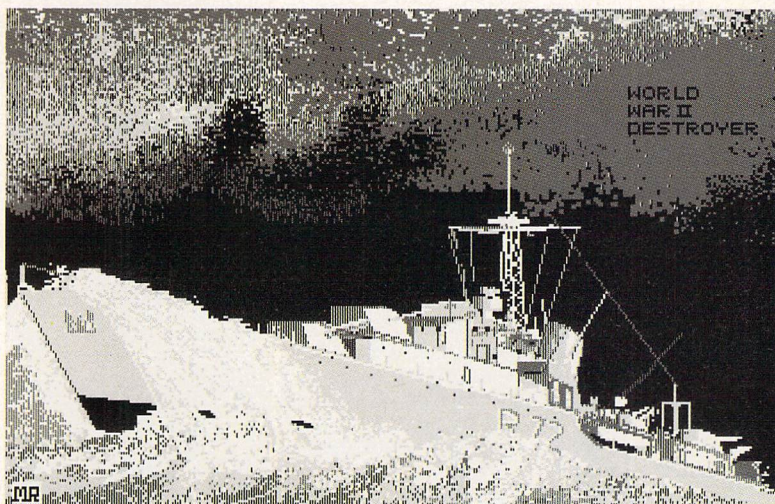
## MARK McDERMOTT - LIGHTNING

Mark McDermott of Salford sent this effective screen. We like the electric colours and the choice of subject. The strong, straight lines of the shadow against the jagged bolts are very striking.

## MICHAEL RICHARDSON - WARSHIP

This moody study by Michael Richardson of Chelmsford portrays its subject well in monochrome. Some images work much better in greys, and this is a good example.

His lines, the strong form of the ship contrasting against the rolling sea and cloud shapes are all impressive.



## WILL BROOKS - PHAROAH

Will has spent a while composing the perspective in this screen and has made a good attempt at multiple vanishing points. Being clinical, some of the lines are inaccurate but the overall effect achieves focus on the figure.

A bold choice of colours too. A good try.

## WHY NOT DIP INTO THE MONEYBOX?

This month's £25 prize goes to Mark McDermott for his train screen. Obviously a lot of work has been put into shading the clouds and water, and an attractive background to emphasise his dark little steam train on the bridge has been produced.

It's well thought out. Congratulations, Mark.

We still awaiting your letters and questions. If there's a specific subject you would like discussed or a technique you wish to see demonstrated we'll try to help.

Young artists who'd like to make a start as professional designers

are to be covered in later columns, and there will be mini competitions in which a subject will be set and you'll be asked to produce a screen.

The best attempt will win the monthly Moneybox hand-out – as well as instant fame. So try this one for starters 'A discarded, broken toy. Fading colours. Unwanted and forgotten' – the winner's name will be published in a couple of months.

Send your entries to: **ArtBreak Competition, Atari ST User, Europa House, Adlington Park, Macclesfield, SK10 4NP.**



## Specialists In Atari Ram Upgrades

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**ST Format "The very best ram upgrade boards on the market"**

### Easy To Install

Upgrading the memory of your Atari ST has never been easier using Third Coast's range of memory upgrade boards. We have plug in upgrade boards to take your machine up to a realistic 4 Megabytes so you get no more out of memory headaches. Third Coast's range of memory expansion boards take around 1/2 an hour to install and come supplied with full fitting instructions for all revisions of Atari's. If you should get into any difficulty fitting any of our memory upgrade boards are technical staff will give you any assistance you need over the telephone. Third Coast's memory upgrade boards are fitted by plugging a socket over the MMU chip and the Video shifter chip and require no soldering whatsoever.

### Expansion Policy To 4MB

With Third Coast's 1/2 megabyte plug in board for Atari's with and without surface mount MMU chips we offer an expansion policy to 4MB. What this entails is, if you purchase a 1/2 megabyte expansion board from us and you decide you need either 2.5 megabytes or 4 megabytes. Return the board to us and we will discount you the price you paid for the 1/2 megabyte board off the current price of the 2.5 megabyte or the 4 megabyte board. You are not left with 16 useless chips like the solution offered by others but merely a cost effective simple way of upgrading your machine to 1 megabyte, 2.5 megabytes and eventually to a full 4 megabytes.

### Expansion Options

If you have a 520STM, 520STFM or even a 520STFM with surface mount MMU chip we have the solution to take your machine up to 1 megabyte with the expansion policy to 4 megabytes as described above. Third Coast also offer expansion to 2.5 and 4 megabytes for 520ST owners. For 1040ST and Mega 1 owners we have an expansion board to take your machine up to 2 megabytes, 2.5 megabytes and 4 megabytes. For Mega 2 owners we offer a plug in board to take your machine to 4 megabytes.

### Fully Compatible

Third Coast's range of expansion boards are all auto configuring and compatible with all software for the Atari ST.

### Warranty

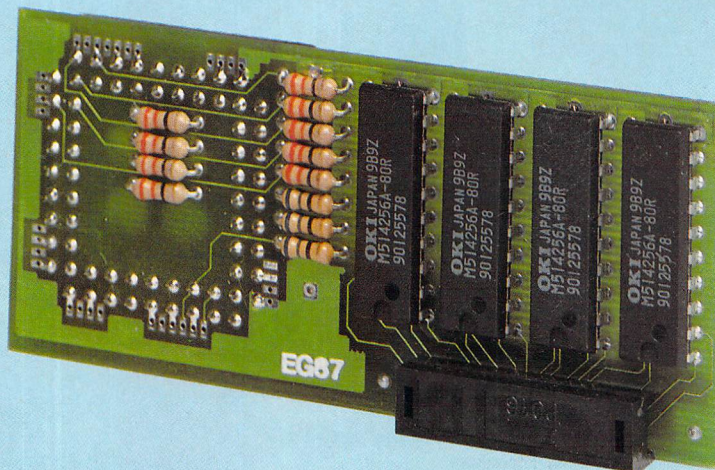
All memory expansion boards carry a full 12 months warranty and free 12 months telephone support.

### Software

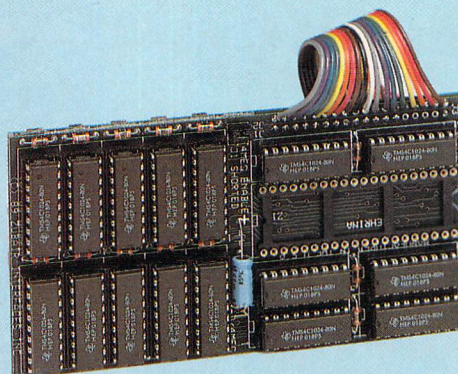
All Third Coast ram upgrades come supplied with a ram checker which checks every chip on the upgrade so you know if you have fitted the upgrade correctly. Also included is a ram disk, print spooler and several other useful public domain utilities.

### 1MB Internal Floppy And Upgrade

For those Atari owners who have a machine with 1/2MB drive and memory we offer a 1MB internal drive and a 1/2MB soldering upgrade kit for the special price of **£99.99**



1/2 megabyte plug in board Atari ST User September 1990  
"Features-Excellent Ease Of Use-Good"



Z-Ram 4MB expansion board Atari ST User July 1990  
"Features-Excellent Ease Of Use-Good"

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### RFI Interference

All Third Coast's ram upgrade boards fit under the RFI shielding so that you get no interference on your screen.

For more information on any of Third Coast's products please return the form below to the address listed at the top of the page.

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# Cleaning up

**P**ut any piece of hardware on a desk and before too long it will be a different shade. There's not too much that can be done to avoid it, it just happens.

With the ST, the grey soon turns into a camouflage of greys, browns and blacks. And even digging out a can of Mr Sheen furniture polish seldom does the trick.

True, it helps, but some stains and sticky tape marks just won't wipe off. For them much stronger cleaning materials are needed. The ones that come in large bottles sometimes have to be mixed with other chemicals and often need cloths to wipe them on and off the equipment.

This option is far from ideal. Because it is messy and time consuming many people just leave their STs to get dirtier and dirtier.

But you no longer need to live in the shade. Bring in Piramex, a pyramid-shaped container

which holds 40 cleaning tissues and offers an easy way of keeping your set-up clean. It looks quite tidy on a desk and a flap on one of its sides opens to enable cleaning tissues to be pulled from the holder. They come out without difficulty but need a sharp tug to rip them from the connecting tissue.

Each measures about five and a half inches by eight inches and has a wet feel and a strong smell – which spreads to your fingers.

All that's needed to remove the dirt from the ST, monitor or any other piece of equipment is for you to rub. You don't need to be a professional cleaner to do the job well, the worst of the mess is easily and quickly removed with Piramex.

But what about the gaps between the keys on the keyboard? Easy. A small piece of triangular plastic can be unclipped from the pyramid to guide the tissue into such small spaces. This means you don't need to call

## THE BOTTOM LINE

**FEATURES:** It does the job, what more can be asked for?

**EASE OF USE:** Just open up the pyramid, pull a tissue and clean the equipment. The tissues have a strong smell but it's not unbearable.

Features
Excellent
Good
Average
Bad
Appalling

Ease of use
Excellent
Good
Average
Bad
Appalling

upon three-year-olds to do the job for you.

So what about the results? It worked perfectly on the ST set-up and was whipped away into the production department to brighten their lesser machines. My only niggle is that the tissues dry too quickly once they've been taken from the pyramid.

**Product:** Piramex

**Supplier:** Financial Director,  
26 Danbury Street, London N1 8JU.

**Price:** £11.50

**Telephone:** 071-359 6616

**Configuration:** All STs



**James Nicholson has been playing games using Sting-ray and then cleans his ST using Piramex, the office equivalent of Wet-Ones**



# Sting in the tale

**Y**ou've been working hard and deserve a break. Why don't you boot up the latest shoot-'em-up? What's that, you haven't got a joystick? Let's see what we can do about that.

A recent arrival to the ever-growing collection of joysticks is Sting-ray, the first product to be manufactured by recently-formed British firm Logic 3, a company with more than a small link with the well known joystick distributor Spectravideo.

This hand-held stick can be used by left or right-handed people with ease and is available in either a manual or autofiring version. It's housed in an attractive ergonomically-designed blue casing marked with a Sting-ray logo.

Movement is controlled by a small stick at the top of the hard plastic unit. It's far too small to be gripped with the whole hand but can be controlled fairly easily by a couple of fingers. The main fire button on the weapon's

handle uses microswitches, but after a long playing session your fingers will be quite desperate for a rest.

Two extra buttons at the back of the joy-

stick come in handy if you want to change your playing position for a spell, although they are not well placed for sustained use.

Autofire which is always useful after a long playing session is brought into action by flicking a small switch at the front of the joystick's roof but it can be quite awkward to operate when you're fighting off invading aliens.

There's nothing outstandingly original about Sting-ray, but for its comparatively reasonable price it's a good aid if you want to splash a MiG or need to save the planet.

**Product:** Sting-ray

**Supplier:** Logic 3, Unit 27, Northfield Industrial Estate, Beresford Avenue, Wembley, Middlesex HA0 1NU.

**Telephone:** 081-900 0024

**Price:** £14.95 (manual fire), £15.95 (autofire)

**Configuration:** All STs

## THE BOTTOM LINE

**FEATURES:** Manual or autofire version, sufficient lead length, several fire buttons.

**EASE OF USE:** Hand-held, ergonomic design, lead doesn't obstruct play, movement stick is a little small.

Features
Excellent
Good
Average
Bad
Appalling

Ease of use
Excellent
Good
Average
Bad
Appalling

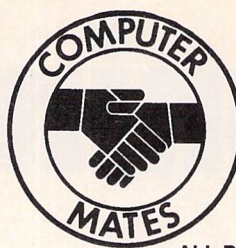


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STU JUNE



# INTERACTIVE

## BETTER BLITTER

**Q** Firms such as Silica Shop and Lad-broke Computing are selling upgrades to Tos 1.4 and blitter chips. Gasteiner is offering to fit Rainbow Tos.

What would the advantages be of having a blitter chip or upgrading from Tos 1.0? Also what functions does the blitter speed up? What are the programs described as software blitters?

*Mark Ivens, St John's Wood, London.*

**A** The blitter chip has a direct and marked influence on the ability of the ST to shovel graphics on to and around the screen. Blitter is an - almost - acronym meaning Block Line Transfer.

Most computers treat and move graphics as individual pixels on a screen. If the screen is updated the new positions of every pixel on the screen has to be calculated and then each pixel has to be moved.

When a blitter is installed graphics are treated in blocks. If the screen is updated the new position for a whole block is calculated and the graphics are moved around in chunks. This, as you can imagine, works much faster than moving individual pixels.

Tos is the operating system inside your ST. It enables the machine to work with disk drives, the monitor, a television and other peripherals and generally looks after what's happening when the ST is powered up.

It stands to reason - or it may not, but it should - that early versions of an operating system are not going to be as efficient and bug-free as they could.

Almost all computer manufacturers have a progressive policy of updating their operating system software and Atari are no different - hence the various versions of Tos.

Some features in the early versions such as the file selector were widely criticised by the great buying public and it is features such as these which get updated when a new release is launched on to the market.

The new versions of Tos are much better than the old, and if you use a lot of applications software such as word processors, databases and the like - and you can afford it - buy an upgrade.

You'll notice the difference immediately. If, however, you are a games player - and there's nothing wrong with that - don't bother. Games gen-



**Computer cracking up?  
Disks doing back flips?  
Printer out of puff?  
'USER's very own  
Silicon Service  
Supremo is at your disposal**

erally don't benefit from better versions of Tos.

Software blitters attempt to do what hardware chip-based blitters do, but in lines of code. How can they do this? Well, when a programmer constructs a routine to upgrade the screen, pull data from a disk drive and the like, there's always another programmer who could have done it better.

It's always much easier to create something good when there's already something to base it on.

The ST's screen updates and other graphic features are slow enough to irritate those who have experienced better, and that's simply down to the

way the screen updating has been written.

A software blitter then is a fragment of code which patches existing code and does the job far more efficiently. Turbo ST from SoftTrek, for example, will outrun a blitter-equipped Mega when scrolling through long word processed files.

The program is loaded as an accessory from the Desktop and you can switch it off at any time by accessing it from the Atari menu. Once installed, Turbo ST replaces some of the Tos and Gem routines and speeds up the processes.

Windows appear on the Desktop almost instantly, and the whole machine seems to race rather than plod along.

Again, if you use a lot of text-based applications, a software blitter will do wonders for your ST and your patience.

## ELITIST?

**Q** I have had a faulty copy of the Firebird's Elite program for a year or two now, the problem being that it refuses to load. All my other software works normally, so I strongly suspect that the fault is on the disk.

I made several attempts to get it replaced by the makers but they were all to no avail, because the firm never replied to any of my letters.

Perhaps you could advise me of what the up-to-date address of the company is and the individual responsible for dealing with complaints about Elite so that I can write to them again.

*Michael R Hall, Osset, West Yorkshire.*

**A** Why didn't you simply take the software back to wherever you bought it? I'm pretty sure that's the accepted solution.

Firebird Software can be contacted at Unit 1, Hampton Road Industrial Estate, Tetbury, Gloucester. Telephone number is 0666 504326.

The company doesn't have anyone specific to deal with complaints as far as we can gather, so send an explanatory covering letter setting out your complaint. We're sure they'll be understanding and sympathetic.

One thing that occurs to me. Did the program ever work? I seem to remember through the mists of time that Elite wouldn't work with some floppy drives Atari had installed into some machines. The reason was that

**...anything can happen in the next half hour...**



the game relied on the drive being able to access 82 rather than the standard 80 tracks in order to provide copy protection.

Maybe that's the explanation of your problem. Contact Firebird and all will be well.

## CIRCUIT BREAKER

**Q** As much as I hate sucking up, I must congratulate you on making such a great mag – oh boy, thank goodness I got that out of the way.

Now to my question. In April 1989 I read in a Swedish Atari magazine about a program called CircuitMaker produced by an American software company called Illiad Software.

The program is used for making and simulating digital circuits. What I wonder is, has the program made its way to the UK? If so, where can I get it and how much will I have to part with?

Is there something better or similar to be found in the public domain? Are there any other programs on the market which can perform similar tasks?

I need these programs since I'm studying electronics and computers in a pre-university course and CircuitMaker is nowhere to be found in Stockholm. I would appreciate it if you could help me out.

*Marcelo Aimeta, Jarfalla, Sweden.*

**A** Hmmm, last time we heard anything about CircuitMaker was way back around Christmas 1989, when Illiad was busy inundating the publishing world with review copies and Bath Computer Shack took over UK distribution.

**Bath Computer Shack went bust however, and since then, nothing! If anyone knows the American address, write and we'll pass on the glad tidings.**

## DIAL M FOR MURDER!

**Q** Since buying one of the older STs, an STM with an external double-sided disk drive, I've upgraded my ST to 2.5 megabytes but now have the problem of wanting another double-sided disk drive but having nowhere to plug it in.

I remembered that Cumana made drives with thru ports but not any more! Then I remembered that Third Coast Technologies sold a lead that would do the job. Not any more, the firm they got them from went bust.

I believe that Atari's drives have thru-ports, but £129! When I can get the same animal from many sources for £60 or less, come on!

What do I do chaps? Is there a firm that makes a lead to do this? I can't be the only person that bought the STM.

*John Gaytor, Barrow-on-Humber, South Humberside.*

**A** Certainly not, we're using an upgraded STM and jolly good it is too! Difference is, ours is equipped with an Atari SF314 double-sided disk drive with thruport and an Evesham Micros second drive, whereas yours has its silicon hands tied with a single port drive.

**£129 for the same beast? Not quite. The Atari drives have thru**



**ports and although they are definitely ahem...a little over priced, they solve the problem. Remember, even if you could find a lead of some sort, it would cost you a few quid.**

**The best advice if money is in short supply (and it always is) is to scan the classifieds in this and other magazines for someone off-loading an old Atari drive that you can buy cheaply.**

**Failing that, place an ad of your own. Not a great solution, I'm afraid but the only one...**

## WAR AND PEACE

**Q** I ensure that I always get my copy of *Atari ST User* and indeed, I have applied to several adverts in the vain hope that someone out there could help me.

After getting into contact with various shops – but wait, let me see if I can fill you in on how all this started.

I wanted to store information in a neater fashion than leaving reams of paper all over the floor in the spare room and came up with the idea that I should buy a computer, put all this information on to disk and be able to refer to it in a much easier way.

I also like to write a little music now and again and was told how easy it was to write with the aid of a damned machine – chuck away the Filofax and typewriter and all my problems would be solved with the purchase of the computer.

I bought my Atari 520STFM by mail order and when it arrived I was more than eager to get it up and running.

In no time at all I had switched it on and read the little manual and launched myself on the road to my first heart attack. How had I managed to wipe off this program called HiSoft Basic God only knows.

I would go and get another in the morning, but while the computer was on, I might as well while away my time playing one of the many games sent to me from these wonderful people at Atari. I would always be able to contact them for advice on what I was doing wrong.

I started my tour of the local computer shops with the misapprehension that I all I had to do was to ask what I needed to start my hobby to get started with my new toy.

I have never met such snobbery and downright patronising .... (expletive deleted to protect the young) as own and work in these places in all my life.

Smile and welcome a customer? None of that! The attitude is if you don't know what you want, how are we supposed to know? After a

couple of days of total humiliation I spotted *Atari ST User* on my local newsagent's shelves. That's the thing I need, I thought, it's bound to have plenty of stuff to help me out and they even give a disk away free.

Lo and behold, lots of adverts to scan through, all glossy and bright. I found the cheque book, bought some public domain software, most of which won't run on this machine or any other unless I contact the inventor.

The new miracle machine called an Atari is now heading perilously close to the classified adverts section of the local paper.

The machine hasn't lived up to its name, yet but that must be my fault because I suppose it's only a machine and does what it's told and I haven't told it to do anything because I don't know how to.

I have a room full of paper and programs now and what I need to do is buy another computer to store all the mistakes that I have made with the first one.

I think I will put it in my own memory, that way I will know how to recall the information.

In one last-ditch attempt to make any sense of the financial ruin I face and the total humiliation as a human, I ask you is there anything that I can use to get started with this damned machine?

I don't wish to write my own programs or join the elitist few who think that anyone who can't fathom out the basics of these machines should be shunned. Please help.

*D Morgan, Canning Town, London.*

**A** Hey, are you joking? I think you may be exaggerating the mayhem just the tiniest bit because it's fun to play martyr, right?

**Thousands and thousands of people started right where you are, knowing nothing, but instead of whinging they got off their backsides and found out from magazines, library books, friends and acquaintances how to move forward and become computer literate.**

**It's not difficult, it merely requires you to stop whining and start learning. Harsh, I know, but you're not exactly trying, are you?**

**What's all this nonsense about spending money for advice? No one will charge you for explaining something. They'll simply either tell you or ignore you – either way, your wallet will be intact.**

**You made one right step by buying *Atari ST User*, but all you could find**



was ads. What about the Interactive Rescue pages, the beginners series and the individual explanatory columns?

Presumably these had been removed by the newsagent before you bought the magazine, just to keep you in the dark.

There's plenty in the magazine for rank beginners – not least of which is the **Absolute Beginners** series which assumes no knowledge on the part of its readers – a jellyfish could understand it.

Our advice is stop bellyaching and try again. Read the ST's manual, switch the machine on, put a disk in, select the disk drive icon – it looks like a filing cabinet – by moving the mouse pointer to it and pressing the left mouse button twice in quick succession, known as double-clicking.

Run programs by double clicking on icons, those little pictures resembling drives, programs, text files and other computerish things. Hey presto! You're computing.

Well, what are you waiting for?

### OLD DISKS FOR NEW?

**Q** I'm very new to the ST and use it mostly for serious stuff but I also play some games. I was going to buy a PC-compatible – heaven forbid – but realised I would have to start building up my disk collection again, as well as losing an already proven first class computer.

So I'm sticking to the ST, but what I would like to get is a 5.25in floppy disk drive for the machine. Could you tell me which ones are compatible for the ST and where I could get the lead made up?

*R Kemp, Outwood, Wakefield, Yorkshire.*

**A** Almost every 5.25in drive made is compatible with the ST. They require almost the same signal set as those for 3.5in drives and the only difference between the two is that the 5.25in device has an edge connector whereas the newer 3.5in ones have a round DIN-like socket

Both however, are 34-pin connectors and both require exactly the same signals.

So rummage through the classifieds, pop along to computer equipment auctions and so on to find a suitable device. Expect to pay anywhere between £15 and £40, but no more!

We're not sure who could run up a lead for you. There used to be a little company by the name of Meadmore that would construct custom leads to fit individual requirements but if they're still trading, they can't be found.

Have a look through the Yellow Pages for computer engineers or electronics companies. One of them might be able to help out, but you should be aware that they will probably charge a bigish sum for the job.

Another option is try the job yourself, and Maplin's Electronic Supplies

will sell you everything you need. Find their catalogue in any branch of W. H. Smith.

### BREAK OUT

**Q** My recently-bought Atari 520STFM is an excellent computer apart from the small annoying problem of the mouse and joystick ports being positioned under the machine (outrageous, aren't they?).

Could you please tell me if there is any extension available for both ports which would allow me to plug and unplug the joystick and/or mouse without having to lift the computer.

If there is such an item, then how much is it and where could I get it? I would be very grateful if you could help me.

*Craig Ferguson, Blackburn, West Lothian.*

**A** Sure enough, if there's a problem, you can bet that someone, somewhere has exploited its market potential. Yours has been solved by WimpleWare of 50A Lowther Road, Norwich, a little company that has marketed break-out cables for the confounded ports for one time.

We are short of any price information, so drop the company a line and inquire about availability and price, OK?

### WOT, NO HARD DRIVE?

**Q** Having read the article about using hard disks a few issues ago, I would like to say that anyone who, like me, is using the ST as a hobby and is thinking about buying a hard drive, my advice is don't.

The main programs I use are Colossus Chess from CDS Software, which bombs out if the hard disk drive is switched on, and Microsoft Write, which that has to have a copy of the program in drive A – otherwise it is completely useless.

GFA Basic, which I use a lot, lasts for about 10 loadings from my hard disk then it has to be dumped into the trash can and re-copied to the hard drive.

I now know that the £480 that have been spent on my hard disk have been a terrible waste of money and a great disappointment.

I only hope that some people don't get carried away with talk of a hard disk drive being great.

*Bob Baker, South Wirral, Merseyside.*

**A** But they are great, Bob, although I can sympathise with your problems. I've tried to use Colossus Chess and had exactly the same problem.

An attempt at copy protection, perhaps? It's unfortunate that the very programs you want to run are those which don't like hard drives.

*Calamus, First Word, ST Writer,*

SuperBase and many, many more programs work perfectly well with hard drives in the office.

Still there's one sure way to reverse the situation. Bung an ad for a slightly-used second-hand hard drive into the **Atari ST User** classifieds – it'll be snapped up...

### ENTER THE ARC

**Q** I have just got an Atari STFM and I don't really know much about it. I saw your magazine in my local newsagents and bought it in the hope it might make things a little more clear.

I found the mag helpful and informative and was delighted with the free cover disk until I tried to use it.

My problem is – and I realise it is my ignorance – that I can't get into any of the programs and files as I don't know how to de-arc them.

Could you please help me. I see in your magazine that you promise to make getting into the disk easier. Will this explain how to un-arc the files including the .TTP files? I don't understand what I should put in to get it up and running.

*C Healy, Rathfarnham, Dublin, Ireland*

**A** No problem. As you can see, the disk and accompanying pages have improved greatly over the last few months and we're providing a thorough explanation of how to de-archive and use the various files

I don't want to give another lengthy explanation of dearchiving here because we went into the subject at length an issue or two ago, but if you turn to the disk pages in this issue you'll find comprehensive instructions. Have fun!

