ST FORMAT

INCORPORATING
ATARI ST REVIEW

C-LAB FALCON MK2 AND THE EAGLE
– a breed apart?

ST Answers
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THE MODERN REVOLUTION

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disc
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What's it all about? ★ Which driver? ★ How does it all work? ★ Sprechen sie Technobabble? ★ What about software?

CD-ROM SPECIAL

Get more megabytes for your money with our guide to CD-ROM discs, drives and adaptors

REVIEWED THIS MONTH:

● C-LAB FALCON MK2 ● TUS HD MODULE ● DESKJET 540 ● THOUGHT! 2.2 ● INTERFACE 2 ● SUBSTATION ● TEAM ● SUPER LEAGUE MANAGER ● ASTEROIDIA ● ARMOURED OPERATION ● STONE COLD SOBER ● ULTIMATE ARENA ● MULTICAD ● GEMBENCH 4.03 ● SUPERVIEW ● POWER 26 AND MORE...

DIVE INTO SUBSTATION

Is it the ST's Doom beater? Now you can make up your own mind with our fully playable demo and review!

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ST FORMAT

REVIEWS

If you'd like to create an attractive user interface for your programs, Frank Charlton recommends *Interface 2*.

Team is here at last. Does it play a good game of football, or should it be heading for an early bath? Turn to page 38 to find out.

REGULARS

Coming your way real soon now: *Imagecopy 4*. Read all about the new version in News – see page 11.

Just what is Nick doing to Karen in these shocking photos? Turn to page 80 for the shocking truth (or something equally bizarre).

THE MODERN REVOLUTION

18 CD-ROMs are a common part of PC and Mac users' lives. Discover why you need one and how to go about getting it.

Frank Charlton concludes his three-part tutorial on *Pablo Paint* with a wicked smile – see page 68.

A BREED APART?

27 We profile two new claimants to Atari's throne: GeSoft's versatile Eagle and C-Lab's music-oriented Falcon Mk2.

START HERE...

1 Assuming you have a single-drive system, back up your Cover Disk and insert it into drive A. Double-click on the drive A icon to access it. Next, double-click on the drive B icon.

2 When prompted, remove the Cover Disk and insert your blank disk into drive A. Click on OK and a separate window should appear with the contents of your blank disk displayed within it.

3 Next, click and hold down the left mouse button on the file or folder you wish to copy across to your blank disk. Drag the file over to the drive B window before releasing the button.
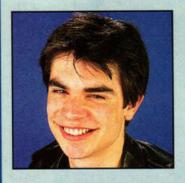
4 An alert box will tell you to insert disk A (your Cover Disk). Do so, click on OK and follow the on-screen instructions. You may have to swap disks several times during this process.

5 Just follow the instructions on the screen until the file or folder you wished to copy has been transferred to your blank disk, whereupon it will be displayed in drive B's window.

Cover Disk

Here's Nick Peers, 22, tall (5 foot 11 inches), dark, GSOH, complete with all you need to get started with this month's Cover Disk. If you'd like to meet this desirable young man, write (with photo) to Box 1701-D. ALA.

SUBSTATION

BY: Unique Development Sweden
MACHINES: STE, Falcon
MEMORY REQUIRED: 1MByte
RESOLUTION: Any colour resolution
SIZE: 264K (649K unpacked)

Read all about it: SubStation's title screen tells you all about the game's many features.

From the makers of Obsession comes

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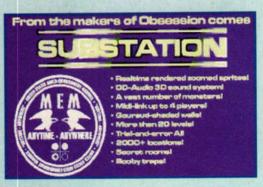
Getting started

Copy the STF_SUB folder to your blank disk as shown on the left, then open it up and double-click on STF_SUB.PRG. The program is packed, so you'll need to wait a few seconds while it unpacks into memory. Falcon owners need to transfer the contents of the STF_SUB folder to their hard drive and unpack the STF_SUB.PRG file using *Disk Opus* from last month's Cover Disk.