### POWER DOWN!

**Q** I noticed a letter by Raymond Donnelly of County Down, Ireland and think that I might be able to help.

I had a similar problem as Mr Donnelly with my Atari power supply. I changed the component that was physically showing damage, but unfortunately when I plugged it back into the computer the very same component I had changed blew up again.

I decided to take it to my local computer repairs company, WTS Electronics, who fixed my power supply for just £45. I was so happy.

I believe they deal in mail order, so Mr Donnelly could send his machine to them through the post.

*R Nibbs, Luton, Bedfordshire.*

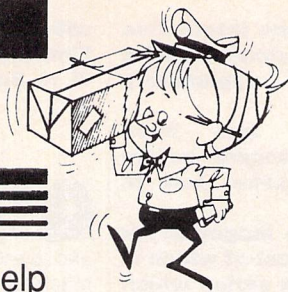
**A** The power supply is one of the trickiest and most expensive items to repair, although there is no inherent reason for this, for they are fairly simple items.

Any company charging only £45 quid to repair one should be heartily recommended.

**All points bulletins to  
Interactive Rescue,  
Atari ST User, Europa House,  
Adlington Park, Macclesfield SK10 4NP**



# BYTEBACK



**FAST**  
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... and the  
**keenest prices**

Ring us now! **0636 79097** we're programmed to help

## NUMBER ONE FOR ATARI ST USERS - FIRST CLASS SERVICE BY FIRST CLASS POST

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If release delayed - Sent A.S.A.P.

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Kick Off and Extra time!

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#### MONSTER PACK

Shadow of the Beast, Infestation, Nitro

#### WINNING TEAM

Cyberball, Klax, Vindicators, Planet of Robot Monsters, Klax

#### POWER UP

Rainbow Islands, Altered Beast, Chase H.Q., Turrican, A.P.B.

#### FISTS OF FURY

Double Dragon II, Shinobi, Ninja Warriors, Dynamite Dux

#### MASTERTIX MIX

Thunder Blade, Turbo Outrun, Crack Down, Super Wonder Boy, Dynamite Dux

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Games Winter Edition, Games Summer Edition, California Games

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Ghostbusters II, Robocop, Batman The Movie, Indiana Jones

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#### POWER PACK

Xenon II, TV Sports Football, Bloodwych, Lombard RAC Rally

#### STAR WARS TRILOGY

Star Wars, Return of the Jedi, The Empire Strikes Back

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Star LC10	159.00
including lead!	
Star LC200 (Colour)	209.00
including lead!	

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Prof Makes Sentences	19.99
Puzzle Book 1	15.99
Let's Spell at Home	15.99
Let's Spell at Shops	15.99

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### PUBLIC DOMAIN

1 disk = £1.99  
5 disks = £8.99  
10 disks + file box = £15.99  
20 disks + 2 file boxes = £24.99  
Ask for our NEW catalogue!

BG.01. Monopoly; Classic Board game!  
plus: Chess, American Football  
BG.20. Dungeon Master; Maps of all  
levels + 40 pages of hints, tips  
BG.27. Strip Breakout; Knock out the bricks to  
reveal the picture!  
BG.55. Froggy; (Frogger). Caves of Rigel; Original  
maze type arcade.  
BG.57. Dungeon Master; NEW dungeon! Needs  
original program to run  
BG.58. Soko; 50 level puzzle game  
BG.59. Bubble Trouble; Pacman style plus: Jump-  
ster; Q-Bert version  
BG.62. Millipede; Arcade classic  
BG.64. ST-Umped; Cricket simulator  
Does NOT require STOS to run!  
BG.65. Joust; Arcade classic.  
MG.08. Star Trek - Next Generation  
Battle the Ferengi... (not STE)  
MT.09. Elvira; Stunning demo of the long awaited  
horror game

DA.01. 66 Adventure game solutions!  
DA.02. 62 More Adventure solutions!

BS.18. Madonna; Including those  
controversial Playboy pictures  
BS.20. NASA Space Mission slideshow  
BS.21. X-Cert. Spectrum 512 Show  
BU.01. Neochrome; Super Art Package  
BU.07. ST Writer Elite; Professional quality word  
processor  
BU.57. ANI-ST (was Aegis Animator)  
BU.58. File Selector, Desk Manager, Disk copier,  
Virus Killer  
BU.64. Fractal Landscape generator, and Explorer,  
Mandelbrot Show

BU.59. ZX81 Emulator; including 38 program files!  
Uses the original keyword entry system! Great fun!  
BU.61. ZX81 programs; Over 100 files to run with  
the ZX81 emulator!

MU.05. Sheet 2; Powerful Spreadsheet plus tutori-  
al. Lotus compatible!  
MU.13. F-Copy III; Superior Copier!  
SO.02. Composer; enter notes from computer or  
Mid keyboards!  
SO.03. 16 Voice synthesiser with multi voice  
recording!  
BC.16. Clip Art - Viz Magazine  
BD.33. STE Demo; See what your STE is capable  
of and be amazed  
BD.34. What the Butler Saw; Demo  
BE.02. Fun for 3 to 6 year olds; Kids Music,  
Piano, Grid...  
BE.03. Kids ABC, Kid Potato, Kid Story,  
Kid Sketch...  
BE.05. On screen Colouring book!  
BE.13. Wolf and Seven Kids; Multi choice  
adventure game for kiddies!  
MD.15. Snowman - Digitised demo. (MB)  
MD.41. Robocop; Stunning digitised  
sequences from the film! (2 disks)

The above is just a small selection of our VAST range of 16 Bit software... Catalogue available!

All prices include VAT and FIRST CLASS POST! All stock items sent by return post

# BYTEBACK

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Cheque, postal  
orders or credit  
card facilities  
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# HANDS-ON ART

## Mo Warden tries teaching herself ST art using Castlesoft's latest educational tuition package

Each of the Art Tutor's three auto-loading disks contains a virus checker and has four options in its mouse-driven menu, which appear after the main title screen.

Disk one has an introduction, animals, perspective and landscape, number two has colour, vehicles, plants and landscape while three contains design, cartoons, body language and heads.

Each subject is covered by a series of text or drawn screens which complement the manual. A button click on the next box advances pages, or you can return to the disk's main menu. Drawings are a mixture of

digitising and line draw/fill and all the examples are included in a library on the same disk. Each can be de-compacted and saved in Neochrome format on to your own disks.

The student is encouraged to follow exercises from the manual, in some cases loading a framework and completing the screen or simply using them as guidelines.

The idea is to study a subject in the disk tutorial and manual until you are happy that you've grasped the principle, then switch off the ST and have a go at the exercise on paper.

For example, the section covering design is contained in 40 screen pages, some only a couple of lines long, describing the design process of five part-screens.

Five pages in the manual repeat the information and this is followed by two exercises taking the form of briefs that are to be tackled.

The subjects are set out in no particular order so you can pick those you are interested in without wading through the rest on the disk. But each section has to be studied in its entirety, no flipping to a specific page number.

Altogether there are nearly 500 screens to work through in the disk tutorial and 20 exercises in the booklet, some containing several parts.

### 'EXPERIMENT'

For example, exercise six in the landscape section of the manual asks us to: "Take a look out of a window in your house that has an interesting view and experiment using the principles you have just learnt."

"Try moving various parts of the landscape (or equally, city or townscape) about the picture and see how this affects the composition."

"Try enlarging objects or reducing them."

"Try bold strokes then subtle, more rounded ones."

Plenty there to keep anyone busy for months. The firm is aiming the software at young artists, but it would be suitable for any age if the user is inexperienced and patient. This is the kind of package that a parent would need to sit down and study alongside their child.

As many adults would like to improve their drawing this might be a good excuse to buy it, but it's unlikely that a youngster will be motivated enough by the approach to continue with the lessons alone unless they are extremely keen. A more fun approach might have

helped or even more of an on-screen interaction than clicking on Next. It would be more likely to appeal to adults wanting to start or improve their art than a 12-year-old.

Considering that it is educational software, it contains numerous spelling mistakes in both the disk tutorial and manual – but a more serious failing is that it refused to load on my STE.

Even the library of pictures locked up when loaded. It's also worth noting that the disks are double-sided and with a three-disk package it's hardly likely that a single-sided version will be available for the same price, if at all.

Art Tutor Plus One, available for £29, is made up of the tutor and a multi-screen painting program which is simple but fairly powerful. The art editor can be bought alone for £15.

The presentation of this software could be done differently, using a more interactive approach, perhaps a kind of join-the-dots or "copy this" approach onscreen.

As it stands the tutor is quite adequate and covers a fair bit of ground, but is no better than a good library book. The techniques discussed are pure art and not machine related and the example screens are reasonable.

On the whole, it's a brave and mostly successful attempt at a difficult subject and is well-priced. But try before you buy.

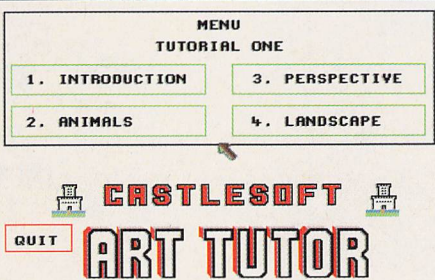
**Product:** Art Tutor

**Price:** £19.95

**Supplier:** Castlesoft, 62 Glebe Road, Bayston Hill, Shrewsbury, Salop SY3 0PN.

**Telephone:** 0743 723539

**Configuration:** Not STE-compatible, double sided drive



**MENU**  
TUTORIAL ONE

1. INTRODUCTION      3. PERSPECTIVE  
2. ANIMALS            4. LANDSCAPE

**CASTLESOFT**  
**ART TUTOR**


**QUIT**

The program is controlled using the mouse. Just click on the selection from the menu which appears when any of the three disks are booted

WELCOME TO ART TUTOR !  
BY STUDYING ALL EXAMPLES AND WATCHING HOW THEY ARE DRAWN ETC. YOU SHOULD GAIN A BETTER UNDERSTANDING OF HOW TO CREATE YOUR OWN PICTURES  
THEN YOU CAN LOAD VARIOUS EXAMPLES INTO THE CUSTOM-DESIGNED PAINTING PROGRAM AND HAVE A GO YOURSELF  
ALTHOUGH ART TUTOR CANNOT PROMISE TO MAKE YOU A GREAT ARTIST IT CAN AT LEAST HELP YOU IN UNDERSTANDING SOME OF THE BASIC RULES, AS WELL AS TECHNIQUES THAT WILL HELP YOU TO PRODUCE A REASONABLE END PRODUCT  
CLICK ON 'NEXT' TO CONTINUE

**MENU**      **1**  
**NEXT**

Disk one contains an introduction to the software which is given onscreen



PRESS 'NEXT' TO REVEAL FINISHED CAT

**MENU**      **25**  
**NEXT**

Eleven subjects are covered in Art Tutor. Here the program gives step-by-step instructions on how to draw an animal – in this case a cat

## THE BOTTOM LINE

**FEATURES:** 50-page A5 manual, 500 screens, 20 exercises, library of drawings, four options on each of the three disks.

**EASE OF USE:** Room for improvement in the presentation, spelling mistakes.

Features	Ease of use
Excellent	Excellent
Good	Good
Average	Average
Bad	Bad
Appalling	Appalling



# ProFlight

from  
HiSoft



Fuel up, weapons loaded...let's fly...

*The Tornado Flight  
Simulator for your  
Amiga and Atari ST*

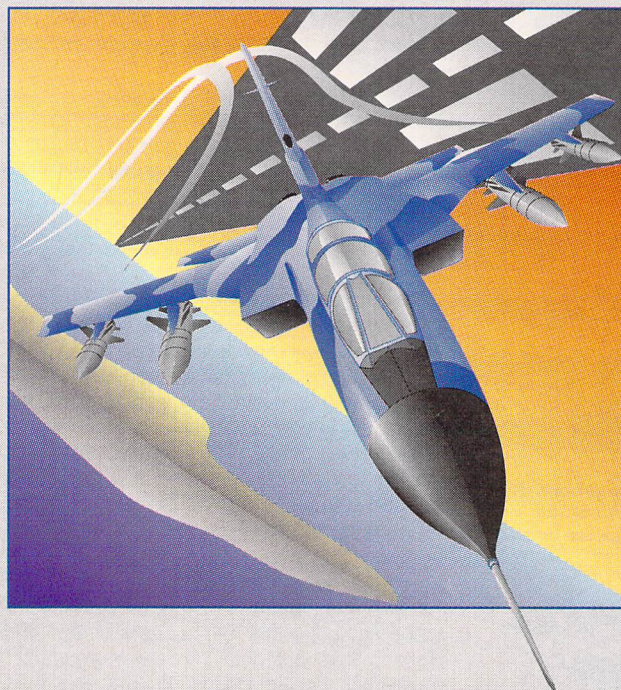


...target spotted...try your cannon...

## Some comments from ProFlight Customers

- "The best simulator on the ST by far."
- "Very well done, the only flight simulator that gets it right! Thanks."
- "Well done!!! It is real!"
- "Superb - without exception the best on the market."
- "Very impressive - brilliant manual."
- "At last - a real flight sim for the purist."
- "Your usual high standard of software. Excellent."
- "For realism, beats anything I have ever seen on a home computer."
- "Good fun & makes me nervous when flying dangerously - 10 out of 10."
- "Brilliant manual, brilliant simulator."
- "Another HiSoft winner!"

These are all unsolicited comments from users of the Atari ST version of ProFlight.



## and the Reviews ...

"The sheer range of things to do makes this a winner and with future expansions planned this one could become as popular as the now classic Flight Simulator II."

"A great deal of thought has gone into how the plane handles and the controls are very responsive."



ST Action, March 1991.

"ProFlight isn't the same as other fighter sims - it really does feel real."

"ProFlight is addictive ... if you've got the hang of less realistic simulators, moving on to ProFlight will give many more months of exciting flying. Very complex but enjoyable and well worth the clams!"

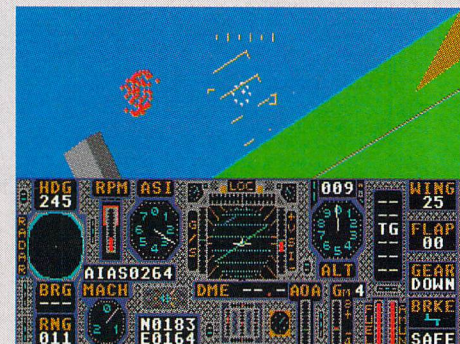
Atari ST User February 1991.



...change to missiles...locked on...



...heat-seeking missile launched...



...target destroyed...back to base...

HiSoft is delighted to announce the immediate availability of ProFlight for the Atari ST and Amiga.

ProFlight, a supremely accurate simulation of the Panavia Tornado military aircraft, a plane that is the fastest aircraft in the world at ground level (Mach 1.2) and one of the fastest at any level (Mach 2.2) with advanced swing-wing technology that gives it a truly multi-role capability. ProFlight uses complex and exact flight equations that allow you to fly this powerful fighter just like its pilots.

Everything is there ... you can fly peaceful reconnaissance missions or roar into full attack with cannons, bombs, heat-seeking Sidewinder and radar-guided Sky Flash missiles.

ProFlight comes complete with a professional 170-page, ring-bound flight manual which details every aspect of flying this exciting aircraft together with a pull-out specification sheet of the Tornado.

ProFlight is available from all good computer stores and costs only £39.95 inclusive (UK only); if you have difficulty locating your copy, please call HiSoft on 0525 718181 and ask to speak to Julie.

**HiSoft**  
High Quality Software

The Old School, Greenfield,  
Bedford MK45 5DE UK.

Tel: +44 525 718181

Fax: +44 525 713716



# ST PUBLIC DOMAIN - FROM 90p PER DISK

Characters between asterixes show special requirements:  
 \* M = Mono Res. \* C = Colour Res. \* D = Double sided disk. \* X = 1 Meg Ram.

- 378 - FASTDISK**, quick reading & writing FCOPY 2.0, disk copier, FORMAT, pg & acc, Ramdisk & setup utils for Mega's, Taskcopy work & copy disks. Doc in German but the prog are simple to use.
- 337 - SELECTION** of Hard Drives built. Inc. prog to boot from drive C, dir checking, back up, Auto folders on hard drives, & overcome the 40 folder limit.
- 751 - SUPERBOOT V6** - ST boot prog, choose desktop, ACCS, Auto prog to run DESKTOPINF, GDOCS, ASSISTSYS etc.
- 384 - LABEL EXPERT** Preset formats for disks, video & tapes.
- 884 - ARC GDOS**, Atari's replacement for GDOS, ARC SHELL v1.98 make ARC.TPP user-friendly, DISK TOOLBOX v2.03, check boot Sector etc. HYPERFORMAT v2.56 upto 929K bytes, VKILLER 2.2 detect & disable viruses, fully docs & MORE.
- 322 - Neochrome** Art package. Great colour art utility & 5 high quality pics.
- 375 - FONTEDIT V3.0**, Editor & loaders for Ram & downloaded fonts. Fonts inc., font data disassembler & Meta util.
- 390 - E-FRAN CAD**, stock list facility, A great CAD package with Star 10 & C Ion prt drivers. \* M \*
- 391 - COLUMBIA**, Drawing prog with some 3D elements & Co-ord display, Studio (1 meg Ram), menu driven drawing package. Both progs from Germany.
- 397 - DODULE**, Original Mono & Col versions. Also NEOHOME v0.5 & more.
- 376 - FONTS 2**, 7 screen & desktop fonts, Columbia, Devoll, Hudson, Saturn, Spokane, Thames & Universal Roman.
- 537 - DOUBLE SENTRY** accounts.
- 538 - TYPING TUTOR (1)**
- 539 - TYPING TUTOR (2)**
- 393 - THE ARTIST**, Great drawing package with all the normal options. \* M \*
- 394 - PICWORKS**, Utility to enlarge, reformat & manipulate pics. \* M \*
- 820 - SNODOPY**, 25 cartoons. \* C \*
- 540 - PUBLIC PAINTER**
- 310 - 3** versions of ST Writer wordprocessor, Full docs & a printer installation program, template & quick ref files.
- 541 - INVENTORY PRO II**
- 567 - DELICIOUS DEMO** II by the Overlanders. \* D \*
- 568 - THE DEFINITIVE DEMO**, by the Lost Boys. \* D \*
- 569 - SLATYANIC CULT**, Music Demo 1 & 2. \* D \*
- 591 - ASTERIX DEMO**, Digital sound & graphic demo
- 592 - BOMB THE BASS DEMO**
- 593 - TRANSYLVANIA DEMO**
- 594 - SOUND CONNECTIONS DEMO**. \* D \*
- 595 - THE NEW YEAR DEMO** by the Care Bears \* D \*
- 730 - GEMINI** Desktop replacement.
- 761 - EMPIRE BUILDER**, property development simulation
- 762 - RUSH** fast moving game
- 738 - CLIP ART** humorous & A-Z
- 836 - Mono Emulator v5.0**, ARC file compiler, BLOCKLOCK to set time/date without, ACC slot, Editor, set up your printer from the desktop, Dagscom converts Degas pics to Hi-Res & outputs to printer.
- 881 - 100%**, IBM compatible formatter that formats 3.5" or 5.25" disks for DOS or TOS, ARC SHELL v1.91, Megamatic, Mono emu v3.0, STARTGEN for GEM progs to be Auto run, SWITCHER, Spills ST in two, VIRUS DESTRUCTION UTILITY V2.1.
- 834 - DOUBLE CLICK** format, v3.03 9/10 sectors, 80/80 tracks. Write an executable program to do to things like bypass HD Autoport, run prog to write & call COMMAND, PRG & lots more.
- MEGAMINUTE V2.1** Hard drive backup.
- 883 - MX-2**, v2.3 a multi-tasking & multi-user environment. Up to 7 concurrent tasks such as compiling, printing, etc. Designed for use with Gham (included). Has network drivers. \* D \*
- 382 - Archive** utils, including ARC, EXSOUZ, SQUEEZE, STAPACK, STSD, UENCODE & TAU a text archiver.
- 809 - AIM V3.21**, Image processing package. Read & write different graphic formats such as NEO & Degas & process colour images. Demo macros & plenty of docs. By Deft University, Holland. \* DX \*
- 876 - DELUXE FONTMASTER V2.0**, Lay out text & print it with a large choice of different & original fonts on an Epson, IBM or NEC compatible printer. Plenty of fonts inc. or create your own. \* MD \*
- 879 - PALETTE MASTER**, Art package with up to 512 colours. Features such as airbrush, sprays, fills, etc. Docs in 1ST Word format. Demo pics. \* C \*
- 880 - COLOURBUNST 3000**, v0.3, Add different colours to pics from other packages. Up to 50 palettes per screen. Choice of 3375 colours \* CX \*
- 520 - CLIP ART**, Various fonts, pics of famous people, old & new, Seasonal logos, images & cartoons.
- 521 - CLIP ART**, Various human figures, different cartoons, Titles & more.
- 523 - CLIP ART**, Children's whimsical & elaborate font & Xmas card images.
- 524 - CLIP ART**, Food images, logos, Disks, Computers, Robots & Sci-Fi.
- 525 - CLIP ART**, Faces & Eyes, Horses, Building plan symbols & more.
- 526 - CLIP ART**, American trademarks from the 1920's & 30's. Some very atmospheric images from Logic Logic USA.
- 527 - CLIP ART**, Various borders, high arty & cartoons.
- 763 - BUMPER JACK**, great platform game.
- 764 - AHATZKY**
- 765 - COMPANION**, outer space shoot em up.
- 766 - TUNNEL VISION**, maze game
- 807 - SKY MAP**, Display over 1500 of the brightest stars & info.
- 957 - SETTLING MADE EASY**.
- 958 - MATHS MADE EASY**.
- 959 - KIDPUBLISHER**
- 759 - SPIRTE EDITOR**
- 720 - MUSIC WRITER**
- 753 - XBIOS** music construction kit
- 328 - FORMATER**, calendar, clock, Prt printer, Disk Manager with format, copy, file, disk free and rename folder options, & MORE.
- 829 - Tidy** disk is packed with various programs for printing all kinds of labels.
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# NEWS

● Goodman Enterprises have just completed the spring/summer issue of their International Public Domain and Shareware Guide. It has more than 80 pages and includes a STOS supplement.

Among other firsts inside the next catalogue is a section devoted to owners of PC emulators which covers PC software in the public domain.

The library has just incorporated the official STOS software service, previously run by Sandra Sharky and formed when the language was released. With immediate effect Goodman Enterprises has taken over the entire collection of software.

Meanwhile, the library's STOS competition which is due to close at the end of June has generated a massive response including an entry from the head of Atari Italy.

Submissions are expected to be seen in the public domain within the next few months.

● Start-up utility Superboot has been upgraded to version 7. Improvements include sampled sound, better graphics and the ability to set up function keys to run accessories.

● Version 4.4 of the disk catalogue program STDcat is the rewritten version which is cured of the bug which didn't allow the software to work when Gdos was loaded.

● The winner of the Discovery Pack Competition, which was held by Goodman Enterprises for their subscribers, has just been announced. Paul Sennett from Hayes, Middlesex should be hearing a very heavy thud as a 520ST lands on his doormat at any time now (not too heavy, I hope! - Ed).

● Two new interesting PD programs from the USA give telephone area and zip codes, the American equivalent of postal codes. Unless you are in frequent contact with the States you're unlikely to find a need for the software but who's complaining - it's free, and available from Goodman Enterprises.

# PUBLIC SECTOR

***Once again John Butters sifts through the ever-growing collection of public domain programs to find the kind of software you thought you could never afford***



Guide the cross-hair over the balloon, fire and watch it fall to the ground

## Point, shoot and fire

A very simple but fun game comes from Yorkshire library TRuST PD. There are five stages to the gun-toting game Gunner, in which you can practise your shooting skills by firing at anything that moves.

It has been written in the STOS programming language by STESoft and boots via a well-presented title screen complete with digitised sound.

The game is played by guiding a small cross-hair over the target and firing. In the first stage hot-air balloons fly across the screen and as many as possible have to be downed. Targets in later levels include birds and - strangely - vans.

Each successful kill increases the score

shown in the top left-hand of the screen and a high score is kept in the memory of the computer.

As each stage is cleared the level of difficulty is increased, first with the targets moving and then with the light being limited as dusk falls.

Control is achieved using the mouse - the cross-hair follows the movement of the mouse and bullets are fired by pressing either of the rodent's buttons. The graphics and sound are simple but satisfactory throughout the program but further levels would give a more lasting appeal.

For a copy of Gunner ask for TRuST's disk number GAM62.



# Dying planet

Scientists and pressure groups say that a huge area of the Netherlands and cities such as Miami are going disappear underwater before too long as an indirect result of pollution.

And each week we hear amazing statements from 'people in the know' such as sports reporter turned politician and now, son of God, David Icke.

Thanks to Icke we are all aware that the Channel Tunnel is going to collapse and that a series of earthquakes will devastate the UK, again as a result of the effects of modern human life on the environment.

But despite government attempts to keep the planet living by offering incentives such as selling lead-free petrol much cheaper than the leaded alternative, the public is still slow to learn about the planet's problems. Public domain software World at Risk is the first educational program on the subject.

It's mainly text-based but has simple graphics on many of its screens. The introductory screen describes the aim of the program as being to assess and explain factors which act on our planet in a manner harmful to the environment, health and existence.

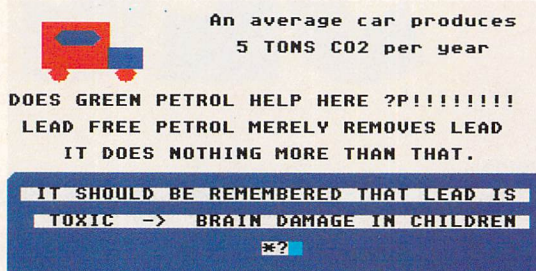
And despite being written by a doctor, World at Risk succeeds in explaining much of the subject without using long scientific

expressions that often baffle the masses.

The first part of the program describes the atmosphere's structure before it moves on to talk about the greenhouse effect and its main causes. Carbon dioxide, or CO<sub>2</sub>, is the gas which is causing the greenhouse effect and the software explains how it is being pumped into the atmosphere.

Another major environmental worry is the ozone layer, which is slowly being destroyed by chlorofluorocarbons, gases more commonly known as CFCs.

The ozone layer receives similar coverage to the greenhouse effect and the changes which will happen to the world as a result of both are described in the text.



**World at Risk is full of facts about the main causes of environmental concerns, including the greenhouse effect and the depletion of the ozone layer. Petrol is among the offenders**

# Play school

An educational program aimed at young children has been added to the public domain by Microcare. It was written by Mr Bocij using the STOS programming language and runs on a colour monitor.

As it boots, the disk is automatically checked for viruses before giving a menu which offers six options. Four of them are programs, one is for quitting the software and the sixth is for configuring the program.

One of the programs is called Lotto. Six pictures sit at the bottom of the screen and

there's a bin in the corner. A series of objects fly on to the monitor and they should be either matched with one of the six at the bottom or put in the trash can.

Points are awarded for matching the illustrations correctly but if the answer is incorrect the ST scores points. At the end of the game you're asked whether you want to play again.

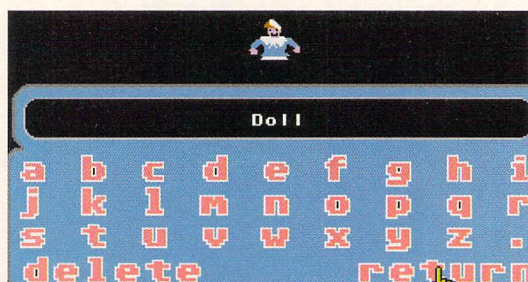
There are two programs devoted to mathematics. One uses numbers in its questions and the other pictures, such as two apples plus two apples. The answers

are entered using a numeric keypad on the right-hand side of the screen and several arithmetic elements are covered.

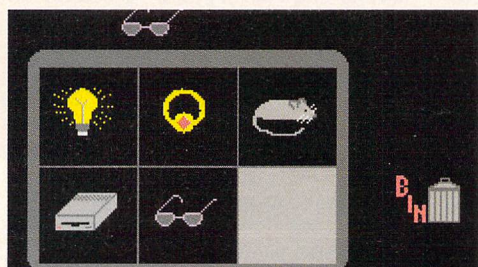
As in the Lotto program, the student's score is increased for a correct answer and the ST's is boosted by an incorrect one.

The final Microcare educational program is a spelling test, which can have its level of difficulty adjusted. A word is printed at the top of the screen with the relevant picture underneath. The word quickly disappears and the child is left to spell the word by clicking on letters onscreen.

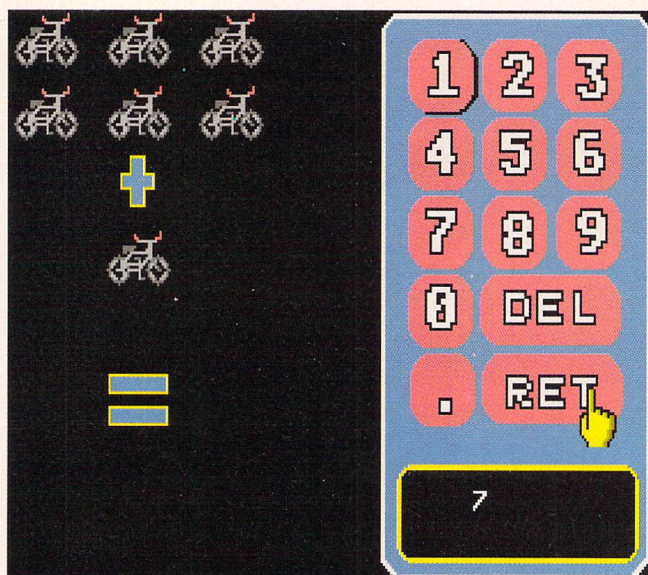
All of the programs are controlled using the mouse and the most striking features of the software are its ease of use for the young and the simple but colourful graphics. This one came from TRuST PD on disk number COM003.



**The Microcare educational disk contains several programs. One of those is Lotto in which the student matches pictures, and bins those which can't be paired**



**Another program is Spell, a spelling test which can be adjusted to suit the age and capability of the child**





# Spread your wings

GEM-Calc is a shareware spreadsheet program which has a very professional look to it. As its name suggests this program written by Gregar Englmayer has a GEM interface and can be run on either a monochrome or colour monitor.

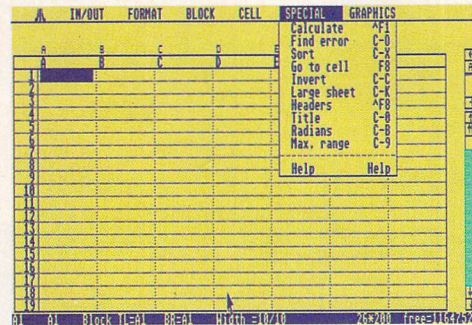
A maximum of 26 columns are available and between 200 and 999 rows, with a total of 5,200 cells. The column width and number of decimal places are definable either globally or by individual columns.

Rows and columns can be added or deleted from the worksheet at any time and common features of this type of program are available, such as 'go to cell', 'header', 'title' and 'maximum range' commands as well as

many mathematical functions. Files can be loaded, saved or printed out and a clean sheet is obtained by clicking on an erase worksheet option in one of the drop-down menus.

In addition to onscreen help within the program, a more comprehensive tutorial is included on the disk, which like so many other documents for PD software is better read from a hard printout.

Version 1.92 of this useful program is available on disk GD1145 from Goodman Enterprises.



In addition to a document on the disk, GEM-Calc offers onscreen help.

On the same disk as World at Risk is a program called Franglais 2, the second version of the French language education software reviewed in November 1990's Public Sector. It's very similar in appearance to the earlier program, with text-based screens and occasional graphics to brighten things up.

Franglais 2 teaches regular French verbs and includes several short tests which are scattered throughout the program.

But like its older brother, English words sometimes pop mysteriously into explanations and questions.

Both programs can be run on either a colour or monochrome monitor and the disk is available from Goodman Enterprises on disk number GD1178.

## Parlez Franglais

As in le first programme of this series  
si vous do not comprenez certain mots,  
il y a un dictionnaire pour vous  
in the 'Readme'.



Excusez moi, programmer,  
when is a verb REGULAR ?

\*?■

Donnez moi time to write the program !

Franglais 2 continues from where its older brother, Franglais, left off. In this version French verbs are taught but like the earlier program, English words sometimes appear mysteriously in the middle of sentences

## Tracking Overland

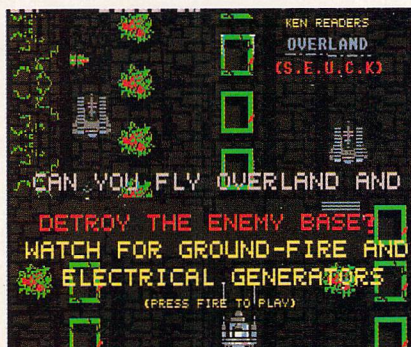
There are several good shoot-'em-ups already in the public domain but new ones are slow to appear. Recently, however, Ken Reader has given some new ones to the MT Software library.

Among them is Overland, a vertically scrolling shoot-'em-up written using the Shoot-'em-up Construction Kit. It's fired up by double-clicking on a .SCK file and has you flying an spacecraft over enemy land, avoiding ground fire and electrical generators but destroying other space objects.

The graphics are reasonable but in parts of the game the colours clash, making the action more difficult to follow, and sound is provided in the form of simple bangs and crashes. You're given 10 ships at the start of each game and lose one whenever you're shot down or fly into one of the targets.

Relevant information about the game is listed at the top of the screen, including the current score, and number of ships remain-

ing, but there is no high score table. It demands a colour monitor and joystick but is another fine example of the many quality programs that can be found in PD libraries. Ask for M.T. Software's disk G122.



A new addition to the public domain is Overland, a vertical scrolling shoot-'em-up with graphics best described as fair

### WHERE TO GET IT...

- Caledonia PDL, 250 Oldtown Road, Hilton, Inverness IV2 4PT
- Elmsoft, PO Box 17, Loughton, Essex IG10 2EE
- Floppyshop, 45 Provost Graham Avenue, Hazlehead, Aberdeen AB1 8HB
- Goodman Enterprises, 16 Conrad Close, Meir Hay Estate, Longton, Stoke-on-Trent, Staffordshire ST3 1SW
- MT Software, Greensward House, The Broadway, Totland, Isle of Wight PO39 0BX
- NBS, 132 Gunville Road, Newport, Isle of Wight PO30 5LH.
- Page 6, PO Box 54, Stafford ST16 1DR
- Public Dominator, PO Box 801, Bishop's Stortford, Hertfordshire CM23 3TZ
- SoftVille, Unit 5, Eletra Avenue, Stratfield Park, Waterloo, Hampshire PO7 7XN
- South West Software Library, PO Box 562, Wimbourne, Dorset BH21 2YD
- TRuST PD, 18 The Park, Southowram, Halifax HX3 9QY



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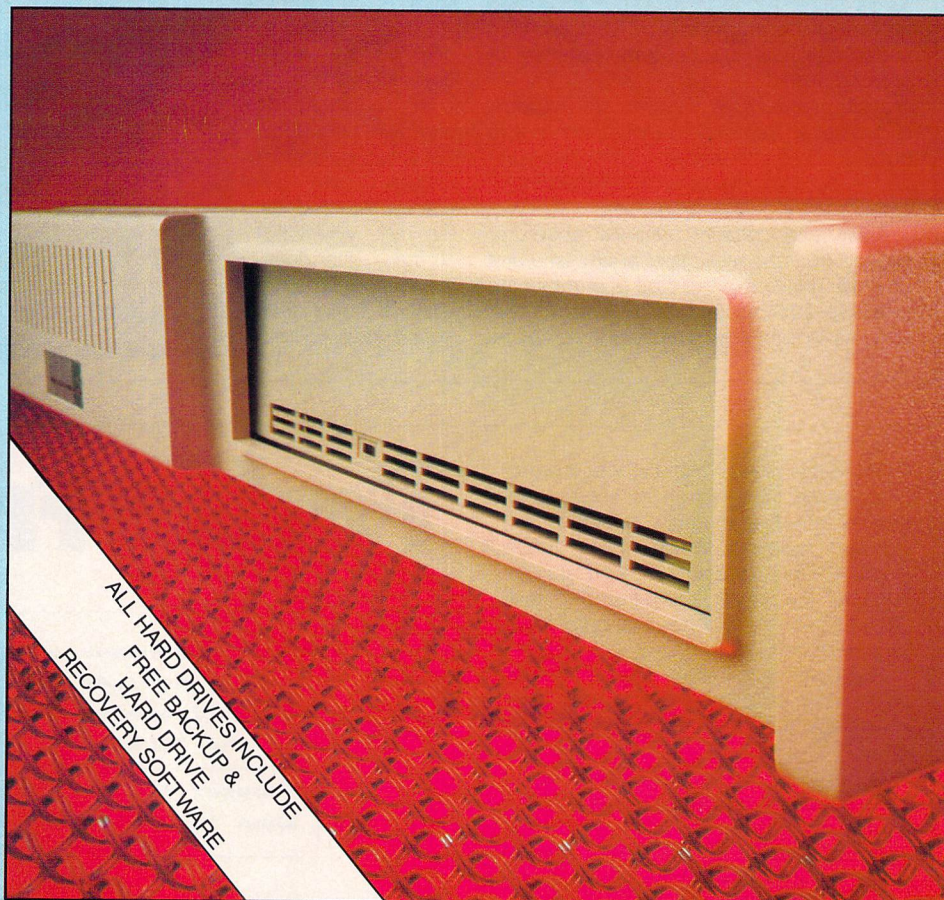
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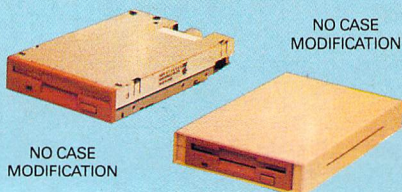
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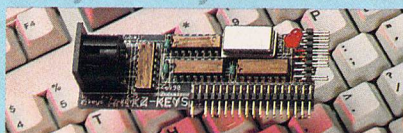
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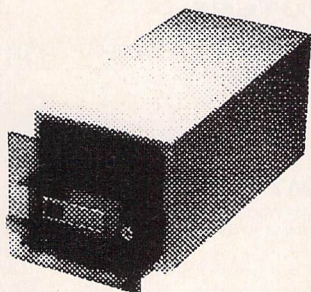
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**M**idi songs are simply pieces of music which have been recorded using a sequencer and saved to disk. It's the sort of thing any sequencer user could do providing they have the skill.

Most Midi songs are programmed by professional musicians and many follow the arrangement which is used on the record.

The idea is that you load the song data into your sequencer, press play and, hey presto, instant music. However, as different synth modules have different sounds, you must make sure that the sounds on your instrument correspond to the ones the song requires. It's no use playing a funky bass line on a piccolo!

Incidentally, this is exactly the sort of problem General Midi and Roland's GS standard seek to overcome – see last month's Frankfurt Music Fair report and this month's Music and Midi column for more details.

All songs for the ST are available in standard Midi file format which can be read by all professional and most budget sequencers. When using Midi song files you need to make some initial settings before running them.

Most sequences display the track names, which are usually the names of the instruments used by the song. Use these to select the correct sounds on your equipment.

The next thing to check is the drum map. Most multi-timbral synths and expanders have a drum preset in which each key is allocated a different drum sound.

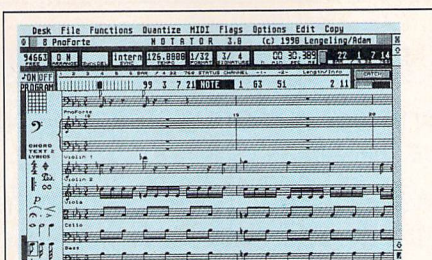
However, at the moment there is no agreement on which drums should be assigned to which keys. The nearest to a standard is the drum map used by Roland's MT-32, and most song files use this by default.

The other thing to look out for is a tempo or conductor track which controls changes in tempo.

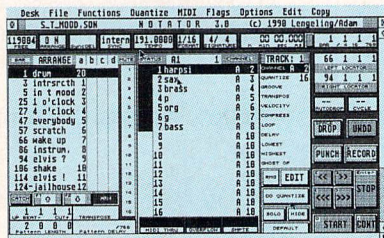
Midi files cater for a large number of sequencers, but some companies produce dedicated files for specific ST programs, notably Pro-24/Cubase and Creator/Notator.

This means the user has just a little less hacking to do in order to make the piece play correctly.

Digital Music Archives were one of the first companies to produce Midi sequences. They



**Mozart's Piano Concerto No 24 in C Minor. Digital Music Archives**



**Swing the Mood by Jive Bunny – the arrangement. Geerdes**

specialise in classical music and have 12 pieces in their catalogue including Beethoven's Eroica Symphony (£24.95), Bach's Brandenburg Concerto (£24.95) and two organ concertos by Handel (£19.95).

There is a mass of data in these pieces and they are excellent productions. If you have a notation program, it's particularly interesting to watch them scroll as they play.

You can be rather cheeky with the Bach, too, by applying swing quantisation to the music. Sacrilegious perhaps, but it's fun!

Hands On Midi Software have built up a list of more than 150 pieces. Most are chart material, but there are traditional and classical pieces, too.

The pop songs are direct transcriptions from the record and Hands On pride themselves on their accuracy and attention to detail.

Most of the Hands On files are set up for the Roland MT-32/CM-32 and D-110. Disks include a System Exclusive file which will set up a D-110, for example, ready to play the pieces. They come with extensive information

files which tell you about the sequences, the sounds they use, where tempo and program changes occur and where the lyrics fit.

Hands On titles cost £19.95 for a choice of any four pop songs or two classical pieces. The arrangements are first class and are excellent value for money.

Geerdes is one of Europe's largest Midi song producers, with more than 700 pieces in their latest catalogue including rock, pop, jazz, swing, classical and golden oldies.

Some disks contain Sys Ex data to set up D-10/110/20 synths and most songs default to MT-32 settings.

They are available in Midi file and Notator formats and a READ.ME file supplies information about the sounds, although most of them are in German.

The Geerdes pieces cost £36 for three titles, £59 for five and £115 for 10.

Trycho Tunes from Zone Distribution are newcomers to the UK. They use four to six Midi channels and come with a Midi map showing channel assignments, although they are ready to play on an MT-32.

Trycho Tunes Tri Packs contain three associated songs and cost £16.95. A Ten Pack is £9.95. You can order Custom songs, too, stipulating drum machine, computer, sequencer and so on. They run from £9.95 if you buy one song down to £8.50 each if you order 25.

Zone also operates a Midi sequence club which costs £20 to join but offers in return a 20 per cent discount on sequences.

Midi song files are fun. You can sing or play along with them – mute the melody line – and subject them to your own taste in instrumentation.

Some of the classical pieces in particular may find a home in education, but mainly they're fun. And you don't have to be a master musician to enjoy them – in fact you don't have to be a musician at all!

#### **Where to get them...**

**Digital Music Archives, 46b Gascony Avenue, London NW6 4NA. Tel: 071 624 8774**

**Hands On Midi Software, 14 Lodge Road, Bedhampton, Havant, Hampshire PO9 3LL. Tel: 0705 452628**

**Newtronic, 60 Siddons Road, London SE33 2JQ. Tel: 081 699 2919**

**Zone Distribution, 5 Abbeville Road, London SW4. Tel: 081 766 6564**

**Ian Waugh takes a look at Midi songs, the latest craze to sweep the country**

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## OBSERVING THE LAW

I was very interested to see the article in the April issue of *Atari ST User* entitled "Free for All". The part which caught my attention was the box "The Long Arm of the Law" on page 21.

This states quite clearly (paraphrased): "Public Domain software can be copied and distributed providing you don't charge anything for the software and it remains intact and accompanied by any documentation. The author of the program retains copyright."

However there is also a similar description in the ST Club catalogue which states: "Public Domain programs are out of copyright. The author has waived all rights to the software and you may do anything you like with it."

Also, the descriptions of 'freeware' are similarly reversed.

I don't pretend to know which is correct but it seems to me that although either definition would do, there is still some disagreement in the industry about the exact definition of terms such as 'public domain' and 'freeware'.

I quote the ST Club as most other PD suppliers seem very vague when it comes to defining terms.

*Roland Givan, Brentwood, Essex*

**The whole area of software use which encompasses public domain software, freeware, shareware and even licenceware is subject to misunderstanding and confusion. And the situation is not helped by the fact that the law as it applies to these areas has not been put to any rigorous test.**

**So definitions vary from library to library and among users. A simple explanation of the system as it stands goes like this.**

**Public domain software has been around since before the days of ST computers, yet its conditions remain very unclear because of the misuse of the term 'public domain'.**

**If public domain libraries really did distribute 'true' public domain software then the ST Club description would be the most accurate.**

**Public domain means just that - a program which is available to all and sundry, owned by no-one - but most programs distributed in PD libraries are copyright to their authors and so don't really fall into this area.**

**The feature in the April issue of Atari ST User offers the nearest explanation for these programs: software always remains the copyright of its author and can be distributed providing that no profit is made from it.**

**Authors usually write documentation to accompany the program and this lays down any restrictions with its use. Most writers forbid their work to be adjusted in any way and say that the text files must remain with the program.**

**Any program with a copyright notice is not in the public domain.**

**Freeware describes programs in which the author retains all rights but allows to be used without charge. Shareware is similar to freeware but the author asks users to**

# mail

**Every month we love to hear what you think, on any topic related to the ST. And if it's the best letter of the month, we'll even pay you £10. So if there's something you just have to get off your chest, write to:**

**Atari ST User,  
Europa House,  
Adlington Park,  
Macclesfield  
SK10 4NP**



**send a small amount of money if they find the program useful.**

## SEEING SENSE

It is not often that I feel inclined to write letters to magazines but after reading the letter from the good Dr. Brown (May 1991) I feel some intelligent and commonsense material was needed for your Mail page.

I quote "...unless you own a printer which handles envelopes with no bother - like a LaserJet ...or fiddling around trying to load sticky labels... they will come off the backing and gum up the works... you have a problem."

Well I do not own a LaserJet printer but a humble Star LC10 and I do not seem to have any problem addressing envelopes (9 X 4" size). Using Protext I have created an address template with suitable left side margin. To print the address the template is loaded with a single macro key, the surname is entered into the template (Protext will search out the address), an envelope is placed in the printer - and that's it folks!

As for sticky labels: for larger envelopes I also have labels installed ready for loading. The only problem I have in loading is when I have had the machine switched on and allowed the printer to load itself.

If it is some time since the labels were used they will invariably jam. However, all is not

lost! The solution to this problem was to leave the printer switched off and, after checking the labels were free at the rear of the machine, load by hand. Result - no problems.

As with all good things a little time and effort was required to set up the template and work out the positioning of the envelope but patience brings its own rewards and I am well satisfied with the results.

*Graham E Moss, Huyton, Knowlsey*

**Boy, that Masterclass sure has raised a few hackles hasn't it? All we said was "If you're sending letters to people it is much better to use a printed label on the envelope."**

**But thanks to everyone who has sent in suggestions for ways of getting around the problem of not having the very latest technology for printing envelopes. I think that's enough now - thank you!**

## A DIFFERENT CALENDAR

Could you settle a question that has been running around in my mind for some months now? Am I a month behind or do you have a different calendar to me?

I refer to the publication date of this magazine with respect to which month it is issued



# ATARI ST PACKS

ALL ATARI ST PRICES INCLUDE VAT AND UK DELIVERY. ALL PRODUCTS CARRY A FULL 12 MONTH WARRANTY. PLEASE RING US BEFORE ORDERING TO CHECK STOCKS AND CURRENT PRICES. ALL OF OUR STE COMPUTERS HAVE THE "PLUG-IN" RAM SOCKETS AND DO NOT REQUIRE A SOLDERED IN RAM UPGRADE. ALL OF OUR STE COMPUTERS ALSO HAVE THE NEW DMA CHIP SET ALLOWING TROUBLE FREE OPERATION WITH ATARI HARD DISK DRIVES.

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**ATARI STE DISCOVERY.** consists of the Standard Pack and STOS, First Basic, NeoChrome and 4 games (Carrier Command, Space Harrier, Outrun, Bomb Jack)

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**ATARI STE TURBO.** consists of Standard Pack and STOS, Basic, Hyper Paint II, Music Maker II, 8 games (Indiana Jones, Impossible Mission II, H.K.M., Super Cycle, Outrun, Dragons Breath, Anarchy & Blood Money)

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**ATARI STE TENSTAR.** consists of Standard Pack and Asterix, Chess Player 2150, Driving Force, Live + Let Die, Onslaught, Pipemania, Rick Dangerous, Rock n Roll, Squeek and Trivial Pursuit II

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for. By about the tenth of the month, or earlier, I trek down to the newsagent to get next month's issue! The worst case I came across was the February issue available before the end of December 1990.

In the good old days when *ST World* was monthly it appeared at the end of the month for the following month, eg late April for May.

I'm also one of those people who would prefer not to get the CoverDisk, because I have a collection of them that I never use for computing. No, I use them as a coaster to set my coffee mug on so as not to mark my valuable furniture.

However I will continue to buy the best *ST* magazine about, for its value compared to *START*, the American monthly *ST* magazine at £6 an issue without a disk!

For your information there is a news digest called InfoAtari16 which originates from the University of Princeton (USA I believe). It consists of articles, comments, adverts and the like by people like you and me, average STers.

The jargon tends to be a bit technical for some but proves to be an interesting read. It can be obtained by anyone with a modem and access to the various networks, eg Internet, Arpanet etc. Copies are also available from Lancaster University Public Domain Archive via JANET, the Joint Academic Network for universities and colleges.

Keep up the excellent quality and features of the magazine to enhance and improve the popularity of the *ST* at all levels.

G P Craig, Belfast

**Thanks for the info which hopefully readers can use. As to your initial question, well it's like this, see...**

**I don't suppose it would be giving too many trade secrets away if we told you that one of the reasons the, say, June issue comes into the newsagent in the middle of May is to do with marketing.**

**You see there's fierce competition among magazines for space on newsagents' shelves. So, as soon as the newsagent sees that a magazine is out of date, it's taken off the shelf to make space for something else. The theory goes that if you have an earlier cover date, then you won't be taken off the shelf prematurely. Well that's our story, anyway...**

## WHAT SERVICE?

I would like to question some of the advertisers in *Atari ST User* – why do you do it?

Why do you invite readers to return little coupons complete with name and address as requests for product information, sales lists, brochures etc.?

On 7 December 1990 I requested such information from MT Software, Goodmans PD, PDom and WeServe, and received items requested. Thank you.

I also wrote to Ladbrookes International and Atari (for the second or third time – requesting info “introducing the powerful new Atari 1040STE”) but have not received a thing!