"Are you sure this is Ocean World darling? Little Jimmy just got eaten by a spider and Susan is being attacked by a strange man in a radiation suit."

About SubStation

SubStation is the latest release from Unique Development Sweden and brings the gory world of *Doom* and *Wolfenstein* to the ST. The year is 1999 and you've been drafted to find out what's happened in an underwater energy plant.

In this special *ST FORMAT* demo you're given three sublevels to work through, killing everything with either a knife or pistol (other weapons can be found scattered throughout the demo). You'll face enemies of all shapes and sizes, all intent on one thing – killing you. Your progress through the game is further hindered by locked doors which require you to find the correctly coloured key before you can move on.

The action takes place in a first-person environment, which means you see *SubStation's* hostile environment through your character's eyes. You need to move around carefully as you have a limited amount of energy. Once it's all gone, you're dead.

Because you can't easily see what's going on behind you, you have to listen carefully for the sounds of enemies advancing from different directions.

You only get one go at *SubStation* before you need to reload. If you've got a hard drive we suggest you unpack and transfer the program to speed things up. If you like what you see, turn to page 40 for the review and the chance to design your own *SubStation* level and win one of ten copies of the game.

KEY COMMANDS

SubStation is run entirely from the keyboard. Here are the keys you need to survive the station.

[Arrow keys]	Walk forward, back or to either side
[Z]	Sidestep left
[X]	Sidestep right
[Control]	Fire currently selected weapon
[1–6]	Select the appropriate weapon
[Shift]	Speeds up movement (hold it down)
[Tab]/[Backspace]	Drop bomb
[Space]	Push buttons or open doors
[Help] and [Undo]	Rotate left or right very quickly

Numeric keyboard controls:

[1–3]	Travel to appropriate level in elevator
[4,5,6 and 8]	Scroll the map
[7]	Place map-marker
[9]	Centre the map on the player

BALLS UP

BY: Nick Harper
MACHINES: STs only (not TOS 2.06-compatible)
MEMORY REQUIRED: 512K
RESOLUTION: Low
UNCOMPRESSED SIZE: 160K

Getting started

Open the BALLSUP folder, copy BALLSUP.TOS to a blank disk, then double-click it to dearchive the contents. *Balls Up* auto-boots, so you shouldn't run it from the desktop.

Getting electrocuted is not the way to make progress in Balls Up.

About Balls Up

Balls Up is an attractive combination of two old favourites, *Pacman* and *Lemmings*. Your job is to guide a rolling ball through each level, picking up all the power pills whilst avoiding numerous hazards.

To move around you need to lay tiles to change the direction you roll in. You can speed things up, bridge dangerous gaps and even leap over hazards should it all get too much.

The game is almost entirely mouse-controlled, but press [P] to pause the game, [Esc] to restart the current level and [Return] to pick up the same tile again without having to return to the tile bank first. Also, remember that *Balls Up* is shareware, and if you want to stop Nick from leaving the ST scene for the Mac you'd better cough up the very reasonable £5 registration fee.

The Tile Bank

1 Scroll the screen up or down.

2 Start your ball rolling again after a stop.

3 Make the ball roll in the direction indicated by the arrow.

4 Stop the ball from rolling. Lasts for a short time, or until you click on 'GO'.

5 Trampoline – useful for leaping over hazards.

6 This tile speeds the ball up. Use carefully!

7 The Bridge tiles enable the ball to cross water and other types of gaps.

8 Eraser tile to remove any unwanted tiles from the playing area.

KIVI 1.37

BY: Arto Jalkanen
MACHINES: All Ataris
MEMORY REQUIRED: 512K
RESOLUTIONS: Medium/High
UNCOMPRESSED SIZE: 197K

Getting Started

KIVI 1.37 enables you to download messages from a BBS in the form of a file which can be read and replied offline. It supports *QWK*, the popular offline reader which is used by almost all BBSs, and – unusually for an offline reader – is *Multi-TOS* compatible