I may have some cash to spend – I may have spent it elsewhere by now.

What is the point in filling in coupons, sometimes enclosing the requested sae, posting them off to other parts of the country just to be ignored! How do these companies

respond to an order? Do they take just as long?

If your advertisers request responses from your readers then they ought to take note of those responses when they are made.

David Kitching, Sandown, Isle of Wight

**Er, yes, quite. What's going on out there, guys? Perhaps all the advertisers have been totally inundated with orders and requests for information lately. Presumably there is a logical explanation for it, anyway.**

**You do have a point. If you don't receive a reply to a coupon, then how can they expect you to order? Hopefully by the time you read this, those tardy responses will have made their way to you.**

## GOOD NEWS FOR AUSSIES

Robert Huggins, Qld Australia (Jan 91) must be going to the wrong newsagent if it takes two months to get a copy of *Atari ST User*. I have had the January 91 mag for four weeks now (letter dated 5 March 91) which means we get it within four weeks of the UK. That's nearly as quick as package airmail.

Now the questions. I originally bought a 520STFM in Dec 89 whilst unemployed so that I could keep up with programming practices etc. I bought my first *Atari ST User* in January 1988.

I then moved interstate to take a new job programming and gave the *ST* to the youngest son. I bought myself a 1040 in Dec 89 and started doing some serious programming in BASIC but finally decided to start using assembler (I have DevpacST2) and Pascal etc so I started looking through old mags for routines I can use.

In the January 1988 issue there is a section on machine code. This was written by Steven Hill and was part 6 of the series. Is it possible to get parts 1 – 5 and any after part 6 from yourself, or do any others have the complete list? I have the Abacus 3D Graphics programming book but this article is written in a far better and plainer language.

PS: I wish we lived in the UK. You certainly have a lot more options in suppliers than Australia and must have a better marketing strategy. One of our largest retailers (Myer) have now stopped selling Atari hardware and software suppliers hold a very limited selection of merchandise (ordered software can take 6 to 12 weeks to arrive).

Gary Thomas, Kilsyth, Victoria

**Even if you live in the next county from a supplier it seems that sometimes it takes 6 to 12 weeks to arrive so don't feel too hard done by!**

**We will do our best to send you the articles – but only because you asked nicely. But the rest of you take note: this does not mean it's open season on asking us to send out copies of articles from back issues, OK?**

## OPEN TO OFFERS

Some assistance for two of your readers:

● A Cummins of Blandford Forum, Dorset wants to know if he can convert the IBM.PCX picture format to an Atari mode.

TINYSTUFF v3.4 is the answer. This brilliant utility will also handle MAC formats as well and should be available from any good public

domain library.

Any chance of copies of those clip-art disks?

● James Glazier of Wagga Wagga, Australia requested the address of JRI, USA. Well here it is!

John Russell Innovations  
PO Box 5277  
Pittsburgh  
CA 94565  
Telephone: (415) 458 9577

From my experience Australia appears to be ruled by Commodore, so if anybody at Atari is reading this and would like someone to go out there and spread the word for Atari, then look no further...

Mark Hammond, New Malden, Surrey

**Well Atari?...**

## OLDE ENGLISH

For the first time I bought your magazine from WHSmith here in Brussels and I'm really happy to find a magazine like that in English.

I'm happy about your March Disk, especially the program Pin Head which makes it possible to run my DTP program faster. I have Publishing Partner Master, the French version of PageStream. What a great idea it would be if Softlogik could come over to Europe. If they are reading this letter – I'll be very happy if finally we can get more typefaces for this program.

Upgrade in Paris who are the importers of the French version tell me it's coming, but I'm still waiting for the Old English one – which is like handwriting – and is different to Chancery, the one I use at the moment.

So may I ask you to write in your magazine the address of Softlogik? I hope Softlogik will try to make PageStream a little bit faster now.

Willemsens Thierry, Brussels

**You could contact Softlogik in St Louis on (1) 314 894 8608. For any readers in the UK who are interested, their products are distributed by Silica Systems (081 309 1111).**

## BUYING ADVICE

I am considering purchasing a 1040STE in the near future. There is one point which I hope you can clear up for me first however.

In many advertisements for STs in your magazine prices are given for 1040STEs and 1MB STes. These prices can differ by as much as £80.

I assume that the 1Mb STes are upgraded 520STes. If this is the case, what is the difference between the two? Would there be any disadvantage in buying such an upgraded 520STE at the cheaper price rather than a 1040STE? I would be very grateful for your advice.

Ben Cavalier, Lowton, Cheshire

**You're right to assume that the 1Mb STes advertised will normally be upgraded 520STes. There should be no difference between the upgraded 520 and a 1040, other than what is printed on the case! I would go for the cheaper option.**



### ATARI 520 STFM DISCOVERY PACK

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# Combining accounts

## Martin Eaton gets to grips with his VAT problems as he puts Digita's latest accounts package, Cashbook Combo, through its paces

**C**ashbook Combo is a combination of two of Digita's accounting programs, Cashbook Controller and Final Accounts. It's an easy to install, Gem based double entry book-keeping system and is supplied on a single disk. Many sets of accounts for different companies can be set up and run alongside each other, each in a separate set of files.

Partnerships as well as limited companies are catered for, with five distribution accounts for partnerships. Up to 253 nominal accounts can be set up in a user-definable chart – certainly enough flexibility to cope with the financial structure of most businesses. It is not a

full accounting suite, and although many different sales and purchase nominal accounts may be used, there is no sales or purchase ledger as such.

No aged accounts or debtors listings here. Having said that, it copes very well with value added tax requirements, having nine input and output accounts plus the VAT control accounts – again nine each for sales and purchases.

Special retailers schemes are not catered for automatically, so manual entries have to be made. Using the memorandum VAT ones a report can be produced each VAT period giving the figures to be entered on the return.

This appears to be a good idea at first, but when it is realised that 18 accounts are held for the VAT it seems a little strange when one control account plus a period summary would do – a small criticism though.

Transactions are recorded in a daybook with full audit trail and analysed by account (range), date (range) with the option of reference masking using wildcards for full control.

Transactions can be recorded on an entry-by-entry or batch entry basis with full total checking, and each transaction can be posted to up to five accounts.

VAT is calculated at time of entry – just select the VAT code and confirm the calculation by pressing Return.

Transaction entry is fully error checked, minimising the risk of erroneous entries.

Final accounts, trial balance, profit and loss report, balance sheet and accounting ratios are produced from this module, accessible only from within Cashbook Controller.

All reports are easily produced with a minimum of effort. Printer codes are configurable through the supplied configuration program. One of the best aspects of Final Accounts is the accounting ratios option.

Most commonly required ratios are reported including acid test, capital ratio, ROCE.

Push-button financial analysis should enable fine tuning of most types of company,

A very nice feature, but it could perhaps have been enhanced by graphic as well as tabulated ratios. The A5-sized manual covers installation, and data backup and has a short tutorial with examples.

Its reference section covers the more advanced features such as trial balance, profit and loss – income and expenditure for partnerships – balance sheet and accounting ratios.

The manual is quite comprehensive, covering all aspects in enough detail for the experienced businessperson but simply refers the inexperienced to their professional advisor.

Descriptions of accounting terms are a little sparse. Explanations should at least be given for transactions, control accounts, memorandum accounts and nominal accounts in order to impart a fundamental understanding of the sales/purchase/VAT aspects of accounting. This is an area where the manual is a little lacking.

A well presented system, very functional and easy to install and use – although you will need opening balances from your accountant to begin with.

Not an integrated business system with the lack of sales and purchase ledger, but it isn't intended to be. In the future it would be nice to see add-on modules and also lacking is the option to export data for use in a spreadsheet or word processor for further analysis and reporting.

Sixty-day telephone support is included which can be extended by subscription thereafter.

TESTCD 05/03/91	
VAT Summary For Period Ending	
VAT Control Accounts	
VAT 1 O/P Tax	22,500.00 Credit
VAT 1 I/P Tax	15,000.00 Debit
VAT Payments/Refunds	0.00 Credit
VAT Memo Accounts	
Sales VAT 0 (Memo)	0.00 Credit
Sales VAT 1 (Memo)	150,000.00 Credit
Net Payments VAT 0 (Memo)	0.00 Credit
Net Payments VAT 1 (Memo)	100,000.00 Debit
VAT 1 O/P (Memo)	22,500.00 Credit
VAT 1 I/P (Memo)	15,000.00 Debit

Press The Space Bar To Continue

**A full audit trail is provided. Each transaction is marked as it is printed so that your end of year report doesn't take 49,000 pages**

Code	Description	Total
183	VAT 9 O/P Tax	
184	VAT 1 I/P Tax	
185	VAT 2 I/P Tax	
186	VAT 3 I/P Tax	
187	VAT 4 I/P Tax	
188	VAT 5 I/P Tax	
189	VAT 6 I/P Tax	
190	VAT 7 I/P Tax	
191	VAT 8 I/P Tax	
192	VAT 9 I/P Tax	
193	VAT Payments/Refunds	
194	Creditors & Accruals	
195	Purchase Ledger Control	

Previous Next Cancel

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**Product:** Cashbook Combo  
**Supplier:** Digita International, Black Horse House, Exmouth EX8 1JL.  
**Telephone:** 0395 270273  
**Price:** £69.95

**Configuration:** All STs, colour and mono

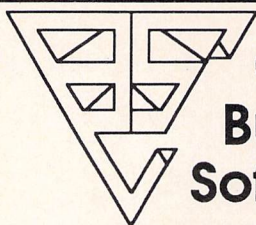
## THE BOTTOM LINE

**FEATURES:** Up to 253 nominal accounts, final accounts, trial balance, profit and loss report, balance sheets, lacks sales and purchase ledger, copes well with VAT requirements, transactions are error checked

**EASE OF USE:** Telephone support, comprehensive manual, well presented, easy to install and operate

Features	Ease of use
Excellent	Excellent
Good	Good
Average	Average
Bad	Bad
Appalling	Appalling





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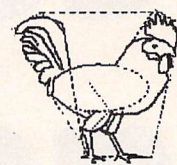
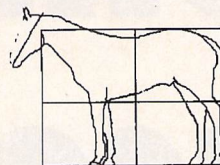
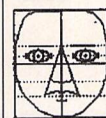
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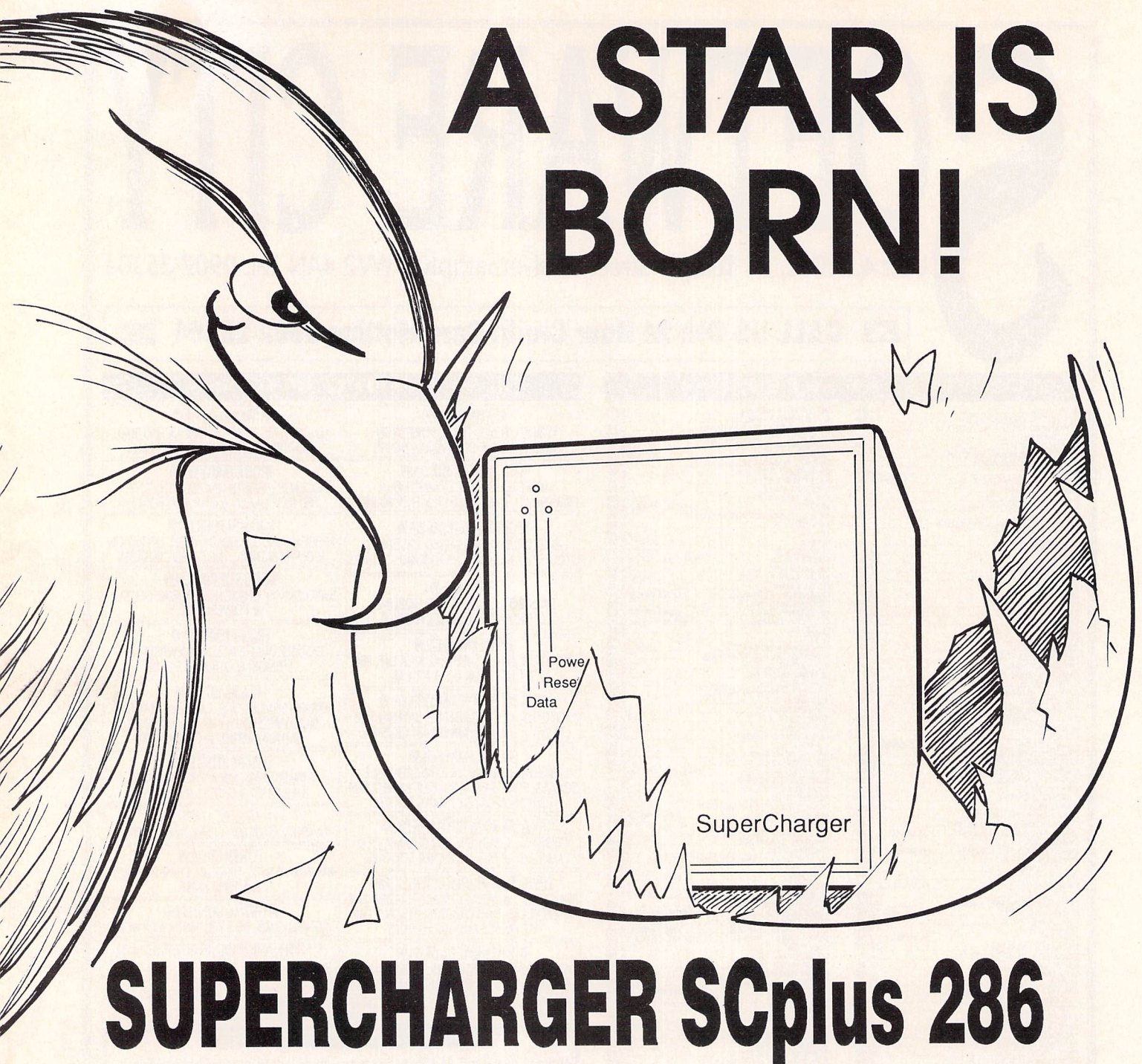
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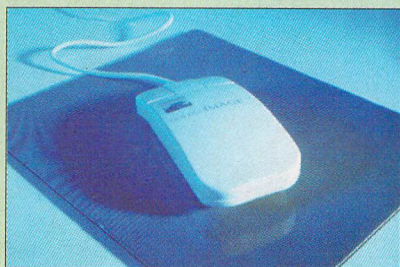
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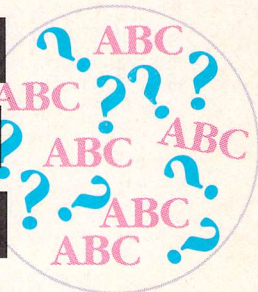
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# ABSOLUTE BEGINNERS



**W**e learned last month about the various input/output devices such as keyboards, mice, joysticks and trackballs.

Before we go on, it's been noticed that there's another way to upgrade the appalling standard 520 and 1040 ST keyboards

Previously, the only option was to use Springz, or install complicated German add-on boards, but Third Coast Technologies are advertising a little plug-in board which enables you to attach any PC-compatible keyboard to your ST.

The machine's own keyboard remains

***If you were surprised at how much data the ST's floppies can store, you'll gasp in awe when you see a hard drive rip into action***

available and you can also type with the PC keyboard.

Some very good PC replacement keyboards are available and they're not too expensive. The Third Coast board then, sounds like the perfect way to upgrade.

Another question which has popped up in the mail several times this month is how the ST's mouse works. How does rolling around that bit of plastic on your desktop move a pointer on the screen?

Well, it's all to do with a common little electronic device known as a resistor. The ST's mouse has variable resistors which, depending upon how much they're turned up or down, allow a certain, measurable, amount of current to pass through them. And that is the basis of the mouse.

The ball presses against rollers which control variable resistors. Move the mouse, the ball moves and the corresponding resistors allow more, or less, current to pass through them to the ST.

It's possible to work out the largest and smallest amount of current these resistors can pass and therefore determine a scale of calibration, smallest figure at one end, largest at the other.

This calibration can be applied to the screen display so that if the resistors pass enough current to be in the middle of this calibrated scale a pointer can be moved by the ST to the middle of its screen display. If there's

only a small current the pointer stays at one side of the screen, a large amount of current and the pointer moves right to the other side.

That's how a mouse works. In fact the ST's resident rodent features optical resistors which measure how far a wheel with slits in it has turned one way or the other, but the principle is the same.

Some of the very latest hi-tech mice don't have any moving parts but instead rely on a pad which is divided up into a grid. This grid is picked up by an optical detector in the mouse and is used in the same way as the slits and resistors.

It is a simple but effective idea which provides an excellent way to control the computer. What's that they say about the simplest ideas always being the best?

## SAVED FOR A RAINY DAY

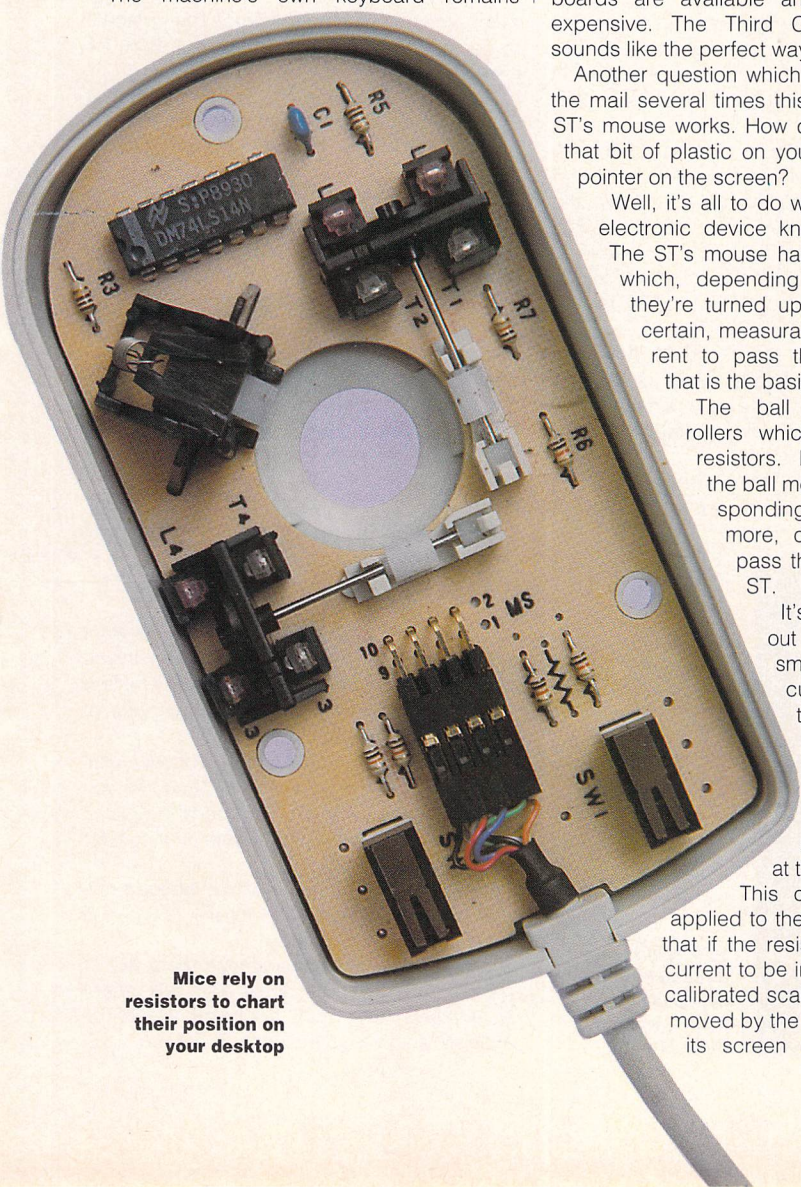
And now on to this month's topic, backing storage. Although even the most basic ST has a large amount of ram – random access memory, explained in earlier Absolute Beginners – the data held in this ram is lost the moment power is disconnected from the machine when you turn it off.

Obviously you don't want to retype programs and data into the memory of the computer every time you want to use it, so a convenient arrangement known as backing storage is available to save valuable applications and data until the next time they're needed.

Early computer users had an horrendous time trying to find forms of backing storage which were reliable and fast. Two of the very earliest attempts were acoustic delay lines and Williams screens.

The former consisted of metal pipes filled with mercury, sealed at one end and with a transducer at the other end – a transducer is a device which converts one type of signal, perhaps audible sounds, into another type, say electrical signals.

The idea was that the computer entered its



**Mice rely on resistors to chart their position on your desktop**



electrical signals into the transducer which converted them to sound waves which were then sent swimming through the mercury in the delay line.

These waves travelled around and around the pipes through the mercury until they were needed again, at which point they were picked up and fed into the transducer, converted back into electrical signals and passed to the computer.

## SLOWCOACH ROUTE

Needless to say, this was an extremely round-about way of storing data. It was slow, the sound waves dissipated in the mercury made the data unreliable and the device could only store a small amount.

Add to that the fact that the delay line was bulky and expensive to build and you have a big no-no as far as the future of technology is concerned. Further development of the delay line was dropped.

The Williams tube was simply a television tube which, rather than displaying a picture, showed dots representing data.

Data was fed into the device, fired from an electron beam to charge particles on the phosphor-covered screen, and the resultant display was the actual data.

It worked, but it too was slow and bulky. The data, in the form of charged phosphor, leaked away and had to be refreshed every millisecond or so and the device was unable to store too much information. The Williams tube was also dropped.

The first real breakthrough was the use of core storage. This consists of tiny metallic rings – like tiny Polo mints – bound together into a matrix with fine copper wires.

By sending an electrical charge along a pair of wires it was possible to magnetise any ring in the matrix. Magnetised rings formed the 1s and 0s of computer data.

Core memory led to the concept of magnetic storage, first tapes, then disks. IBM was among the first to produce floppy disks. These 1970 attempts were eight inches in diameter and could store and retrieve around 100K of data at speeds which, although considered slow today, were incredibly fast for their time.

Gradually, the technology advanced via 5.25in devices, through 3in microfloppies to the 3.5in drives your ST uses.

The 3.5in device installed in your micro can store enormous quantities of data and pass it back and forth at startling transfer rates.

When Atari designed the ST, 5.25in disk drives were phenomenally popular – being

installed in the IBM PC and compatibles – but the technology was nearing its logical conclusion.

Several manufacturers were looking for alternatives to the 5.25in drive and for a time it looked as though the Hitachi 3in floppy was the way the industry would go. Sony were developing their 3.5in drives in parallel with Hitachi, but the latter were receiving most attention.

Atari however, had the foresight to plump for the Sony offering, and the rest, as they say, is history. Hitachi 3in drives made it into a few machines, most notably the 8-bit ones from Amstrad, but they didn't really catch on.

The Sony device, on the other hand, was taken up with vigour by almost every computer company, including IBM. Today it is the most widely used floppy drive.

The ST uses an almost identical disk format to the IBM-PC and this has distinct advantages. It means that you can swap data such as text files between your ST at home and the office, college or school PC without problems.

## DISK FORMATS

Where the format differs is in the way the PC recognises which type of disk it's using. The ST knows of only one kind of floppy – the 3.5in variety. The PC knows about several including the 3.5in and the 5.25in drives.

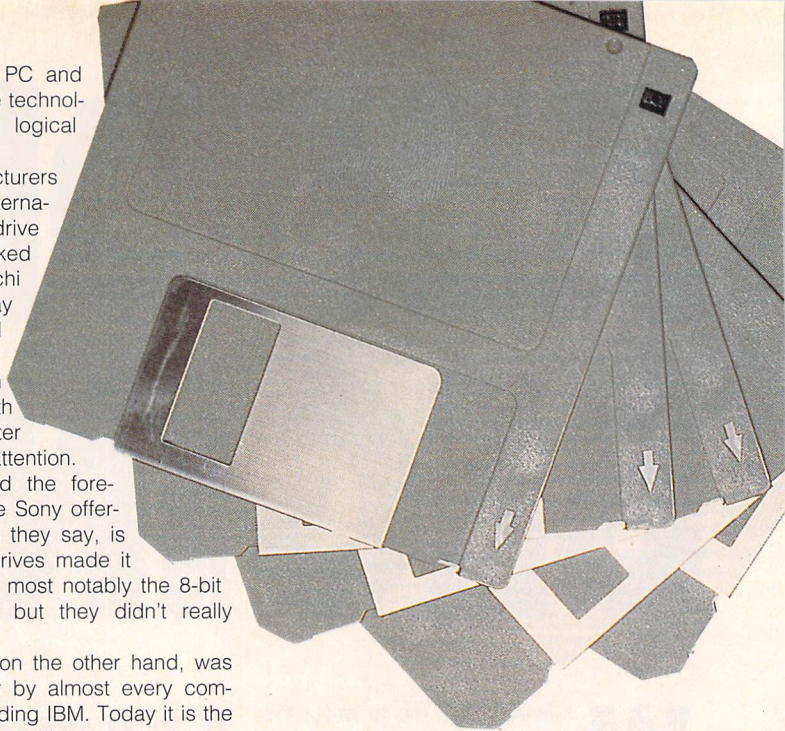
There has to be a way of recognising which format the machine is attempting to access and this is achieved by writing one byte of data to the disk which the PC reads when it first accesses it.

The byte is written when the disk is formatted and is marked with its type.

Disks formatted on the ST don't have this byte and so when they're inserted into PCs they can't be read. The moral is simple. If you're going to use the same floppy disk on both PCs and STs, format it on the PC and all will then be well.

You've probably heard about how you shouldn't mistreat floppy disks how they should be stored safely away when not in use and shouldn't come into contact with any source of radiation.

Rot! We've never come across a floppy disk which has been corrupted by coming into



**Today's floppies can store and access vast amount of data**

contact with televisions, telephones, magnets, tube trains, monitors, dogs or dirty washing up.

It simply doesn't happen. Try this. Format a blank disk – they're cheap, so you can probably afford to experiment with one. Who knows, you may prove me wrong! Copy some data to it – nothing important and nothing for which you don't have a backup. Then place it on top of the television and leave it there for a week.

Now put it under the telephone and leave it for another week. Get the biggest magnet you can find and rub it backwards and forwards over the disk.

Waft it around in front of the ST's monitor, bung it on a radiator for an hour or two, breath on it, let the dog breath on it, let your granny breath on it.

If, after performing all the experiments, your disk doesn't work absolutely perfectly, just as normal, then you're very, very unlucky. From burning curiosity, I subjected lots of disks to the tests outlined above.

Every single one worked perfectly. The only mishap was with the outer casing of one disk which melted after being left on a very hot radiator. If I could have got it into a drive however, it probably would have been fine, just like all the others.

## REALLY RELIABLE

So what's the point of all this? Well, I just want to illustrate how reliable floppies are. If you discover a bad 'un, it's because it was faulted at the manufacturing stage, not because of anything you did.

Sure, treat your disks with respect, but don't get paranoid about them. Of course you should keep a backup – anyone who doesn't keep a backup of important data is asking for trouble.

Disks do fail, but on the whole they are reliable and hardworking and for the few pence they cost, a very good buy.

● *Next month: How to squeeze more out of standard ST floppies. We'll also talk about hard disks, what they are, why they're so expensive and what they can do for you.*



**Atari had the foresight to plump for the 3.5in drive in their STs**



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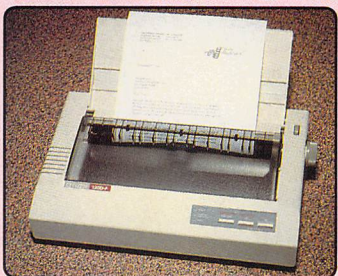
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**192 CPS DRAFT 9 PIN****SWIFT 9 - COLOUR!**

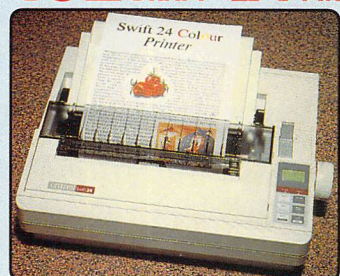
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- 3 NLQ Fonts (48cps)
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- FREE Starter Kit
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**192 CPS DRAFT 24 PIN****SWIFT 24 - COLOUR!**

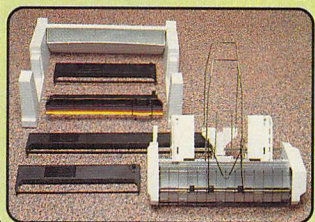
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# AN APPLE A DAY

**Our Emulation expert  
Günter Minnerup offers some  
tips on getting the best from  
your Apple Mac... whoops, ST**

**T**he ST is a true chameleon among personal computers, being able to mimic a host of other machines. With the correct hardware add-ons, and sometimes even by merely running a piece of emulation software, it can behave just like an IBM PC-compatible, an Apple Macintosh, a CP/M computer, an Acorn BBC, a Sinclair QL, an Atari XL, a Sinclair ZX81, or even a Unix machine.

Of these, PC-Dos emulation is perhaps the most useful in that IBM-compatibles clutter most workplaces and an emulator enables you to be a true workaholic.

You can take your job home with you, pursuing the next promotion target on your Atari ST without the need to convert files from Dos to Tos applications software.

Useful as this may be, it is not very exciting. Apple Mac emulation, however, is an entirely different proposition.

The Macintosh is the ST's big brother. Indeed, so similar are the two that they could easily be mistaken by the casual observer as twins, were it not for the difference in general demeanour exhibited by them and their software.

Where the younger ST delights in unpredictability and inconsistency, the older Mac is a model of steadiness and refinement.

True, the ST is slowly growing up but much of its software, having been written for the home and hobbyist market, is still rather unkempt, taking any conceivable liberty with the Gem graphic user interface, which is only as close to its Mac role model as the Apple lawyers would allow.

In short, the Mac is in most respects what the ST should have been – polished, consistent, powerful and groomed to tackle a wide range of tasks in truly professional manner.

All this comes at a price, however, and anything but the most basic Macintosh still costs the earth at those heavily-carpeted AppleCentres whose staff will often mistake you for the window cleaner if you fail to turn

**MASTER  
CLASS**

up in a bespoke suit. Enter Spectre 128, a wonderful gadget which will turn an ST into a fully-fledged Mac for a fraction of the price of the real thing.

Even better, it gives you two computers in one, for your ST will continue to run all its own software in its native mode as before.

I could even swear that my ST's behaviour has shown some marked improvement ever since it has been exposed to the good influence of Mac emulation.

Spectre is available in two versions, with or without group code recording (GCR), the Mac's non-standard disk writing system. The difference is a piece of code which gives the ST power to read and write Macintosh format floppies in an ordinary ST drive.

## ALL SYSTEMS GO

Foregoing GCR is definitely a false economy, as it means linking up with a real Mac to obtain both the system and any applications software.

With GCR, ordinary Mac disks will suffice and you can allow yourself the considerable pleasure of visiting your AppleCentre in your window cleaner gear asking for a copy of Adobe Illustrator to run on your Atari ST!

With version 3 of the Spectre software the Apple File Exchange program – supplied on every system disk – enables you to read and write MS-Dos format disks, which in turn are so close to Atari's own format that it makes no difference.

The Macintosh operating system consists of several parts, some of which are contained

in the roms and some on system disks. They are frequently updated. While it's possible to save money by buying a Spectre cartridge without the 128k MacPlus operating system rom, be warned. Apple dealers will not look kindly at ST owners wishing to buy the chips, whatever their attire.

So unless you have some reliable source, buy your Spectre complete with roms, because you will still have to obtain the rest of the operating system, which comes on disk anyway.

The best course of action is to approach a friendly Mac owner, or a local user group, and ask for a copy of the original system disk as supplied with the machine. Using a pre-installed system is asking for trouble.

The Spectre manual, a highly-entertaining, very informative although occasionally exasperating affair, lists the system versions that work best with the emulator.

The latest for the MacPlus, known as 6.0.5, is best. The Finder is roughly equivalent to the Gem desktop, providing the graphic user interface which sits on top of the operating system proper.

On your system disk you will also find MultiFinder, which enables several applications to coexist within memory and hence a form of multi-tasking. For this to work well an ST with at least two megabytes of memory is required.

Configuring Spectre is a doddle, particularly with floppies only. But a floppy-only Mac is severely handicapped: Its operating system is so fond of accessing disks that simple operations like launching a word processor can make you feel as though you're jogging in treacle.

Serious work on the Mac needs a hard disk, with one or more partitions in Mac or Spectre format.

Spectre can auto-boot from any partition with the requisite system files on it and you can even install different systems on different partitions for different purposes. All this is





explained very well in the manual and could not be exhaustively covered in a magazine feature anyway.

The real journey of discovery starts when the smiling disk icon and the Welcome to Macintosh message have appeared onscreen and you are confronted with the Mac desktop.

Although superficially similar to the familiar Gem, it takes only a first attempt at selecting an item from the menus to encounter some rather different behaviour.

Mac menus are pull-down rather than drop-down, so you have to press the left mouse button over the menu name for it to reveal itself, and the mouse button needs to be kept depressed until the item you want is highlighted.

## TRASHING DISKS

Releasing the button will select the item. This takes some getting used to, as it is easy to select the wrong item initially.

Another decidedly strange aspect concerns the disk drives. Mac drives eject disks mechanically but even Spectre GCR cannot make Atari drives do that.

Instead a flashing drive letter appears on the desktop to signal that it is OK to remove the disk. Remove one without permission and you get into all sorts of trouble, as the Mac operating system will not know what you have done and fail to update the desktop correctly.

The easiest method of forcing a disk eject is to drag the disk icon to the trashcan. This will not, I assure you, wipe them.

The trashcan is much more forgiving than its Gem version. You will note how it expands to indicate that something has been deposited in it, but its contents will not be deleted until you either explicitly select the appropriate command, or power down the computer.

In the meantime, double-clicking on the trashcan icon will open a window displaying its contents, which can then be recovered by copying it back into another window. This can be a life saver on occasions.

## FONTS AND ACCESSORIES

Perhaps the most baffling puzzle for newcomers to Mac emulation comes when trying to install new desk accessories and fonts. Desk accessories work in much the same way as under Gem but cannot be installed by simply copying them to the root directory of a boot drive with an ACC extender.

The FONT/DA MOVER program needs to be run and the desired accessories copied into the system file if they are to be available from within any application as well as from the desktop.

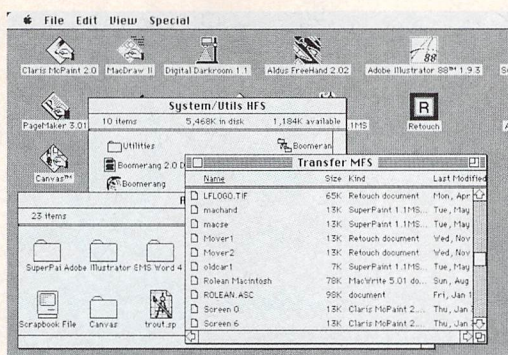
A very useful trick is to copy an accessory which is only needed from, say, a wordprocessor to the relevant program rather than the system so that it will only take up valuable memory when you require it.

Much the same applies to fonts, which again can be installed either across the entire system or for particular applications only.

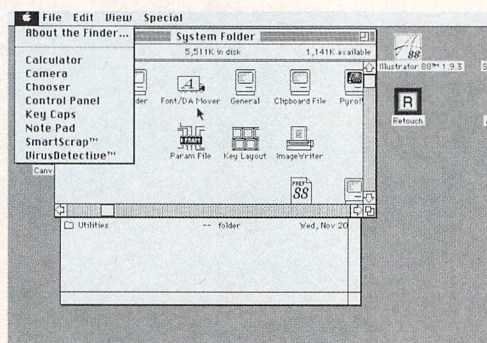
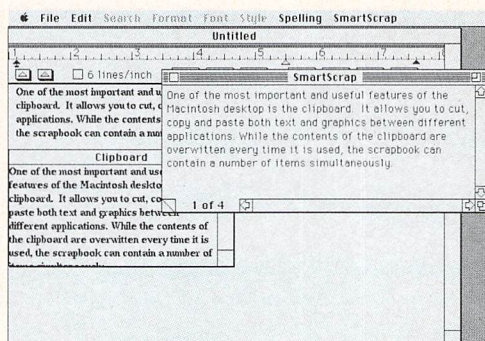
Macintosh screen fonts are bit-image fonts like Gdos ones, and suffer the same fate when enlarged or reduced to non-standard sizes – aliasing and distortion.

On the ST, programs such as Calamus and Fleet Street Publisher get around this by using vector fonts which appear smooth and well-shaped at whatever magnification.

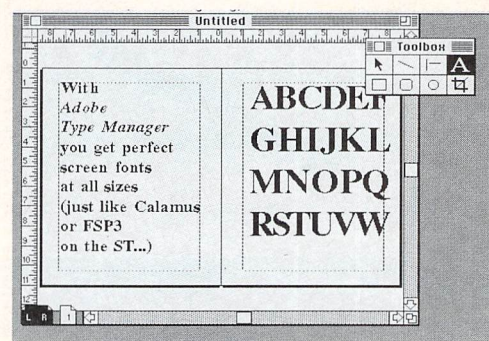
On the Mac, this is possible across the system by investing about £80 in a copy of



**The clipboard stores text and graphics in standard formats which can be pasted back into any other Mac application. Using SmartScrap it is possible to build a library of cut-and-paste items with regularly used phrases or clip art symbols. You'll curse the omission of a clipboard from Gem on your return to ST mode when you have to laboriously save items separately and convert them into different file formats**



**Desktop publishers in particular will quickly find the Adobe Type Manager indispensable for both true wysiwyg screen appearance and improved output quality on non-PostScript printers. For £80 you get a basic set of Times, Helvetica and Courier PostScript fonts with further font packs available quite cheaply – as Macintosh software prices go, anyway**



**On the ST you have to splash out money for memory and the NeoDesk replacement desktop to get what the Mac offers as standard – immediately accessible application icons and different windows displaying files in different forms. The screendump does not fully show the disk drive icons on the right because the ST screen is larger than a Macintosh screendump expects. With Spectre, you get a larger as well as a faster Mac**

**The cute little lorry icon represents the essential Font/DA mover utility in your system folder, which installs or deinstalls desk accessories and fonts. A particularly useful feature is the ability to attach these to one particular application, such as fonts to a DTP program or a paint accessory to a wordprocessor**

Adobe Type Manager. This should really be the first item of Mac software bought, especially as it improves not only the screen fonts beyond recognition, but also considerably smoothens the otherwise rather jagged printer output through ImageWriter emulation.

## INTEGRATION

Finally, a word on making the most of your ST/Mac combination. Mac software running under emulation should ideally complement your ST-based work rather than being a distraction from it, but the different file formats used in both environments can make that difficult.

Bit image graphics are easiest to

exchange, as the Mac-standard TIFF format is increasingly supported by ST software, as is the MacPaint format.

PostScript output from Mac programs can be imported into, but not displayed by, some ST applications and printed through UltraScript.

Other vector graphics formats are impossible to transfer, and you will have to save the output from programs such as Adobe Illustrator and Freehand as TIFF files before transverting them to the ST.

Wordprocessor files can be exchanged as Ascii, although it is probably best to stick with one environment in this case from text input to printed output.



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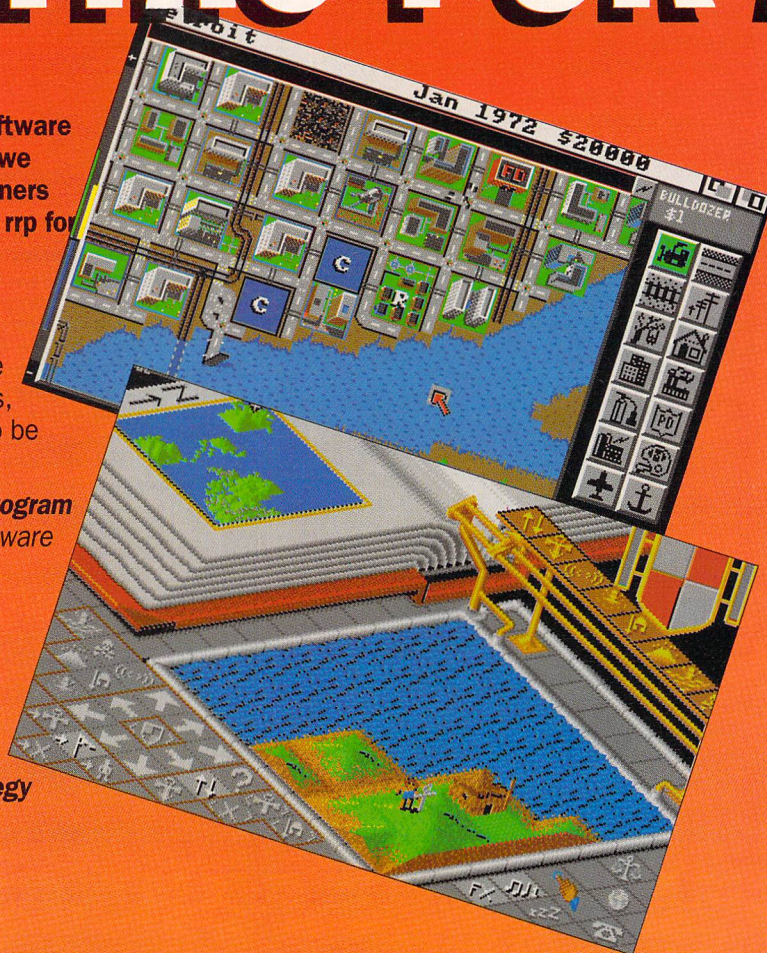
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ATARI ST

## The GFA BASIC and ASSEMBLER User Book

Uli Weidle  
Dietmar Schell

**GFA**  
Data Media UK

**Product:** The GFA Basic and  
Assembler User Book  
**Authors:** Uli Weidle and Dietmar Schell  
**Price:** £19.95  
**ISBN:** 1-85552-003-5  
**Supplier:** GFA Data Media UK, BOX 121,  
Wokingham, Berkshire RG11 9LP

High and low-level mixed code programming is a subject which gets little attention considering that many competent programmers use it all the time.

The majority of C programmers are forever dropping in and out of assembler and a great many Basic programmers use it to handle things which are either awkward or impossible to do directly from Basic.

It's exactly this latter topic, namely the mixing of Basic and assembly language, which is covered in this book. To be precise, it's about GFA Basic and assembly language, with some specific material about the GFA Assembler thrown in.

The first deals with low-level programming, beginning with an introduction/overview to what assembly language is and why it is used.

There's a straightforward PEEK/POKE orientated tutorial introduction which guides you into the world of bits, bytes, and binary/hexadecimal numbers in a painless way.

A short routine written as embedded DATA statements within a Basic program becomes translated into the first real assembly language code.

It then gives more assembly language examples – including scroll routines – and a "learn as you go" overview of the 68000 instruction set and its addressing modes.

This first section does not provide an in-depth account of every 68000 instruction. What it does is provide a tutorial introduction to the most important instructions. There are plenty of examples – which include such things as the use of GFA Assembler's macros – and lots of explanations.

It's a little surprising that the 68000's powerful LINK/UNLK instructions didn't warrant a paragraph or two somewhere along the line, but since beginners often find this particular instruction hard to understand, its non-inclusion was no doubt deliberate.

Part two introduces some advanced Basic techniques: Keyboard scanning, checking

printer status, file loading into a reserved buffer area, graphics transfer, writing accessory programs in GFA Basic version 3.0 and so the list goes on.

It was obviously the authors' intentions to give plenty of useful tips and tricks in this part of the book and they've clearly succeeded.

Part three concentrates more on real mixed code. It's here that more sophisticated topics, such as retrieving parameters which have been placed on the stack by a GFA Basic call, are introduced.

Examples in this section include string processing routines, graphics enlargement/rotation routines and graphics format conversions.

The last chapter deals with the Gem Image format and provides some useful Gem image packing/unpacking routines. Uli Weidle and Dietmar Schell have, on the whole, done a really good job here.

The book is well written and, in a GFA sense, general enough to be useful to all GFA Basic users. Although a few example programs will only run under GFA Basic version 3.0, most will perform happily with version 2.0 upwards.

Throughout the book there's a strong sense of an enthusiasm to teach you something, and this, coupled with interesting examples, makes it difficult to put down.

An excellent book that is both well written and informative, it comes with a disk containing all of the examples plus a few extras

**Product:** C-manship Complete  
**Author:** Clayton Walnum  
**Price:** \$24.95, disks additional \$10  
**Supplier:** Taylor Ridge Books, PO Box 48,  
Manchester, Connecticut USA 06040

Most material for this book first appeared over about four years in Clayton Walnum's magazine column of the same name.

Because of these origins it has more of a conversational/tutorial approach to teaching C than found in conventional textbooks.

First impressions weren't great, but as I got further into the text my opinion of the book as a whole changed, but that of the early chapters didn't.

The first nine chapters – about a third of the book – are devoted to introducing the lan-

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## C-manship COMPLETE

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```
#include <stdio.h>
#include <osbind.h>
#include <gendefs.h>
#include <obdefs.h>