Once you've loaded *KIVI*, you'll need to configure it to your personal set-up, which includes selecting an archive format for all your messages to further reduce the downloading time. For this, you'll need to set the correct file path to your archivers (*KIVI* supports ZIP, LZH and ARC files). You also have to set a path to your favourite text editor for replying to messages.
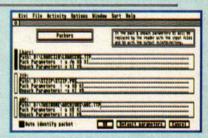
Getting a QWK packet

You'll need to contact your BBS to find out how to group all your messages into a single QWK packet for downloading – call the sysop for help if you're completely stumped. Once you're offline, reading all your messages is simple – load the QWK packet into *KIVI*, which will automatically unpack the messages so you can select and read at your leisure. You can reply to any or all of them – the program triggers your text editor – before packing the whole lot ready for uploading when you next log on to the BBS.

Full details can be found in KIVIQWK.TXT, and we'll be looking at the program in more depth in a future issue. Denesh Bhabuta, who runs the Atari section of the HENSA archives, is handling UK registration so just send £12 (all cheques to be payable to Denesh Bhabuta) to CyberSTrider, 203 Parr

Frank Charlton will take you on a detailed tour of KIVI next month.

Lane, Unsworth, Bury, Lancashire, BL9 8JW. Registering removes the annoying reminder message at the beginning of the program and the supplied key file will work with all future updates.

FINDER 2.0

By: Bill Aycock
Machines: All Ataris
Memory required: 512K
Resolutions: All
Uncompressed size: 40K

Getting started

Copy FINDER.TOS to a blank disk and double-click on it to dearchive the files, then run FINDER.PRG. *Finder* can be run as an accessory by renaming it to FINDER.ACC and ensuring it is on the root directory of your boot disk or drive.

About Finder

You remember reading something about peanuts a few months ago. The problem is, you can't remember what file the reference was in.

Finder enables you to scan entire drives in order to find specific text strings. Enter up to three search strings and decide whether the search is to be case-sensitive, then click on Search to select the drive or folder you want to scour. The program will look for any files

This particular search would probably draw a blank on any but Nick's hard drive.

containing any or all of the strings specified. When it finds a match you'll be prompted to keep that file or skip to the next reference. When you've seen enough, press [Undo] to end the search and see the results.

You can configure *Finder* to store the results in a separate file, search only files within a specified size limit or date and time stamp, create a memory buffer to speed up searches of large files or restrict searches to a specified folder depth. Read FINDER20.DOC for full operational details, including how to go about registering this excellent utility program.

BOOT MANAGER 1.3

BY: Radoikovich Nenos
MACHINES: All Ataris
MEMORY REQUIRED: 512K
RESOLUTIONS: All
SIZE: 25K

Getting started

Create an AUTO folder on a blank disk, copy BOOTMGR.PRG into it, then copy the other three files to the root directory. You can then create a folder to store accessories in.

About the program

Boot Manager is designed to help you determine which accessories and Auto programs are loaded when you boot up your ST. Although it's not as elaborate as *Super Boot 8.1*, it's far more reliable in so far that it loads programs and accessories at the first time of asking. You can also tidy up your desktop by storing all your accessories in a folder rather than on the root directory of your boot disk or drive. See the BOOTMGR.DOC for full instructions.

CD-ROM LIST

By: Greg Kopchak
MACHINES: All Ataris
UNCOMPRESSED SIZE: 60K

Copy CD_LIST.TOS to a blank disk and dearchive it to access the two text files. CD_List is a list of all CD-ROMs whose contents include at least 75 per cent Atari-compatible files. Over 1,000 discs are contained in the current list, which is being updated monthly. Read CD_LIST.DOC for full details.

MUSIC DIRECTORY DEMO

BY: CIS (International)
MACHINES: All Ataris
UNCOMPRESSED SIZE: 25K

Copy MUSIC_AD.TOS to your blank disk and double-click on it to dearchive the contents. *The Music Directory* is an extract from the complete program which is available for just £9.95 from the address given in the accompanying READ__ME.TXT file.