main()
{
    appl_init();
    open_vwork();
    if (Getrez() != LOW)
        v_clswork();
    else
        main_loop();
    appl_exit();
}
```

A Taylor Ridge Book



# AMMING

## RS

**Paul Overaa checks out  
three new books aimed at  
users entering the world of  
serious ST programming**

guage itself. The basic facilities – variables, loops, flow control mechanisms, arrays, pointers, structures and so on – are well enough explained, but an awful lot of important things didn't seem to be said.

Niggles revolved around matters of style, for example the presence of I/O dependent routines, such as printf(), scattered throughout the examples instead of being isolated, frequent use of variables that had been given abbreviated names and so on.

Others worries, such as the use of getchar() routine with char instead of int variables are relatively minor.

More serious is the fact that Ansii C doesn't get any coverage at all, and the important new style function declarations, function prototypes and other Ansii C goodies which C programmers should be using nowadays aren't mentioned.

Although you will learn about C, it isn't an in-depth introduction to the language. The early chapters seem suitable for someone wanting to learn enough of the language to get by without worrying about developing a more detailed understanding.

From chapter 10 things improve dramatically. The book concentrates far more on Gem than on C and here the tutorial approach really works well.

Chapter 10 itself provides a general introduction to Gem and VDI and this is followed by sections which look at VDI text functions, alert boxes, file selectors, object trees, dialog boxes, menu bars, windows and many other Gem topics. The emphasis is on using what you've learnt about C to get into Gem programming on the ST.

There are plenty of useful examples, including a Degas picture viewer, some clock/calender programming, a tutorial on creating desk accessories and even some simple animation techniques.

To end, there are five chapters devoted to the development of a complete Gem applications program.

Overall, this is not a particularly good C book, but certainly is a useful doorway into the world of Gem programming on the ST.

It's available either with or without accompanying disks, but in view of the size of the Gem example programs the disks are recommended – you'll save yourself hours of typing.

**Product:** *Introducing Atari ST Machine Code*

**Authors:** Roger Pearson and Sean Hodgson

**Price:** £19.99 including disk

**ISBN:** 1-873423-01-2

**Supplier:** zzSoft, 3 Riverdale House,  
Mytholm Close, Hebden Bridge,  
West Yorkshire HX7 6BP.

Another book short on theory but containing useful Gem-orientated material. It starts with a readable introductory chapter explaining what assembly language is and why it's used.

It moves on to explain about labels, mnemonics, operands and a few other jargon-related assembler topics. Following this are chapters on the Sozobon debugger – supplied on the disk – and a host of other topics.

The hands-on tutorial approach has some advantages. Certainly many of the line-by-line explanations will help people tackling assembly language for the first time.

The disadvantage of this approach is that some topics which would be better presented as a single unit tend to get fragmented.

The reverse also occurs and leads to some odd combinations of topics within a single chapter. There is, for example, a chapter on ds and jsr. What does ds – which is an assembler data storage directive – and jsr, which is a processor jump to subroutine instruction, have in common? Nothing. The only link is that both were used in the examples. Having said that, the book is by no means a bad offering and there's plenty of material to keep the ST programmer happy.

There are useful discussions of high to low resolution Degas file conversions, explanations of display bitplanes and other graphics subjects and an easy to understand introduction to disk formatting.

Later chapters particularly useful for those wanting to get into ST Gem programming. Chapters 10 to 18 are almost exclusively Gem-orientated – there is one chapter on GFA BASIC/Assembler mixed code programming thrown into the middle.

The accompanying disk includes a resource construction kit to simplify the building of menus, dialog boxes and so on. There are plenty of examples to keep you busy, with lots of basic VDI/AES functions explained and some useful discussions of Gem objects and their structure, menus, dialog boxes, file selectors and windows. Towards the end of the book a useful chapter covers a number of



miscellaneous areas including common programming errors, booting from drive B and Ascii/hexadecimal conversion.

As with most tutorial type books, the material covered seems a bit disjointed in places, but on the whole it's a useful addition.

Recommended retail price? £19.99, and that's good value, especially when you take into account what has been provided on the accompanying disk.

It's absolutely packed with goodies – there are the examples themselves, an assembler, a debugger, a resource construction kit, details of the 68000 instruction set and files containing AES and VDI call details.

Even an archiving program is thrown in – many of the files have had to be compressed to get them to fit on to the disk. Good value for money.

### THE BOTTOM LINE

Three books and three different subject areas, so it's not possible to compare them. Top marks must go to the GFA Basic and Assembler book, simply because a book on mixed code programming is a nice idea.

High marks also to zzSoft for working hard to produce a value-packed disk and to Clayton Walnum for providing some much needed insight into the often mysterious world of C, Gem and the ST.



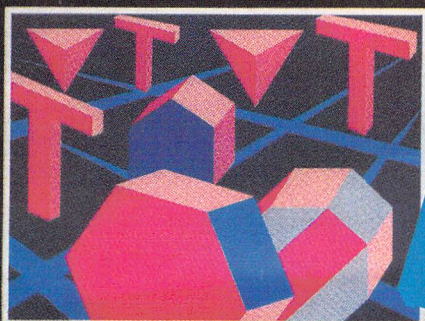
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# Going round in circles

**Andrew Tyler**  
**twists and turns**  
**objects on the**  
**screen**

**S**tatic pictures on the screen can be dead boring, but using what we have picked up so far in this series it is possible to achieve quite a lot in the way of animation. So now let's get things moving along.

Rotating an object is a rather strange process, particularly when several rotations are done in succession.

In general, calculating the positions of the vertices of an object after a rotation is a complicated business.

However, we can simplify the task as much as possible by doing rotations about the x, y or z axes. That is what we will look at here.

Figure 1 (see page 111) shows the rotation of a point p to a new position at p' about each of the principal axes.

Different symbols are chosen for the angles for different axes to avoid confusion when dealing with compound rotations about several axes in succession.

One important convention to stick with is the direction of rotation with respect to the axes. Looking at the figure you can see that the direction of rotation is clockwise looking into the axis of rotation.

This is said to be a positive rotation. Naturally, going the other way is negative. When an object is rotated about an axis the vertices which lie far from the axis move in large circles while those which lie close move in smaller ones.

At first sight it might seem difficult to calculate where the vertices move to, but fortunately matrices are ideally suited to this task. Remember, matrices were introduced in Part 3 of the series as a way of carrying out the perspective transform.

The matrices for rotations are rather simpler, being 3x3 (3 rows and 3 columns) in size.

One interesting property of a rotation is that it doesn't change the shape of an object, and this explains why the rotation matrices are so simple.

To illustrate how the rotation matrices are constructed look at the 2D rotation about the x axis in Figure 11. The x coordinate of point p is not changed by the rotation, but the y and z

coordinates are.

You can see that the y component is reduced but the z component is increased and – because of the circular motion – the sine and cosine of the rotation angle are the important maths. The exact relations between the coordinates of p(x,y,z) and of p'(x'y',z') are:

$$\begin{aligned}x' &= x \\y' &= \cos \theta \cdot y - \sin \theta \cdot z \\z' &= \sin \theta \cdot y + \cos \theta \cdot z\end{aligned}$$

which can be written as a matrix product

$$\begin{pmatrix} x' \\ y' \\ z' \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos \theta & \sin \theta \\ 0 & \sin \theta & \cos \theta \end{pmatrix} \cdot \begin{pmatrix} x \\ y \\ z \end{pmatrix}$$

Rotations about the y and z axes look rather similar except that the order of the rows and columns of the matrix are interchanged. They are rotation about the y axis:

$$\begin{pmatrix} x' \\ y' \\ z' \end{pmatrix} = \begin{pmatrix} \cos \Phi & 0 & \sin \Phi \\ 0 & 1 & 0 \\ -\sin \Phi & 0 & \cos \Phi \end{pmatrix} \cdot \begin{pmatrix} x \\ y \\ z \end{pmatrix}$$

Rotation about the z axis:

$$\begin{pmatrix} x' \\ y' \\ z' \end{pmatrix} = \begin{pmatrix} \cos \gamma & -\sin \gamma & 0 \\ \sin \gamma & \cos \gamma & 0 \\ 0 & 0 & 1 \end{pmatrix} \cdot \begin{pmatrix} x \\ y \\ z \end{pmatrix}$$

## TRIG TABLES

In the bad old days before electronic calculators were invented it was usual to use tables to look up precalculated values of complicated mathematical functions.

Instead of a calculator, every student carried a book of tables. This is how we will determine the sines and cosines of rotation angles for the rotation matrix.

It might appear that there is a problem here, since sines and cosines of all angles lie between 0 and 1 and yet the smallest two values in binary arithmetic are 0 (lowest bit clear) or 1 (lowest bit set). Remember that for speed we want to stick with binary integer

arithmetic. How then can we handle, for example, the angle 60, for which the cosine equals 0.5?

One solution is to multiply all trig functions by a large factor – rounding off what is left behind the decimal point – while calculations are being done, and then divide out at the factor at the end.

The factor 16,384, which in binary is 2<sup>14</sup>, is quite suitable for this, and confines all trig functions to word size. When it comes to dividing out the factor 2<sup>14</sup> this can easily be done in binary by 14 right shifts without the need for time-consuming divisions.

It is very convenient to make sines and cosines word length since they easily fit in the microprocessor registers, especially when multiplications are being carried out.

This strategy works fine providing certain precautions are taken. Most important is to remember that there is still an error in each cosine and sine, since it is only accurate to that last bit, which is 1 part in 16,384.

This may be a problem in any calculation where an object is progressively rotated, using the calculated vertices from the previous orientation to get the next so that accumulating errors give rise to visible distortion. This is something to avoid.

## A SINE FOR ALL ANGLES

Have a look at the program file DATA\_03.S, which contains the sines of angles from 0 to 90 in increments of 1, multiplied by the factor 16,384 as explained above.

Surprisingly, this is all that's required to calculate the sine or cosine – at degree intervals – of any angle between 0 and 360, and is the look-up table we will use.

Why does this work? Put in a nutshell, going from 0 to 360 is like going all the way round a circle. But a circle is an object of high symmetry and it is possible to construct the whole circle from just one quarter.

The first routine in CORE\_03.S shows how this is done. For speed, it really makes more sense to have a longer look-up table with the sines and cosines for the complete range 0 to 360, but to illustrate the similarity of sines and cosines it has been done in the way







described. Rotation about a single axis is fine but in real life, rotations are likely to occur about all three axes. This is where the curious nature of combined rotations becomes apparent.

Figure III shows this. In 1 a point p is first rotated about the x axis by 90 and then about the z axis by 90 to end up along the x axis. In 2 the order of rotations is reversed so that it ends up along the negative y axis. Clearly the order of rotations is important.

We need a consistent scheme to deal with combined rotations about the three axes. It isn't sufficient just to list the three separate rotation angles since there is no record of the order of the rotations.

## INTO THE MATRIX

There are several ways of dealing with this problem: Some simple and others complicated. We needn't worry about complicated solutions here, instead we'll take the simplest option.

The simple scheme is to keep a running total of the angles of rotation about the separate axes and then do the rotations in a fixed order.

The advantage is that the three rotation matrices can be multiplied – concatenated, if you want to impress your friends – together beforehand to form a single matrix and then the transform done all in one go.

That is what happens in the example program. What happens on screen as the angles are changed is clearly unique to this order of the matrices but, providing the order is remembered, the end result is predictable.

We will use this transform in a later instalment to construct a quite complicated object.

Look at the file CORE\_03.S. You will find in the subroutine a calculation of the nine elements of the transform of a combined rotation which consists of a first rotation about the z axis followed by a second rotation about the y axis and then a third rotation about the x axis.

It doesn't matter if some of the rotations are zero. In that case the appropriate matrix elements are zero the important thing is that we have on hand a transform which can handle combined rotations, which will be needed later.

## GETTING INTO POSITION

If you look at the overall picture described last time you'll see that objects are moved into their positions in the imaginary world inside the computer with an object-to-world transform and then the world is projected on to the screen with the viewing transform followed by the perspective transform.

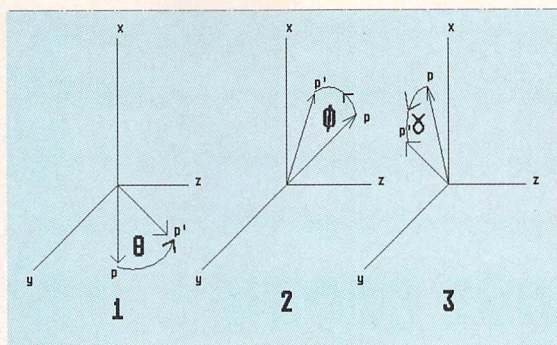
In this part, life is going to be made simple by assuming that the observer, that's you, is fixed in position at the origin of the world reference frame.

So the world-to-view transform isn't needed since these two frames are coincident. What is left then is the object-to-world transform which places the object at its current position in the world frame.

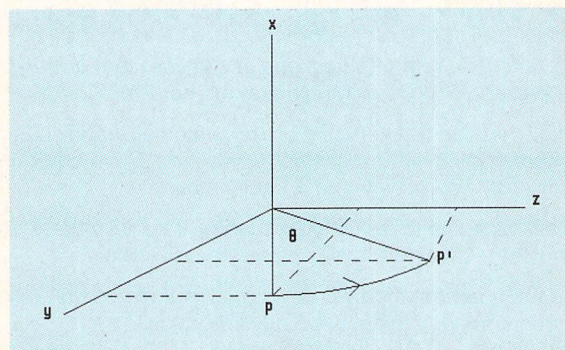
The overall transform which does this is a combination of a rotation to get it in the correct orientation and a translation to put it in the right place.

Translation here doesn't mean converting from French to English, but is a bit of mathematical jargon meaning move it from here to here.

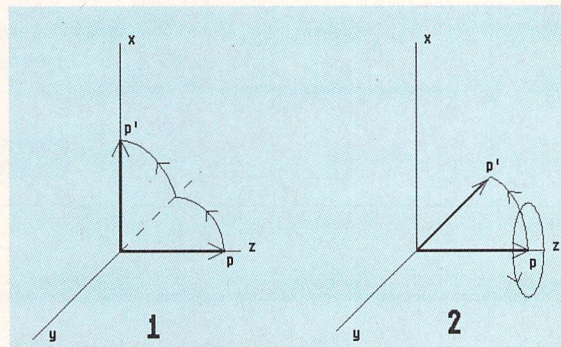
In our case we take the current position of the object to have the coordinates (Oox,Ooy,Ooz) in the world frame so the



1: Rotations about the principal axes



2: A rotated object



3: A rotation in two dimensions

overall transform is:

$$\begin{pmatrix} x' \\ y' \\ z' \end{pmatrix} = R' \cdot \begin{pmatrix} x \\ y \\ z \end{pmatrix} + \begin{pmatrix} Oox \\ Ooy \\ Ooz \end{pmatrix}$$

where  $R'$  is the rotation to get it pointed the right way. We can use the rotational transform that has already been worked out. In particular when the rotation angle is changed a bit each frame, the object will rotate.

The translation appears as a separate addition on the right-hand side but it could be converted to a product if we were to go into homogeneous coordinates.

But that would be making work for the sake of it. In the program it is left as a simple addition. This idea of a translation is quite important. If the object were to have a life of its own it would alter Oox, Ooy and Ooz continuously from frame to frame.

## THE PROGRAM

Let's have a look at the example program for this part which, taken together with what has gone before, is getting quite long. Remember the program for this part uses the program files from the earlier parts by INCLUDEing them during assembly.

The INCLUDE directive is an instruction to the assembler to add in all the earlier files, which should all be on one disk. The example

program shows the ST monolith – a sign with ST written on it – which we showed in perspective last time, rotating about the z axis, which points into the screen.

The rotation is done by decreasing the angle each time by 10 from its initial value of 360 in the control program 3D\_04.S.

When it gets to zero the angle is reset to 360 and the cycle repeated. Screen buffering is used to give flicker-free motion. Rotating about either the x or y axis would be a problem because that would attempt to show the back of the object.

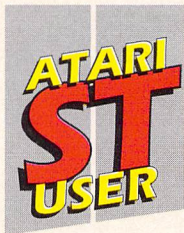
Since the back is hidden it should not be visible. Removing surfaces which are not visible is called hidden surface removal. That's one of the topics we are going to cover next time.

If we really wanted to see the back of the ST monolith it would be necessary to draw the back as a second object, 'pasted' on to the front.

Apart from the new program sections there is no new data this time, since it is possible to use the static ST monolith shown in 3D\_03 in perspective. Now it is being rotated.

• This article and programs are based on Andrew Tyler's book *RealTime 3D Graphics*, published recently by Sigma Press.





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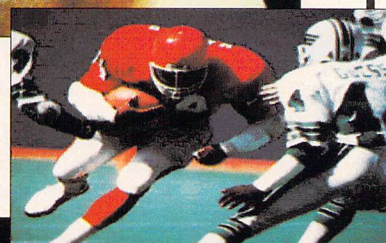
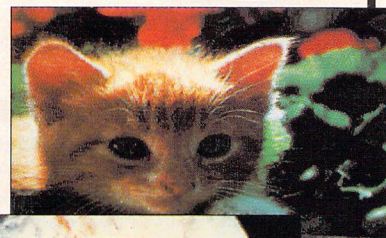
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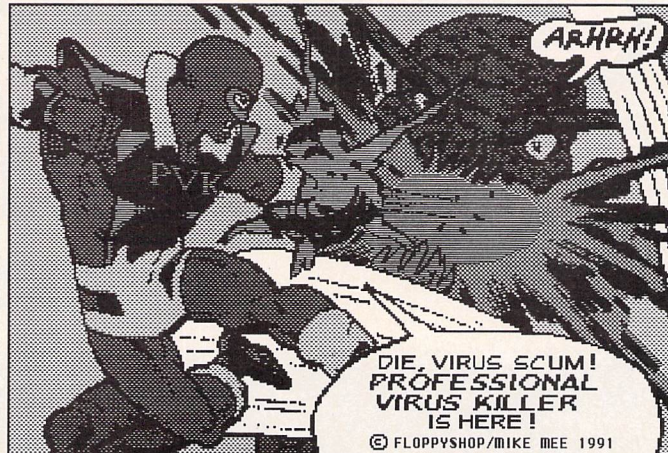
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# ASPECTS OF THE ATARI ST

*Atari ST User brings you seven special pages devoted to your very own favourite ST subjects. There's something for everyone – every month.*

## MIDI AND MUSIC

PAGE 100

*Sequencers for beginners, competition for a new Midi standard and Miäi codes on CDs have Ian Waugh steppin' out*

## EDUCATION

PAGE 103

*Pat Winstanley has scoured the length and breadth of the land to bring you her selection of the best arithmetic programs*

## COMMUNICATIONS

PAGE 105

*Fielding Mellish dives into error correction, explains about MNP and discusses a few problems with StarNet*

## EMULATION

PAGE 107

*Screens and screendumps, scrolling Dos and the Mac Classic all keep Gunter Minnerup busy this month*

## ADVENTURES

PAGE 109

*That incorrigible beastie Cyclops has been kicking butts, breaking hearts, and generally creating Chaos – or has he?*

## DESKTOP PUBLISHING

PAGE 111

*Charles Michael sorts through clip art, lays to rest the missing Timeworks DTP images and considers copyright*



## Competition for new Midi standard, hi-fi hopes and step-time steps

Following last month's revelation that a new Midi standard called General Midi has been proposed, musical instrument manufacturer Roland have pre-empted its development by announcing a broader-based standard of their own.

Called the GS standard, it takes the GM idea a stage further with provision for more sounds and greater multi-timbral capacity. GM, therefore, is starting to look like a sub-set of Roland's GS even before it gets off the ground.

Roland have even launched two products to support the standard – see the Frankfurt Music Fair news report last month – and has more in the pipeline.

The idea behind GS – and GM – is that all GS sound modules will have a range of identical sounds in a predetermined order. Any song programmed to use them, therefore, will sound the same on any GS system.

One of its main uses is to support the growing craze for pre-programmed songs on disk in

Midi file format. If these songs are set up to use the GS standard they will sound identical whatever GS machine they are played on.

They will play correctly automatically without the need for the user to fiddle about with his equipment trying to get the correct sounds. Just plug in and go.

I suspect Roland also hopes that the GS modules will appeal to non-musicians and hi-fi buffs. The SB-55 and SG-55 have very hi-fi looks and even boast a remote control. You could sit back in an armchair, insert a song disc, press play and hear an 'original' playback of a number of songs.

Great, now you no longer need to be a musician to make music, although used in this way the songs might as well be played from cassette, LP or CD. Are there any drawbacks? That depends. A number of potential problems may arise depending on how GS is handled and Midi is implemented.

For example, if GS becomes such a standard that all – or most – material is recorded using it what will happen to the market for non-GS or traditional Midi synths?

Also if songs are programmed to GS standard and require no additional sounds, users not need



Roland's SB-55 and SC-55, the first GS instruments, on show at Frankfurt

buy any more synths. One way around this would be to produce more sophisticated GS modules and more complex song arrangements – hopefully downwardly compatible – but this is a clumsy and limited solution.

At the moment everyone is waiting to see how the market reacts to GM and GS – and, indeed, if any other manufactur-

ers take it on board. We'll be bringing you a full details of the new SB-55 and SC-55 modules when review models are released.

Meanwhile, perhaps you'd like to tell us if you think the GM or GS standard is a good or bad thing for the consumer and for the music business in general. Would you buy it?

## STEPPIN' OUT IN STEP-TIME

Regular reader Harold Edwards of Stockport writes with an apparently simple request. He wants a step-time entry sequencer with a minimum of 16 polyphonic tracks which uses music notation and enables you to enter repeats plus volume, tempo and programs changes anywhere in the score.

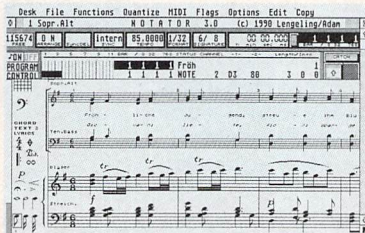
He's tried K-Minstrel, which was found to be too elementary, and KEYS!, which was too limited.

When you get past this type of program – which includes The Music Studio and The Music Construction Set – you're into the realm of professional packages. Several programs will fit Harold's requirements but, paradoxically, most probably do far more than he requires. Here's a mini survey:

**C-Lab's Notator:** In my opinion the best sequencer/notation program around. Lots of powerful features and sophisticated notation options – you'll need to read the manual. Price, £499 from Sound Technology (0462 480000).

**C-Lab's Notator Alpha:** A cut-down version of Notator, but it retains most of the notation facilities although only showing four tracks in notation form at once. See the review in our May issue. Available for £199 from Sound Technology.

**Steinberg's Cubase:** The other major state-of-the-art sequencer has a superb front end for sequencing and arranging as



Notation by Notator . . .

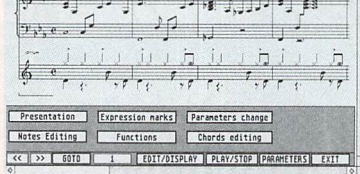


Encore's style . . .

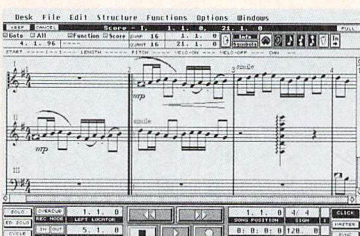
well as good notation facilities. £550 from SDL (081-300 3399) and Evenlode Soundworks (099-389 8484).

**EZ-Score Plus:** Three-stave notation with two parts each stave. One of the less complex notation programs from American company Hybrid Arts. Available now from Hybrid Arts in Germany (010 49 69 7892054/2057) for DM299 (about £110).

**Digram's ProScore:** A little fiddly, especially when used mainly for step-time note entry. Has recently been upgraded. Ask GFA (0734 794941) for a demonstration disk. The full program costs £199. Digigram's Studio 24 also has notation facilities.



. . . and by ProScore



. . . and Cubase's

**Music DTP :** Essentially a music DTP system, it has recently been updated to give recording and playback via Midi. Available for £299 from Take Control (021-706 6085).

**Passport's Encore :** Highly regarded on the Apple Macintosh, has just been ported to the ST. Again, is basically a DTP program but with Midi input and output facilities. £379 from MCM (081-963 0663).

If you have any queries about music on the ST or if you want to praise a music program – or complain – we would be glad to hear from you, so drop a line to Midi and Music.



# Beginners start here

The difficulty you face when buying your first sequencer is that you never know what facilities you need – or don't need – until after you've bought your first sequencer. If you see what I mean.

The best way is to try before you buy. Many companies realise this and will send you a demo version of a program for about £5. Most have the save function disabled and/or bomb out after a set time.

Another option is try a public domain sequencer. Some early PD programs such as the Waddington or Canadian sequencer were pretty primitive, but a fairly recent addition to the PD libraries is worth looking at.

It's called the Accompanist, although it's also known as the Cosh Sequencer after the guy who wrote it – British, too.

It's quite a sophisticated program with 16 tracks and music shown as bars on a grid. You can drag a box around a part for editing. There's a useful undo function, too.

If you make a recording which is almost perfect apart from a small section you can punch in and record over it. Filter controls to remove unwanted Midi data.

A quantisation function helps correct poor timing and you can also quantise a specific section of the music. A conductor track enables you to enter time and tempo changes at any point in the score.

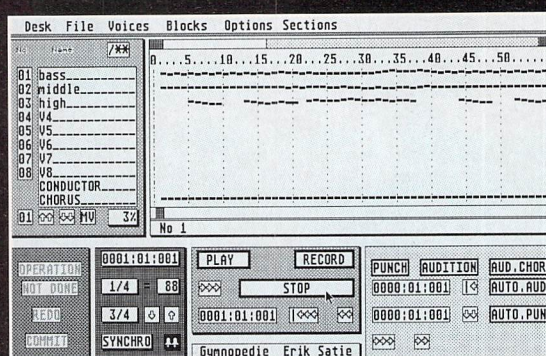
The disk includes a comprehensive manual and a quick start tutorial which covers many helpful hints.

You can even use Accompanist without any Midi equipment so you can see if you like the idea of sequencing before splashing out on Midi equipment.

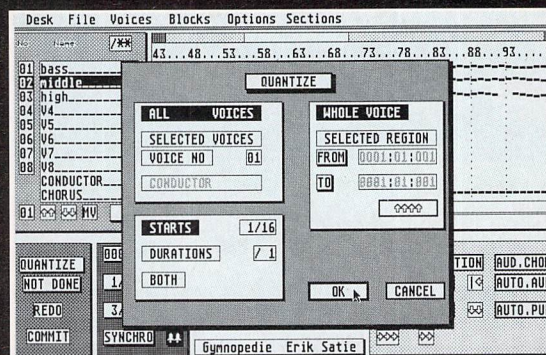
Perhaps one of its main drawbacks is the numeric nature of some functions – clicking and dragging is more intuitive – but it works, it can handle quite sophisticated arrangements and is free.

Contact your favourite PD library for a copy. The version you'll probably receive is 2.2 but version 4.2 is available from the author for a small fee.

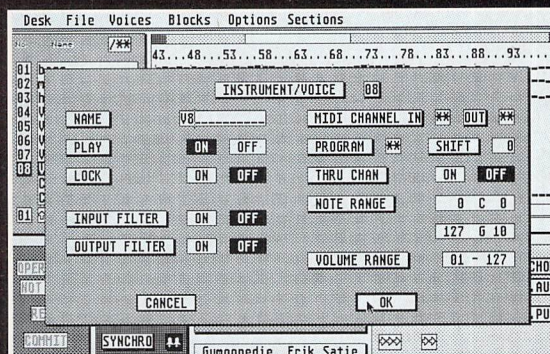
Additions include use of the Midi file format – so you can take your music with you if you upgrade to a commercial program – a repeat bars function, insert and delete across all parts, show amount of memory used plus various operational enhancements.



The Cosh Sequencer Main screen



Quantise options



Instrument set-up

## MIDI MOVES

Following a rumour that some companies were putting Midi codes on to CDs, we've had several inquiries asking where they can be obtained.

The CD+Midi specification is just one multimedia application which is under consideration and development. As of writing, other than some Japanese demo CDs, I'm not aware of any commercial releases.

No doubt you'll read about them in the hi-fi and music press when they do appear. Meanwhile I repeat my original query – what would you do with it? Have it play back an identical melody line on your equipment using exactly the same sound that appears on the CD?

● Got an old pre-Midi analogue machine gathering dust? Kenton Electronics (081-974 2475) specialise in Midi retrofits and have kits for more than 20 common analogue instruments. Prices average £200.

● A second edition of R.A. Penfold's Practical Midi Handbook has been published by PC Publishing at £6.95. It has been updated to include more recent information on sequencers along with details about standard Midi files. More from PC Publishing on 0732 770893.

● The trouble with playing guitar sounds on a keyboard is that no matter how realistic the guitar sound, the notes are rarely voiced the way a guitarist would play them.

Help is at hand with the Strummer, which converts keyboard chords to guitar voicings. You can select the strum rate and direction and it has 94 memories. £149 from MCM on 081-963 0663.

## NEWS ROUND-UP

● Zone Distribution (081-766 6564) has announced version four of Band In A Box.

New features include user-definable styles, the ability to change programs at any point and enter lyrics. It's also possible to make real-time tempo changes.

Zone is also handling a new range of Midi sequences from Trycho Tunes in America.

Songs include chart hits as well as golden oldies. They use between four and six Midi channels and come with a detailed voice assignment list.

Most will run without alteration on a Roland MT-32/CM32 system. Prices start at £16.95 for three songs.

● Just a reminder not to forget the International Music Show – formerly the British Music Fair – which takes place from July 9 to 14. For more details contact Westland Associates on 071-730 7852.





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## After last month's scan of programs to aid reading and writing – now for the arithmetic

Arithmetic is by far the easiest topic to program, but finding imaginative presentation methods is not so simple.

The programs which worked best – that is held the kids' attention – were those with colourful graphics and animation, or something of a plot.

Of the programs tested, the most expensive held interest the least, while one of the examples from the public domain had the testers coming back again and again.

### EARLY LEARNING MATHS

Ages 4 to 9  
0702 600557  
£19.95

A package which covers a wide range of maths topics is Early Learning Maths. Twelve games involve many variations on simple addition, subtraction, and multiplication by introducing the child to greater, equal to or less than, shape differences, shape matching and counting.

What lifts the package above many others is the imaginative use of animation and characterisation.

Two small animated characters, Meanie and Dizzy Lizzie, add action to most of the games and quick reflexes are required for some sections, though not enough to put a child off.

It concentrates on practising through play rather than learning by drilling and works very well. A great favourite with all the testers.



Early Learning Maths covers a range of maths topics within 12 games

## MATH BLASTER PLUS

Infant & Junior  
£34.95  
0626 332233

This American import is the only Davidson program available on the ST yet and takes the child right through to top junior with addition, subtraction, multiplication, division, fractions, decimals and percentages.

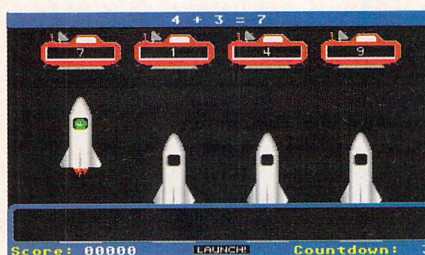
After each session a score table can be saved to disk for each child and printed out if required. The manual also mentions a means of printing a Certificate of Excellence, but it

didn't work on the ST.

Gradual movement through levels of competence is reflected in this steady and accurate product. Unfortunately, the children soon became bored by the repetition of questions and

the minimal graphic interest.

It's probably most useful for children who work best without distractions, or for class use where individual record keeping is handy. Afraid it's pretty expensive.



For a wide age range Math Blaster Plus enables a score table to be saved to disk but it's a little pricey

## PUBLIC DOMAIN

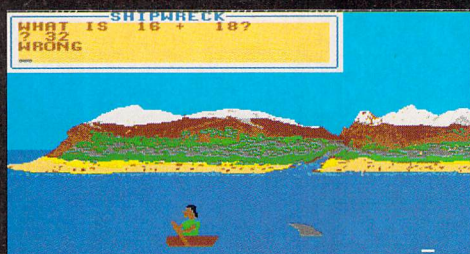
Goodman PD Library  
Around £2.50 per disk  
0782 335650

This program started life on the BBC Micro and has been converted to the ST using the STOS programming language. Unusually for a public domain program, it is autobooting and the only game on the disk.

It consists of five sections aiming to improve mental arithmetic with add, subtract, multiply and divide. A shipwrecked mariner first rows to land answering addition questions before crossing a desert by division.

A trip by cable car up the mountain tests multiplication while a slalom down the other side attacks division.

On arriving at a precipice a problem must be answered before parachuting down to escape by aeroplane. These come in guises such as finding



Pretty graphics make Shipwreck appealing to young children. All sections of arithmetic are tested

the time taken for an aircraft to fly 1,800 miles at 200 miles per hour – a good test of the child's understanding rather than rote repetition.

Although various skill levels can be chosen, all the categories must be tackled to succeed. The testers – who are only just approaching division – found this frustrating on the ski section.

A time taken count is given at the end of each section, so allowing children to compete with each other.

Animation and graphics, while basic to say the least, are clear and colourful and the children were more inclined to try harder questions in order to get to the finish. A very successful game which combines plot with essential practise.

While there are lots of offerings for pre-school

and primary children, seniors seem to be a little left out on the software scene. So it's good to see this PD program aimed at upper grade GCSE pupils.

Several categories are available, including

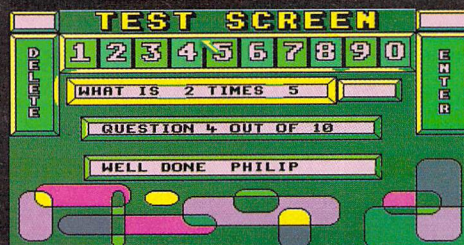


Table Test is a multiplication program that has an option for the result to be printed as a hardcopy

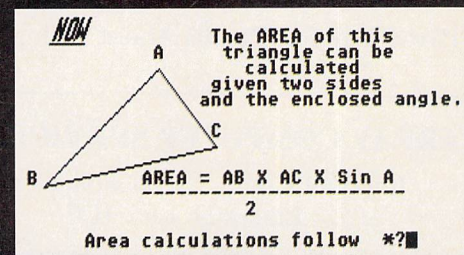
algebra and geometry, and they are presented in a useful form.

For each sub-topic the program first presents a tutorial such as how to calculate the area of a trapezium and asks questions on it.

The only drawback found was having to rerun the program in sequence to refer back to earlier sub-topics, but perhaps this is a useful reinforcement of acquired skills.

Table Test proved a great hit with primary children due to a feature which separates it from the rest. Although as simple as its name implies, an option is presented at the end of each test to dump the result screen to printer.

Various levels and tables are available but – pity my poor ribbons – all the children wanted a printout every time they played and collected great swathes of paper which they proudly bore to school the following day.



One for the older children is GSCE Maths, with tests following each tutorial



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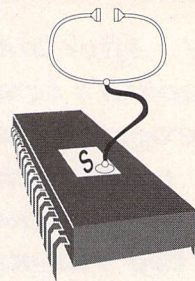
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## Part two of the great error correction jamboree. This month, it's full speed ahead with MNP

We discussed last month the problems of extraneous line noise corrupting data transmitted between your and other STs and modems.

Although for simple to and fro transmissions up to V22bis no error correction is necessary – what's the occasional flipped character on the screen?

As soon as you want to transfer a program across the airwaves, and let's face it that's what most of us spend our waking hours trying to do, just one wrong byte and the whole thing refuses to work after you've received it.

As you keep going back to the bulletin board for another go both your stress level and phone bill are rising.

The first error correction methods available, Xmodem, Kermit and so on, provided a solution to the problem, but they were very slow – there had to be a better way to do it. And, of course, there was.

Miracom, an American com-

pany heavily involved with communications, decided to implement its own method of data compression, encryption and error correction.

The result was the MNP (Miracom Networking Protocol) error correction and data compression system. Using sophisticated algorithms to encode and reduce the data, MNP level 5, only now becoming widespread, can increase communications speed and accuracy by 100 per cent.

To work, MNP must be supported by both communicating

and it works best with data which isn't already archived.

There's a further level which is just starting to make its way into the modems of rich kids, and that's level 7. Miracom claims level 7 increases speed of transmission by a factor of 2.7.

Although the Miracom networking protocol is an accurate and fast method of error correction and data transmission it has taken no little while to become acceptable to a wide audience.

This partly because equipment with MNP installed is expensive when compared to

British Telecom – at least, based upon algorithms developed by BT... – V42bis is a breath-takingly sophisticated error detection, correction and compression protocol.

ST which claims to increase communications speed and accuracy by a factor of three.

V42 supports MNP level 4 but offers far more power. The protocol relies on a dictionary of strings which, when found in a data to be transmitted, are substituted for codes which are transmitted in their stead.

If the string isn't found, it's added to the dictionary and assigned a code. The results are exceptionally fast and very efficient.

Unfortunately, before a modem manufacturing company can make use of the protocol, it must pay \$20,000 to British Telecom, IBM and Unisys – a total of \$60,000, not a figure many can manage.

Consequently, although V42 has been adopted as the European standard by the CCITT (hence the V number) it is unlikely to see widespread use.

So there you have it. The simple and the sophisticated, the cheap and the chokingly expensive.

You pays your money and takes your choice.

## Going for broke on V42

modems although the system is downwardly compatible. That means that if your modem has one of the earlier incarnations of the protocol, 2 or 3 say, and you're attempting to communicate with a modem which is operating at MNP level 5, then all will be well.

That's because the MNP level 5 modem can make full use of what your modem is sending to it.

MNP levels up to 4 are straightforward error correction protocols whereas level 5 includes data compression which helps to speed things up

ordinary modems and partly because of sheer obstinacy on the part of the big public service providers such as Prestel.

Silly, because modems equipped with MNP can communicate perfectly well with simple modems by switching MNP off.

MNP, though good, isn't the best form of error detection and correction and it isn't the industry standard – and that's an important factor in the protocol becoming widely accepted.

What is the industry standard? V42 and its compression-equipped sibling V42bis, that's what. Originally developed by

## Caught in the net? Fear not!

There's been a lot of good feedback about the StarNet bulletin board software your favourite magazine had on its cover disk a month or two ago.

Most people have but one or two are a little stuck. The cover disk pages promised a tutorial on the comms page and so next

month we'll be looking at one or two StarNet trouble areas. Meanwhile, this letter from Brian Sherry of Laindon, Essex, is typical of those received:

"As a relative newcomer to the comms scene I was very interested to find the StarNet software included on the April cover

disk of *Atari ST User*. "I would like to try and get this software up and running but I have encountered a couple of snags, and as it says on the cover disk page that you will be doing StarNet tutorial articles, I thought you might be able to help me.

"The first is a software problem. It seems as if the program will only accept telephone numbers in the American format. Is there any way this can be made to work?

"The other thing is what do I put in the MODEM.TXT file to make my modem work correctly?

I have a dumb modem which does not use Hayes commands but relies on RS232 signals. It can work at V21, V23 and V23v rates using Qualsoft Starterm software and made to dial under software control.

"It should also be capable of auto-answering by sending a ring signal to the computer on RS232 pin 22. Can you tell me what to put into the MODEM.TXT file to achieve this?"

● If you're itching to use StarNet but are having similar problems to Brian, look out for next month's column when I'll be presenting the first of a complete StarNet tutorial.

**Problems with StarNet? Look out for next month's tutorial**

```
StarNet DOS version .51
By Eric Drewry
Laston: System Reset
F1 Local Logon F2 Star-Term F3 Execute TOS program
```

### Star-NET configuration editor

- A >----< Reread system configuration
- B >----< Write system configuration
- C >----< Edit access levels
- D >----< Edit message bases
- E >----< Edit U/D section
- F >----< Edit other system parameters
- G >----< Goodbye Leave Config Editor

Waiting for Call

12:01 AM



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## Screens and screendumps are the flavour of the month, and the Mac Classic finds a defender from Woking

Regular readers of computer magazines are familiar with the concept of screendumps: the contents of the monitor display saved to a disk file in one of the common graphics formats for further editing or import into a publishing package.

Most software reviews are accompanied by screendumps, software manuals are full of them, and a screendump is sometimes the only way to transfer your artwork between different painting programs if these

are not directly file-compatible.

And most ST users will also know the ALT-HELP keyboard command to dump a screen image straight to the printer.

### DUMPING THE MAC

As a regular reader of this magazine (and, of course, this page in particular) you will have come across screendumps of the Apple Macintosh desktop taken from within Spectre GCR, and noted that there always seems to be something missing: on an ST, the Mac screen is about 30 per cent larger than on a Mac Plus or even the new Classic, but neither the built-in screendump function nor PD utilities such as Camera recognise this.

Hence the truncated illustrations of emulated Mac screens. To solve this particular problem, get hold of a shareware utility called Flash-It which is available from most Mac PD libraries (I

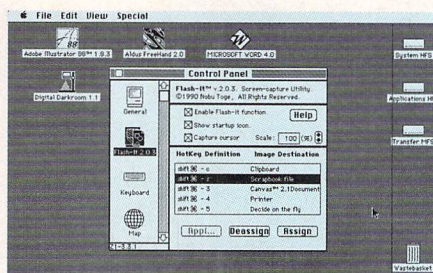
downloaded Flash-It from the Mac files list on the CIX electronic conferencing system).

Installed as a control panel document, the program lets you select the hotkeys for saving the screen to the clipboard, a scrapbook, a PICT file or straight to the printer (although Spectre GCR has its own function for printer dumps), and you can even scale the image up or down.

On hitting the hotkey, a cross cursor appears which is used to select the screen area to be saved.

All this works very well indeed, and the only remaining problem is that ST software can't read PICT files, so it's best to save to the clipboard and then paste the picture into some application capable of writing TIFF files – the usual MacPaint format is out because, wait for it, the screen's too big...

**Configuring Flash-It in the control panel: the vertical line on the right indicates the cut-off point for a standard MacPlus screendump, so the drive and wastebasket icons would not be included**



## Scrolling Dos

Two of the MSdos emulators available for the Atari ST, AT-Speed and ATonce, now feature something which until recently was considered well-nigh impossible: support for EGA and VGA screen modes on an ordinary Atari SM124/125 monitor.

No colour, of course, but a quality of image which has to be seen to be believed (see screenshot below). The only problem is that the Atari monochrome monitor is too small to display VGA images, making it necessary to scroll the screen if the work area used by the software exceeds the available 640 X 400 pixels.

The same, of course, applies to Hercules mode which SuperCharger, too, is capable of displaying. With EGA, it's the other way round: the vertical resolution of the SM124/125 is higher than EGA's 350 rows of pixels, so you get an unused area at the bottom which sometimes contains weird patterns.

The choice is not easy, but EGA and Olivetti (640 X 400) are probably best for those who can't bear the continuous shifting of the screen contents required by Hercules and VGA.

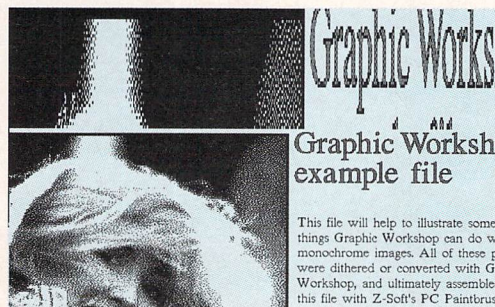
Unfortunately, Olivetti mode is not always supported by the programs you wish to run, especially

public domain and shareware programs. 00CGA is only advisable with colour monitors which can't display any higher resolution images. CGA text characters can look surprisingly good on monochrome screens because of the double-scan display trick employed by the emulators, giving remarkably well-defined letters.

But standard CGA fonts are a throwback to the computer stone age, and graphics are just too blocky for serious work.

You won't be surprised to hear that given the confusion of video and graphics standards in the PC world, getting screendumps from MSdos and then transferring them to the ST is even more of a headache than it is with Mac emulation.

Next month, therefore, I'll take a deeper look at the black science of MSdos graphic screen and file formats.



**The same file from the excellent Graphic Workshop shareware utility displayed on a CGA (above) and a VGA monitor (below) – quite a difference! EGA (not shown) looks almost as good as VGA**

## LETTER OF THE MONTH

A very thought-provoking letter arrived from Peter Blanchard of Woking, who disagrees with my view that the cheap new Mac Classics need not spell the end of Mac emulation on the ST: "I see little point splashing out nearly £400 on Spectre GCR when you can buy the real thing for probably a bit less."

Peter is talking of rock-bottom second-hand prices for the old MacPlus, as well as educational discounts on Classics here, but apart from his figures being slightly askew (even a discounted Classic is still a bit more than Spectre), I think he misses my point: more Macs in circulation after the price cuts may affect the ST market – we shall have to see if it does – but it also makes Mac emulation more useful for existing ST owners.

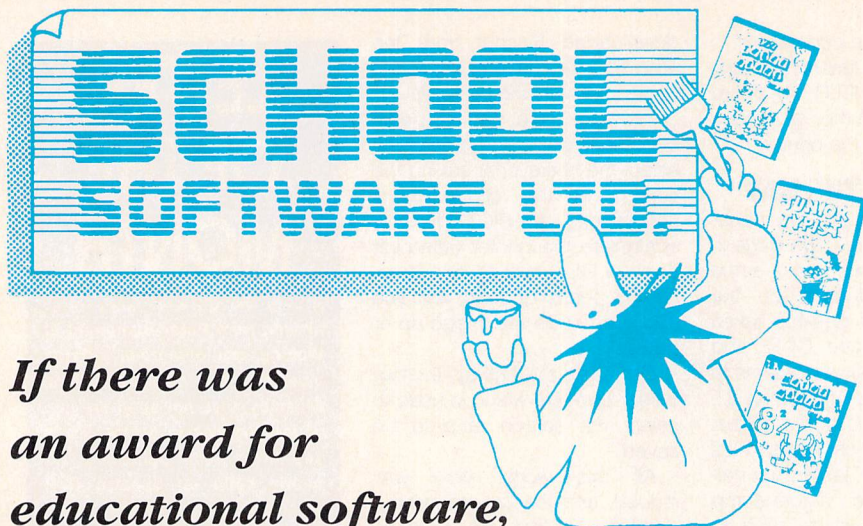
And just as the availability of PC emulation has sold many an ST, the excellence of Spectre GCR may well persuade some people to invest in an Atari platform capable of running all three operating systems. We'll have to agree to disagree on that one, only the future will show who was right.

For me Spectre is not a substitute for a Classic, it is actually far superior to a Classic in most respects, and once I get my TT it will run everything faster than a Mac II. But I strongly agree with Peter's other point: the need for ST software to support more of the file formats that are now standard in the Mac and PC environments.

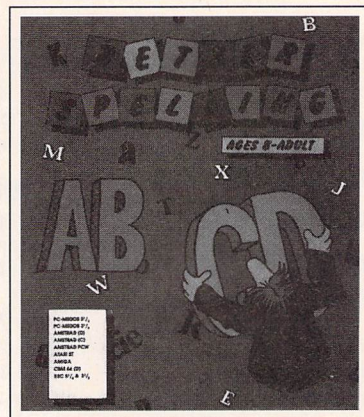
TIFF, PCX, PICT, Encapsulated PostScript, not to mention files written by wordprocessors like Microsoft Word or spreadsheets like Excel, are far too rarely included in import menus, and where they are the implementations are often poor and restrictive (only 1-bit TIFF, monochrome PCX, no Word Perfect footnotes, and so on).

To quote Peter's letter: "As it is, ST developers seem keen to force ST users into a ghetto of incompatibility with other packages and platforms." Quite so, and potential buyers will not be impressed if even with Dos and Mac emulators the three worlds remain so difficult to reconcile.



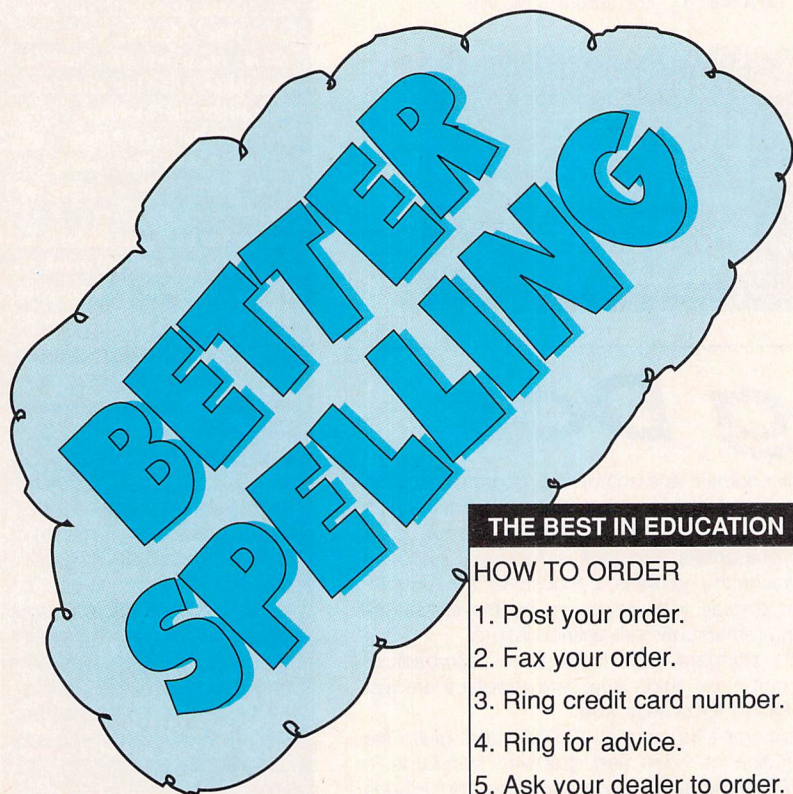


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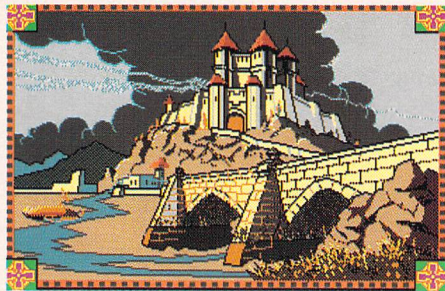
## Kicking butts and breaking hearts, Cyclops returns with a few well-chewed words

As the picture on the box features two knights beating blue blazes out of each other, Conquests of Camelot, a graphic adventure from Sierra, instantly appealed to my finer instincts.

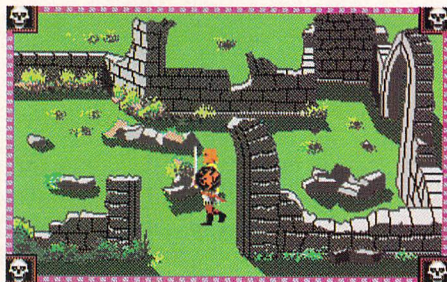
In it we are assisting a fairy called Arfur in his search for the Holy Grail. Arfur possesses a large, macho sword but instead of putting it about a bit he tends to waffle on about honour and duty.

He even comes with a booklet explaining the Messages of The Flowers.

It says that white lilies mean purity and yellow tulips mean hopeless love – not a damned word about stinkworts or deadly



Only the sacred powers of the Holy Grail can save the once glorious kingdom of Camelot



King Arfur searching for something we no not where

nightshade. The booklet explains that the game is a result of many years of research into Arthurian legends, which could have fooled me.

Initially you are obliged to per-

form a number of tasks in Olde England before being allowed to set sail for the Holy Lands to find the Grail.

I decided that I better do the England bit pretty sharpish and

get out – well you don't want to end up with an ugly camel do you!

The first bit involves duffing up a few witches and wizards and answering some riddles. In addition there are arcade sequences involving basic sword fighting and even more basic jousting.

I spent an hour cheering the black knight until I realised that I was supposed to be helping weary Arfur.

Arriving in the Holy Land you're required to choose a guide from between two characters, either a man in black who speaks like Mustafa Fag or a cute little orphan boy with a crying donkey.

Suspecting the obvious, I picked the evil looking guy who wasted hours leading me through the desert before killing me. It appears I should have trusted an innocent child. Blech.

At this point I did a system dump into my Leisure Suit Larry barf bag and reached for another game.

## CODENAME ICEMAN

From the writer of Police Quest I and Police Quest II comes a tale of international politics and radical terrorists which forms a backdrop for a powerful story of world crisis, superpower conflict and high tech escapades (it says on the box).

In this tale you play a James Bond lookalike whose job it is to have fun with spies – females that is, our boy is no cissy – pilot nuclear submarines and save the US ambassador.

Well it sounds good stuff. The detail and animation is extremely well done and the whole thing plays like a movie. Piloting the nuclear submarine is real 8-bit game stuff but has some novelty value.

There is however a down side to all the wonderfulness. For a start our hero moves as if he is high on sennapods and walking through treacle.

Secondly each screenful of graphics takes a year and a day to load from disk, and God help you if they have included a bit of animation.

A new philosophy is being built into the latest Sierra games – never mind the quest, feel the quality. In earlier products you tried to solve puzzles, in these games you play a more passive role. Compare the disco scene, which has a fully animated band and dancers, with the simple sequence in Leisure Suit Larry I.

The old scene was amusing, the new one is irritating because it delays the action. These games cost serious money, and while they appear much better than the old style I'm not convinced that the change is for the better.

They are strictly for the rich kids on the block.

## CHAOS UPDATE

The official Chaos Strikes Back handbook, just arrived from FTL, is packed with tips and cunning tricks. Finding your way around this complex jumble of passages is a mind-blowing exercise.

Mega-tough players can leave trails of dragon steaks to mark their route but lesser beings could use the wacky wizard's wheeze.

By casting the Zokathra spell you can create an infinite number of glowing rocks which can be used to mark places of interest.

This seems a fairer way of doing things compared with wimpy Amiga players who have been given a magic map to make things easier for them. Aargh! Pass me another Amiga owner, I've broken this one.

You may also be unaware that you can return to the Junction of the Ways from

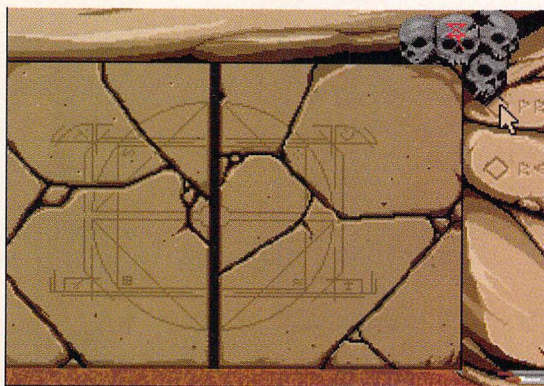


The corridors of Chaos can confuse even the best adventurers. Try the Cyclop's Wacky Wizard's Wheeze to create magical breadcrumbs to ease your problems

any one of the four corridors which end in the altars.

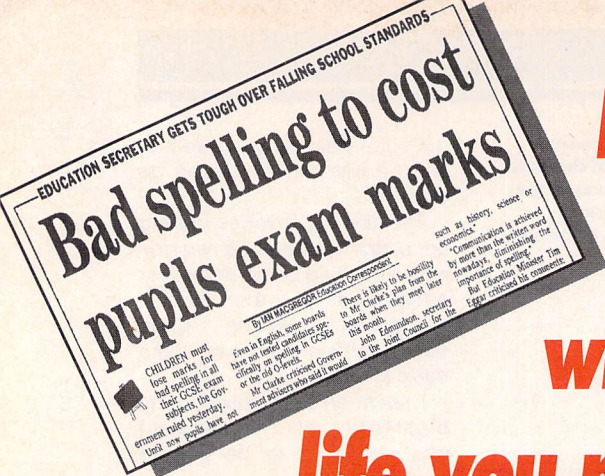
When you first emerged from the Junction certain articles were waiting for you down corridors. The corridors and the corresponding objects were: Dain – Yew Staff, Neta – Horn of Fear, Ros – 3 Poison Darts and Ku – Biter Sword.

To re-enter the Junction simply replace the correct object in the altar and the wall will open behind you.



The opening screen of Chaos Strikes Back. Its manual supplies plenty of useful tips for getting out of trouble





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**Lunar Buggy:** Type fast for fun. The aim is to key in the word as it's pulled across the screen by the buggy. It has to be completed before the letters drop down a crater.

**All Mixed Up:** Jumbled letters have to be sorted out to find the scrambled word. To help beginners – and anyone else who is stuck – clues can be obtained at the press of a key.

**Conveyor Belt:** Words pass by on the screen and have to be remembered. Then they must be typed in – spelt correctly. This is a challenging test of both spelling and memory.

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## Collections of clips, from fish to Disney. And tackling those Timeworks DTP images again

More clips have flopped on to the Welcome mat this month. The first is from S. Hall, of Hall of Images, based at 5 Allington Drive, Barrs Court, Warmley, Bristol BS15 7AS.

This is a self-proclaimed non-profit making organisation that supplies disks of clips at prices from £2. The company also offers a scanning service to create images to your own specifications.

The sample disk supplied con-

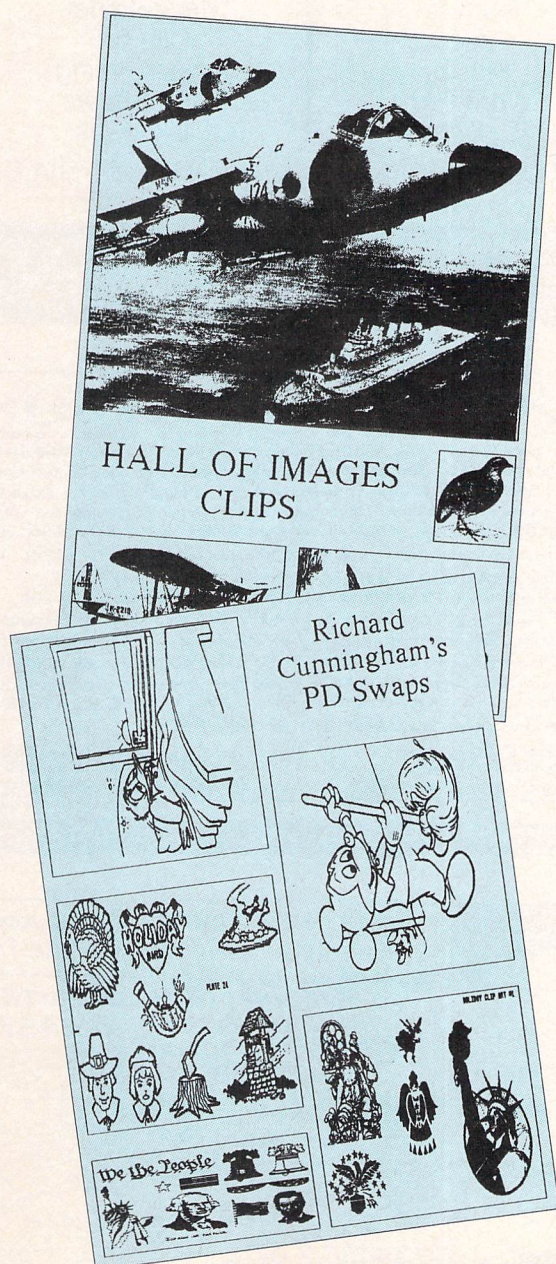
tains 19 images as well as a viewer utility and documentation file. The images tend to be large, detailed scans, several between 50 and 100k.

They include pictures of fish, animals and a lot of fighter planes. Hall of Images can supply a three-disk set of contemporary fighters for £7.

The other clips came from Richard Cunningham of 1024 SE Lambert Street, Portland OR 97202 USA. Richard seems to own more Atari kit than most American computer stores.

He's interested in swapping public domain programs and clips with ST users in the UK and has sent a couple of disk of clips as samples of what he has to offer.

There's some good stuff, including some Disney clips. Are these really PD?



A variety of new clips from Hall of Images and Richard Cunningham. All kinds of birds, from partridges to harriers

## LOST IMAGES - ROUND 3

Perhaps we can finally lay the missing Timeworks DTP images to rest. As you may remember, Anna Dayton's problem with printing images in Timeworks Publisher was that some of them just didn't print. Various solutions have been offered through this column, but the following may also be relevant.

Trevor Tweedy suggests that it might be Timeworks Publisher's inbuilt restriction to eight separate graphics on any single DTP page.

Not knowing the order in which Anna placed the graphics on her page, it's hard to tell whether this applies. The restriction is only true of 9 and 24-pin dot matrix printers, and no error message is generated by the software. This seems the most likely cause of Anna's problem.

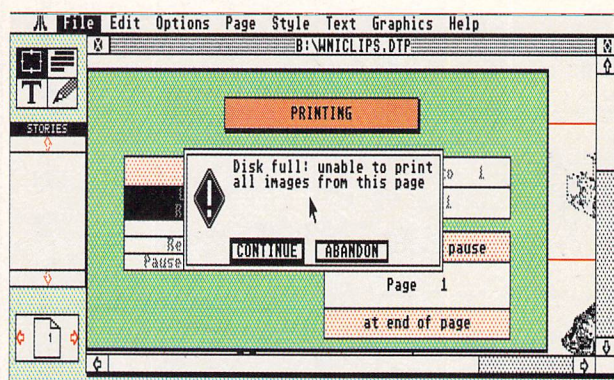
Nial Grimes of Sphinx Software offers a different solution to a different, though related, problem. It means upgrading to two megabytes.

Graphic images can be lost if the the temporary files Timeworks Publisher creates during printing fill the start up disk - this condition is reported on-screen.

The problem can be avoided by setting up a substantial ram disk and copying all the files except the AUTO folder from your start-up disk.

You must also copy the PUBLISH.WID file from your fonts disk on to the ram disk. Timeworks Publisher will now work entirely from ram, except for fonts, which are still fetched from floppy.

Nial offers a copy of his preferred ram disk, MAXIDISK, for £1.75. Ask for disk UTI 74 from Sphinx Software at Erw Fynydd, Carmel, Llanelli SA14 7SG.



This is the message Timeworks Publisher issues when you fill its temporary disk space. Continuing will print some images only

## COPYRIGHT

With all these clips floating around, it's worth mentioning the laws of copyright. While individual use of clips for the home or posters for the school jumble sale are unlikely to be picked up, bear in mind that commercial use of copyright material could get you into trouble.

In the manual paste-up world of page layout there are specialist companies selling images, photographs and line drawings. When you buy the rights to use images, a proportion of the fee goes to the original producer of the artwork - artist or photographer.

When it comes to desktop publishing and electronic clips, there are commercial products like Migraph's Scan Art and Draw Art, marketed in this country by GST, which include the reproduction rights to the clips.

If your main source of images is the public domain, try and check the source of the material. Some images floating around might not be as PD as their suppliers claim.

Images more than 75 years old are not covered by copyright, which is why all the Bewick-style frontispieces and line etchings dominate many public domain collections.

Some new images are released into the public domain, but many of the recent scanned photographs appearing on the scene come under the same heading as the James Brown samples which appear in every hip-hop record.

JB's publishers have two people working full time trying to collect royalties from these illegal samples.



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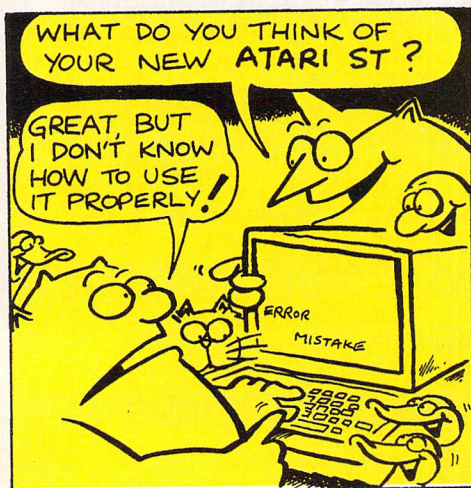
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Gasteiner Mouse	£17.95	9152	<input type="checkbox"/>

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£4.95 9119 ☐

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Soundblaster	£47.95	9156	<input type="checkbox"/>
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## STOS GAMEMAKER MANUAL

£11.95 9476 ☐

## ROMBO VIDI-ST

Vidi-ST/Vidi Chrome-ST	£104.95	9161	<input type="checkbox"/>
RGB Splitter	£61.95	9160	<input type="checkbox"/>