SPEED OF LIGHT 3.8

BY: Stuart Denham
MACHINES: All Ataris
MEMORY REQUIRED: 512K
RESOLUTIONS: All
UNCOMPRESSED SIZE: 405K

Getting started
Copy the SPOFLT folder across to your blank disk, then double-click on SPOFLT38.APP to run the program. Comprehensive instructions can be found in the README folder in the SPOFLT38.DOC file.

About the program
Speed of Light was originally the best GIF file viewer on the ST, but has since evolved into a far more powerful package. This latest version handles JPEG, *Degas*, IMG and *Prism Paint* files as well as GIFs and offers extensive image processing features.

Once you've loaded in your first image (select 'New' or 'Add' from the main screen), click 'Display' to make it appear on the screen. If the image possesses more than 16 colours (or four in medium resolution and two in high resolution), then *Speed of Light* will compensate by rapidly switching palettes to give the illusion that more colours are being displayed simultaneously than is actually possible. There is a slight flicker, but the process is an extremely effective one.

It's when you start playing around with all the options built into *Speed of Light* that you realise just how powerful it is. You can alter the contrast and hue of images with the program's powerful colour manipulation tools. You can also dither images instead of displaying them in all their glory. This reduces the number of colours in the image and enables you to convert GIFs to Degas images of any resolution for use in other programs.

You can also distort, resize, rotate, flip and clip the image as desired while it's being displayed – just hold down the mouse button for the options to pop up on-screen (all functions have keyboard shortcuts to make the process easier).

Registration details
As with *KIVI 1.37*, Denesh Bhabuta is handling the UK registration for Stuart. Just send your cheques for £20 to Denesh at the address given in the *KIVI* write-up. Registering removes many of the shareware restrictions. For example, you can only select one of two dither patterns, and the option to create your own has also been disabled in this version.

We're going to delve into the secrets of *Speed of Light* in more detail next month, but for now you can try out all the different options on offer. You'll soon realise why this package scored 93% in last month's PD Choice.

Don't be fazed by all the options! Here's our quick guide to what does what in *Speed of Light*.

1 Get information on the currently selected image.
2 Display the histogram for the currently selected image.
3 Optimise the image's palette.
4 Display the image in colour or greyscale.
5 Alter the levels of red, green and blue in the image.
6 Rescale the image. Clicking on 'Fit' fits the image to the screen.
7 Switch filtered scaling on or off (requires at least 16 colours).
8 Access the Set Filtered Scaling Settings dialogue.
9 Hide or show mouse.
10 Switch Smooth Draw mode on/off.
11 Access the Warp Settings dialogue to stretch and distort the image.
12 Reduce or increase the number of colours displayed.
13 Change the display resolution from low to medium or vice-versa (colour display only).
14 Set program preferences and/or access inverse colourmap settings or true colour loading.
15 Alter the method of colour selection.
16 Define the ranks of red, blue and green colour planes.
17 Alter the image's contrast.
18 Set the flicker contrast – not required if you have a large palette.
19 Set the dither pattern – used when you want to view an image in 16 or fewer colours without flickering.
20 Access desk accessories from GEM.
21 Displays the title information about *Speed of Light*, including details of how to register.
22 Delete the last image from memory (double-click on Purge to remove all the images).
23 Access the colour editor to alter an image's palette.
24 Save the current image in GIF, *Degas*, *Prism Paint* or IMG format.
25 Run a slideshow of the images in memory.
26 Display the image.

Now marvellous 256-colour pictures like this one can be displayed on your bog-standard ST. Oh dear, yet another gratuitous *Star Trek* shot.

TESSERA
Remember *Tessera* from last month's Cover Disk? Well, we got a few things wrong. Firstly, you can install *Tessera* to a hard drive. Secondly, you can pause the game by pressing [Help], as the TXT file clearly states. Oops.

WE WANT YOUR PROGRAMS
We pay for your software – so if you have anything that's good, original and preferably short that you think really deserves to go on *ST FORMAT*'s Cover Disk, send it with this form and full documentation to Nick Peers, *ST FORMAT*, Cover Disk, Future Publishing, 30 Monmouth Street, Bath, Avon BA1 2BW

Name _____

Address_____

_____

Daytime phone _____ Program title _____

_____ Total size in K _____

On a separate sheet, explain concisely what the program does and why it's so brilliant.
Remember to: ■ Include on-disk and paper documentation ■ Write your name and address on the disk ■ Use a virus-free disk ■ Keep a copy of your program, contributions are non-returnable ■ Enclose an attractive bribe. *Star Trek Voyager* tapes would be nice... ■ Not that it makes a difference.

Please sign the following declaration: This program is submitted for publication in *ST FORMAT*. It is wholly my own work and I hereby agree to indemnify Future Publishing against any legal action should copyright problems arise.

Signed _____ Date _____

PROBLEMS?
If you can't load, copy or back up your Cover Disk, it may be faulty. If you think it is, send the disk and a padded self-addressed envelope to: *ST FORMAT* July Disk Returns, PO Box 21, Daventry, NN1 5BU. We pay the return postage for you.

● Please don't send faulty disks to our Bath or Somerton offices. We don't keep stocks of Cover Disks.
● If you are having problems with a Cover Disk program, reread the instructions and any DOC files. If you still have problems, call the *ST FORMAT* Cover Disk Hotline on ☎ 01225 442244 on Wednesdays between 2pm and 6pm only.
● Cover Disks are double-sided. If you have an old STFM and can't read the Cover Disk then you need to upgrade your ST to a double-sided drive.
● If you have other hardware or software queries, contact the manufacturer or publisher. Or ring the official Atari Helpline on ☎ 0131 332 93233 between 6pm and 11pm Monday to Saturday and 8pm and 11pm on Sundays.

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STF News...

Nick Peers brings you all the latest news, including the truth about that cover price.

Exposed: Titan Designs

Aside from the excellent *Thought 2.2* (reviewed on page 35), Titan Designs is about to launch the first true colour, real-time digitiser for the Falcon. The Exposé is expected to appear in June.

Since our first report (News, *STF* 64), its RGB splitter has been improved to give you full control over brightness, contrast and colour. The splitter is now compatible with PAL, NTSC, composite and S-Video inputs.

The package includes a useful accessory, *FalCAM,* which enables you to view live video from within GEM-based programs.

There is also a *Videobox* demonstration which shows you how to texture map the live video on to the surface of a cube. The cube can be rotated and zoomed in real time as desired.

The Exposé comes with an enhanced version of *APEX Media* (*STF* 68, 93%) and will cost £369.00. Existing *APEX* users can get the Exposé on its own for just £249.00, a £50 saving on the stand-alone price of £299.00.

Now Falcon users can get into powerful true colour digitising in real time with Titan's Exposé.

Look out for a review when it is launched; in the meantime contact Titan on ☎ 0121 414 1630.

FaST Club deluge

THE LATEST VERSION OF THE popular *Imagecopy* is looking good for a late June release. Version 4 will incorporate a new page layout feature which enables you to print several images on a single page. *Imagecopy 4* will cost £34.95 (or £39.95 on CD), and will include *Textstyle.* This program enables you to import text, style it with *Calamus* or GEM fonts, and export the result in an IMG file. Upgrades from earlier versions will start at £6.95 for owners of *Imagecopy 3.5.*

Other new products from the FaST Club include *X-Change,* a versatile vector graphics conversion utility (watch out for a review next month) which costs £14.95, and *Gemulator 4,* a software STE emulator for 486 and Pentium PCs. This will cost £139.95 without Atari ROMs (TOS 1.06/62 or 2.06 is required).