## PFM PLUS

£34.95 9103 ☐

## PLAYBACK New

£26.95 9149 ☐

## ATARI ST USER COVER DISKS

5 assorted disks	£7.50	9442	<input type="checkbox"/>
25 assorted disks	£20.00	9443	<input type="checkbox"/>

## REAL TIME 3D GRAPHICS New

£12.95 9146 ☐

## PRO SHARE

£42.95 9110 ☐

## JAMES POND

**Offer of the Month**

RRP £24.95 £15.95 9154 ☐

## HARLEKIN

£44.95 9102 ☐

## YOUR SECOND MANUAL New

£12.95 9111 ☐

Plus post and packing £1.50

**TOTAL** \_\_\_\_\_

For Europe and Eire add £3 and for Overseas add £5 towards postage (unless otherwise specified)

**Send to: Europress Direct,  
FREEPOST,  
Ellesmere Port,  
South Wirral L65 3EB**

*(No stamp needed if posted in UK)*

Products are normally despatched within 48 hours of receipt but delivery of certain items could take up to 28 days

**Order at any time of the day or night**

Orders by phone: **051-357 1275**

Orders by Fax: **051-357 2813**

General Enquiries: **051-357 2961**

Payment: please indicate method (✓)

☐ Cheque/Eurocheque made to **Europress Direct**  
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Address \_\_\_\_\_

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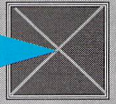
\_\_\_\_\_

Daytime telephone number in case of queries: \_\_\_\_\_





# CLOSE BOX



## The Treasure Trail peters out

Well, by the time you read this, you winners will already know who you are. The reason for this is because if we left it until now to tell you, you'd have missed the Computer Shopper Show! The show was held from May 10th to 12th, so we've had to contact the winners before the magazine hit the streets.

So those three lucky people who won the chance to share in the £2000 worth of HiSoft goodies will have already done their mad dash around the show, solving clues in order to find them. And the other 20 will have received their free tickets to the Show, visited it and revelled in the products available for the ST.

But just for the record, we'll announce all their names here, so that you can be absolutely sure it wasn't you - and if it was you, you can cut it out and keep it in your photo album, or give it to your mother or something.

**The three big winners were:**

**W R Lynes, Darvel, Ayrshire**

**J C Smith, Ilchester, Somerset**

**N J Carter, Enfield, Middlesex**

**And the runners up:**

David Robertson, Walton, Surrey

James Hepburne Scott,

Prestonpans, East Lothian

Jared Earle, Nottingham

Marlon Cole, Ilkeston, Derbyshire

Mark Andrews, Arkendale, Nth

Yorkshire

A Boodson, Leeds

John Rumball, Wigston,

Leicester

L E Maher, Leighton, Buzzard,

Beds

D R Sharples, Newton-Le-Willows,

Merseyside

Bryan Johnson, Murton, Seaham,

Co Durham

F Edmonds, Southway, Plymouth

J A Broadhurst, Kendal, Cumbria

C P Webb, King's Sutton, Ban-

bury, Oxon

K Cook, Lordshill, Southampton

M Turner, Bouton-on-the-Water,

Cheltenham

Ian C Sheppard, Hertford

D Naylor, Coulsdon, Surrey

A Telford, Bath

Philip Fielding, Weston-super-

Mare, Avon

D Naughton, Barking, Essex



## FLIGHT SIMULATOR COMPETITION WINNERS

So who was the lucky person who gets to take the controls of a Boeing 767 simulator?

**Nicola Moore, Cheltenham, Glos.**

We're now waiting for Britannia Airways to confirm a date which is suitable for both parties, and then we'll be away. We'll be publishing photos of the fun in the magazine as soon as possible.

But if you didn't win the big one, did you strike it lucky with the five copies of ProFlight?

**Rex Grozier, Cypress Station, Houston, USA**

**Matthew Lewis, Peterborough, Cambs**

**Scott "Jouster" Knights, Kippax, Leeds, Yorks**

**V F Kerton, Highlight Park, Barry, S Glamorgan**

**Nick Martin, Braintree, Essex**

## NEXT MONTH IN YOUR SUPER

**ATARI  
ST  
USER**

**Have you heard about Virtual Reality? It's the latest development in software technology, a completely new concept, and already fabulous predictions are being made for it. It's expected to appear in UK homes by 1992.**

**Find out about it in the July issue of Atari ST User. What's it like? How does it work and what is it used for? Can you afford it? Would you want it?**

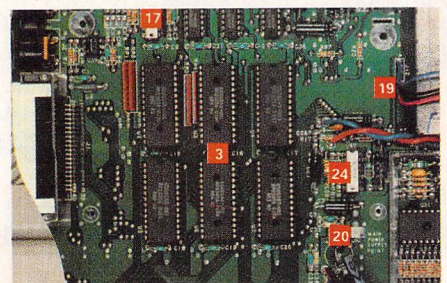
**Then take a look at our feature on Opening up an ST. Get to know your ST better - from the inside out.**

**And there are reviews of the latest products, great competitions, Artbreak, Beginners, 3D graphics, Interactive Rescue, the fabulous Aspects and more.**

**All of this in the fastest-growing, best magazine for the ST. Look out for it!**



**Virtuality?  
Virtual Reality?  
What's it all about?**



**Find out  
what goes on  
inside your ST**



# HiSoft News

All the latest news  
and product  
information.

## New

We will be releasing new versions of many of our existing titles over the next few months. To make way for this new product, we will be reducing (yes ... lowering!) the retail prices of older versions from 1 June.

Or you can use the order form below to obtain these reduced price bargains now.

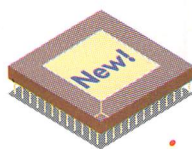
Here is a summary of our new releases:

### HiSoft BASIC 2

- brand-new, multi-window editor with bookmarks, mouse block selection and much more
- tremendous increase in speed of program development and extra flexibility
- extensive, well-documented GEM library allowing high level control, with many examples
- many extra language features including static arrays for faster-running code
- link with Lattice C 5 and Devpac ST 3
- support for the 68030 and 68882 TT chips
- includes a resource construction set (WERCS) and a low-level debugger - no more to buy

Complete with a new manual, support for the STE and much more, BASIC 2 is set to be the BASIC of the 90s. Price will be £79.95 inclusive with upgrades costing

£39.95 to registered users of HiSoft BASIC and £49.95 for Power BASIC users. Release date: 1 June 1991.



### HiSoft Devpac 3

- brand-new, multi-window editor
- re-designed user interface with pop-up menus
- many more assembly optimisations
- faster, more flexible assembly
- HiSoft BASIC 2 and Lattice C 5 linkable code

Devpac 3 is another major step forward for assembler programmers, novice and expert alike. Release is likely by late June 1991 at a price of £69.95. Upgrades from previous versions will cost £34.95.

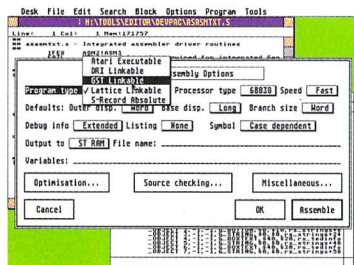
### Harlekin 2

- re-designed and enhanced scrapbook, giving a complete time management system
- greater configurability allowing Harlekin to be used even on a humble 520ST
- many other improvements and enhancements to this already amazing package
- works on the TT

Harlekin 2 is due for release in June 1991. Watch out for details of price and availability.

## Devpac TT, now!

HiSoft Devpac TT, the complete assembly language development system for your Atari TT computer, is now available.



Comprising a multi-window editor, 680x0 macro assembler, fast linker & powerful symbolic debugger, Devpac TT gives you all you need to program efficiently and quickly on the TT. Features include:

### Editor

- Full multi-window support with cut and paste between windows and pop-up menus
- Up to 9 tools give a complete visual shell
- Environment variable support
- High speed search algorithm capable of searching more than 1Mb per second

- Powerful non-ASCII character pop-up to allow unusual characters to be entered using the mouse from the editor and within dialog boxes
- Nine bookmarks to remember arbitrary points in the source text of any window
- Support for mouse block marking complete with shift-clicking, word and line orientated marking as well as 'click and drag'.

### Assembler/Debugger

- Many directives and optimisations to exploit the 68030/68882
- Extended command line support with optimisations, options and variables all accessible from the command line
- Support for DRI, GST, Lattice format linkable code, Atari executable format and Motorola S-Records
- Assembly of 68030/68882 code at 200,000 lines per minute
- Fully TT compatible debugger with support for 68030/68882 and the TT screen modes
- The debugger contains all the features you would expect: multi-windows, conditional breakpoints, full expression evaluator etc.
- Utilities include a Ramdisk, S-record splitter and debug information splitter.

Devpac TT comes complete with a 300-page, ring-bound manual. Also included is the official Motorola 680x0 family Programmer's Reference Guide giving complete instruction details for the 68030/68882 etc.

### Wordflair 2



- improved user interface and keyboard shortcuts
- English spell checker
- complete thesaurus
- FSM GDOS support, which is based on outline fonts, giving much improved display and printing of fonts

The RRP of Wordflair 2 will be £99.95, initially, and the upgrade price from Wordflair 1 will be £39.95. Release is due for mid June 1991.

Use the order form to get Wordflair 1 at a special price!

## HighSpeed Pascal 1.1

Version 1.1 of this new, already immensely popular compiler is now available. Additional features are:

- inline assembler
- help desk accessory
- i/o-mapped maths co-processor support
- faster, improved editor
- more compact libraries

Upgrades from earlier versions cost £7.50 inclusive.



For those not in the know, HighSpeed Pascal comes from Denmark, is extremely fast and friendly to use and is very closely compatible to the immensely popular Turbo Pascal on the PC, even including the graphics unit from the PC.

Compilation speed is roughly 20,000 lines per minute with excellent code generation for the ST and the TT.

## ProFlight 1.2

We are pleased to announce the release of version 1.2 of ProFlight, our immensely popular Tornado flight simulator, loved by reviewers and users alike.

This new version of simulator includes graphics, the ability set-up, a pause key, the view angle and works on the TT!



our Tornado flight improved colour to save your cockpit more control over more ... it even

Registered users can upgrade by sending their master disk back, together with £2.50.

Use this order form to obtain your HiSoft Software directly from HiSoft and we will send you a Starter Pack consisting of a quality mouse mat (printed with the ST ASCII set), an attractive disk wallet and 4 double-sided disks, totally free of charge!

<input type="checkbox"/>	Wordflair 1	£59.95
<input type="checkbox"/>	HiSoft DevpacST 2	£39.95
<input type="checkbox"/>	HiSoft BASIC 1.3	£49.95
<input type="checkbox"/>	Harlekin 1.07	£39.95
<input type="checkbox"/>	Your 2nd Manual	£8.95
<input type="checkbox"/>	HiSoft Devpac TT	£129.00
<input type="checkbox"/>	HighSpeed Pascal	£99.95
<input type="checkbox"/>	Lattice C Version 5	£149.00
<input type="checkbox"/>	HiSoft C Interpreter	£59.95
<input type="checkbox"/>	FTL Modula-2 Developer	£99.95
<input type="checkbox"/>	Power BASIC 1.3	£49.95
<input type="checkbox"/>	TurboST 1.84	£34.95
<input type="checkbox"/>	HiSoft KnifeST	£34.95
<input type="checkbox"/>	ProFlight	£39.95
<input type="checkbox"/>	Tempus 2	£39.95

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HiSoft software is available from good computer shops. In case of difficulty, you can order directly from HiSoft. For export terms or further details on any of our products, please call or write to us. All prices include VAT and P&P within the UK.

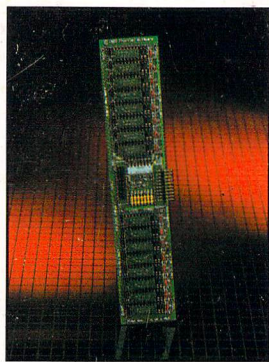
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# Discover Your ST/ST<sup>E</sup>'s Real Power!

New Low Prices!



## XTRA-RAM ST

Upgrades your ST's memory easily. Complete with testing software and comprehensive manual.

### No Need To Send Away Your ST

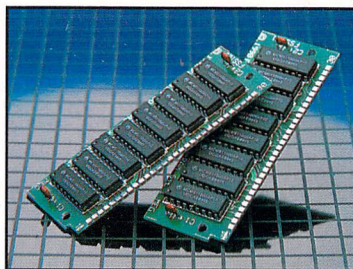
Upgrading the RAM memory of your Atari ST (520ST/M, 520STFM, 1040ST, Mega 1ST or Mega 2ST) usually means sending your ST away or doing a large amount of soldering yourself. Frontier's XTRA-RAM ST is installed by you, in your home or office.

### Easy To Install

Installation takes around an hour and is carefully explained in a detailed 32 page manual which is written with the non-technical ST user in mind. If you have any problems during the installation process, Frontier's technical staff are always available on the phone to offer assistance. Most STs will require absolutely no soldering to fit the XTRA-RAM ST. Some newer models will require a small amount of soldering. Contact Frontier for more details.

### No Need To Stop At 1MB

Most RAM upgrades for the ST leave you at 1MB and that's it! Not so with the XTRA-RAM ST. You can buy the 1/2MB upgrade now safe in the knowledge that the XTRA-RAM ST can be upgraded later without any messy trade-ins. You just replace one set of memory chips with another without any soldering whatsoever.



## XTRA-RAM ST<sup>E</sup>

Easy to fit without soldering - no need to send your ST<sup>E</sup> away.

### Upgrade Your ST<sup>E</sup> Yourself

Frontier's XTRA-RAM ST<sup>E</sup> has been designed to work with the memory upgrade facilities built into your ST<sup>E</sup> to make upgrading the memory straightforward and painless.

### No Soldering

The installation of the XTRA-RAM ST<sup>E</sup> takes under one hour. You simply open your ST<sup>E</sup>, plug in the XTRA-RAM ST<sup>E</sup> memory boards and close the ST<sup>E</sup>. It's as simple as that!

### Expands All The Way To 4MB

With the XTRA-RAM ST<sup>E</sup> from Frontier you can expand your ST<sup>E</sup> all the way to 4MB. There are four possible configurations for the RAM memory in your ST<sup>E</sup> - 1/2MB, 1MB, 2MB and 4MB. For more details on the memory slots in your ST<sup>E</sup> contact Frontier direct.



All of these products are manufactured by Frontier in the UK which means that you can be certain of the best possible after-sales support.



## Forget-Me-Clock II

Automatically sets your ST/ST<sup>E</sup>'s system time. Now all your files will be properly date and time stamped.

### Just Plug In And Go

With the Forget-Me-Clock II plugged into your ST or ST<sup>E</sup>'s cartridge port the system clock (used by the Control Panel) and keyboard clock will automatically be set at turn on or reset. No longer will you have to waste your time setting your ST's clock.

### Full Pass Through

Frontier's Forget-Me-Clock II is a clock cartridge unlike any other. All other clock cartridges for the ST or ST<sup>E</sup> will tie up the cartridge port. The Forget-Me-Clock II has a full cartridge pass through - any other cartridge for the ST can be plugged into it while it is plugged into your ST. The Forget-Me-Clock II remains totally invisible so that the other cartridge can be used normally, but it still automatically sets the system and keyboard clocks in your ST or ST<sup>E</sup>.

### No Need To Open Your ST

Installing some clock cards for the ST means that you have to open your ST's case and pry computer chips out of their sockets. The Forget-Me-Clock II is a cartridge which plugs into the port on the side of your ST or ST<sup>E</sup> which means that its installation couldn't be simpler - you just plug it in and turn on your ST.

## Satisfaction Guaranteed



### Totally Compatible

The extra RAM memory that the XTRA-RAM ST and XTRA-RAM ST<sup>E</sup> gives to your ST or ST<sup>E</sup> is totally compatible with all of your programs. The memory controller chip 'logs' in the extra memory and makes it available for your programs. You will automatically get more valuable memory space for DTP, word processing, MIDI, running the Atari laser printer and everything else that you use your computer for.

### Software Included

Every XTRA-RAM upgrade is supplied with a free RAM testing program (so that you know with certainty that your installation has worked), RAM disk and printer spooler software.

Every Forget-Me-Clock II cartridge is supplied with time and date setting software for the Forget-Me-Clock II's clock together with a small auto-run program which automatically sets your ST's system and keyboard clocks every time you turn on or reset your ST or ST<sup>E</sup>. Built into the setting software is the facility to stop the Forget-Me-Clock II's clock to save on battery life when the Forget-Me-Clock II is not being used.

### Service And Support

All Frontier Software products are designed and manufactured in the UK and are supplied under Frontier's ten day money back offer which means that if you don't like the product for any reason you can return it for a full refund within ten days of purchase. All Frontier's products also carry a full twelve months' guarantee (two years with the Forget-Me-Clock II). Unlike some ST and ST<sup>E</sup> upgrades, Frontier guarantee that each XTRA-RAM for the ST or ST<sup>E</sup> only uses brand new memory chips - making your ST or ST<sup>E</sup> and its memory upgrade more reliable both now and in the future.



All of these products are available from your local dealer or direct from:



Frontier Software

### Prices

XTRA-RAM ST Unpopulated (without memory chips)	£54.99
XTRA-RAM ST Populated to upgrade a 1/2MB ST to 1MB (can later upgrade to 2 1/2MB simply by changing the RAM chips)	£69.99
XTRA-RAM ST Populated to upgrade keyboard STs and Mega 1STs to 2 1/2MB and Mega 2STs to 4MB	£159.99
XTRA-RAM ST <sup>E</sup> 1/2MB (includes two 1/2MB memory boards and will upgrade a 1/2MB ST <sup>E</sup> to 1MB)	£51.08
Xtra-RAM ST <sup>E</sup> 2MB (includes two 1MB memory boards and will upgrade a 1/2MB ST <sup>E</sup> or 1MB ST <sup>E</sup> to 2MB or a 2MB ST <sup>E</sup> to 4MB)	£122.60
Forget-Me-Clock II cartridge	£25.53

All prices include VAT.

Please add £2.50 postage and packing to all orders under £120.00. Frontier accepts payment by Visa, Mastercard or Access. Prices subject to change without notice. Goods subject to availability.

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

\* If we don't dispatch your order within 2 working days we will give you a 25% discount! Offer ends 30th June 1991.

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