FaST is also distributing two new programs from IEBC Design Concept, originator of the *Pablo Paint* art package on Cover Disk 70. These are *Strip Cartoon,* an art program devoted to producing... wait for it... strip cartoons, and *EEC,* Claude Boulanger's database of facts and figures related to the European Community. Prices will be £14.95 and £6.95 respectively, and you can contact the FaST Club on ☎ 0115 945 5250.

Imagecopy 3.5 scored 93% in issue 67, and version 4 is already on the way!

NET NEWS

The Atari Web pages are bustling with all the latest news and gossip, as per usual. A load of Jaguar reviews have been added this month, and two new sections should be available by the time you read this: a games and cheats section and a section on the Atari Portfolio (a popular subject, according to Mark Smith, who runs the Web page). You can access the Atari Web page by pointing your browser software at http://www.mcc.ac.uk/~dlms/atari.html.

FutureNet, home of the *ST FORMAT* Web page, has launched an **on-line daily newswire** service offering up to 150 stories a day from all over the world. You can access it, along with the *ST FORMAT* page, at http://www.futurenet.co.uk.

Internet e-mail users should beware the arrival of a 'test' message cryptically marked 'Good Times' at their address. This is a powerful virus which can cause complete and irreparable damage to your system if read. **If you receive the 'Good News' message, do not read it.** Delete it immediately to destroy it. You have been warned.

If you find the rigours of the Net getting to you, you can now contact the **Samaritans** on-line. Communicate with 'Jo' by e-mailing her at Jo@samaritans.org, and she'll reply in 24 hours. Alternatively, if you wish to remain anonymous, e-mail samaritans@anon.penet.fi. All references to your identity will be deleted before the message reaches the Samaritans.

Also rans: If you are interested in the film *Batman Forever,* access its Web page at http:/batman forever.com. Buy a bottle of wine at http://www.j-sainsbury.co.uk (Sainsbury's home page) or, if you're feeling financially insecure, contact Bradford & Bingley at http://www.bradford-bingley.co.uk/bbs/ for independent financial advice.

Game News

Top Byte Software, publisher of *Brenarvarious* and *STario Land*, has announced the imminent release of two new titles for the ST. The first is *Cyber Knight*, an isometric 3D adventure in the graphical style of *Hero Quest*. It requires you to pursue your girlfriend through various levels including woods, a village, heaven and hell. Along the way you'll have to solve various puzzles, fight off baddies and interact with other characters.

Scapegoat is a shoot-'em-up where you've got to destroy loads of aliens and things to prove that your planet didn't blow up another planet. One for graduates of the *James T Kirk* school of diplomacy, then. Top Byte is looking at a possible mid-June release date for *Scapegoat*. Prices are as yet undecided – contact Top Byte at 3 Salisbury Road, Maidstone, Kent, ME14 2TY for further details. Top Byte would also like to hear from "competent programmers (in any programming language)" interested in working on future Top Byte projects.

Meanwhile, rampaging through the Channel Tunnel is *Killing Impact*. It is a Falcon-only update of the *Joust* genre of

Cyber Knight involves running round after girlfriends. Believe me, they're not worth it and will probably only go off with your 'best' mate afterwards.

I haven't the foggiest idea what *Killing Impact's* plot is about, but the backgrounds are certainly colourful.

games, in which you destroy your opponents by landing on them from above. This game goes much further, however, in that play takes place on a large, scrolling playing area and you can obtain various power bonuses, including several weapons to help you in your quest. A freeware demo version should be circulating as you read this.

Killing Impact is being marketed in France by

Digital Concept, but the programmer, Rebel Vision, is looking for an English distributor for the game. Contact Sebastian Pastore at 7, Allée des Tilleuls, 13620 Carry-le-Rouet, France.

With multi-ball on top of completely redrawn graphics, *Obsession* on the Falcon looks like it's going to take some beating. Meanwhile, UDS unveils blast-'em-down *SubStation* on page 40.

STF price shocker

You will be aware that *ST FORMAT* has gone up to £4.25 this month. This is the direct result of a worldwide paper shortage which

has seen the cost of paper rise by 40 per cent across the board, affecting the entire newspaper and magazine industry. Another consequence of this is that *ST FORMAT* will be dropping in size to A4 from next month. However, we'll still be publishing 84 pages packed with top notch information, tutorials and entertainment, and the subscription rate remains the same, making subscriptions even better value for money.

£39,000 GIVEAWAY BLOOPER

You might have noticed a teensy-weensy mistake in last month's *ST FORMAT*. We incorrectly stated that the closing date for Audiogenic's marvellous £39,000 software giveaway was 8 May, a week before the issue went on sale.

Of course, the closing date should have been 8 June, a week before this issue goes on sale. Having consulted the boss man at Audiogenic and offered him Karen as a sacrifice (he exiled her to Greece for ten days – now all the team wants to be sacrificed), the closing date for the *Helter Skelter* giveaway is now **Monday, 10 July**. Just send 50p in loose stamps, plus your name and address, to Audiogenic Software, Unit 27, Christchurch Industrial Centre, Wealdstone, Harrow HA3 8NT.

Helter Skelter is a challenging platform game which runs on all STs with 512K.

PD NEWS

Dave Munsie, author of a wide range of ST and Falcon games based on old classics (such as *Kid Kong*, *Bezerk* and *Bugs*), has secured a deal with LAPD making it "exclusive distributor of any and all original shareware/licenceware titles released… under the MUNSIE software label outside of USA and Canada." This means that UK and European users can register Dave Munsie titles through LAPD.

Dave's most recent release, *Asteroidia*, is reviewed on page 45, and already he's hard at work on a number of other Atari products, some of which should be available as you read this. *Square Off* is a two-player *Tetris* clone requiring an STE or Falcon with at least 2MByte of memory (an STFM-compatible version will follow). *Choplifter '95* is an update of the old 8-bit classic. You have to rescue the hostages in the old horizontally-scrolling shoot-'em-up fashion. Dave's version will feature 20 levels of play, parallax scrolling and digitized sound effects. Finally, he is working on *Megaspace*, a vertically-scrolling shoot-'em-up inspired by *Raiden 2*, the arcade classic.

LAPD can be contacted on ☎ 01773 605010 or 761944 and you can e-mail Dave directly at D.MUNSIE@GENIE.COM.

This is *Megaspace*, a game Dave Munsie claims "is a monster". Inspired by the arcade blast-'em-up *Raiden 2*, it could well be another shareware hit for the American games programmer.

From now until the end of July, Chaos PD is charging just 80p per disk (with a free disk for every five ordered). Adding over 150 PD disks a month to its catalogue, Chaos claims to be "the fastest growing PD library in the UK". Call ☎ 01296 89059 for a catalogue.

Purchasers of LAPD's *Lexicon* word-searching utility (*STF* 70, 79%) can obtain the latest version, complete with updated 65,000 word dictionary, from author Peter Legge. Just send the price of a disk and postage, or a disk filled with PD, to the address listed in the README file on the original disk.

Transparent Dreams PDL has folded. However, the STench UK user group for people wishing to swap hints, PD and source code will continue. Membership is now free. STench will also be stocking *Team* and *Hollywood Hustler*, at £24.95 each, although the first six people to order *Hollywood Hustler* can get a copy for just £19.95. Contact STench UK at 59 Renton Rd, Manchester, M22 9TG.

Atari speaks

Atari UK's Darryl Still turned up on Ad.Lib BBS recently, answering people's questions about the ST, Falcon and Jaguar. To quote one of his replies: "Atari has handed support for the Falcon to C-Lab and other companies who are producing software, magazines, clubs, etc. All ST support is through System Solutions, etc. Atari has one brand, Jaguar. We are honest about it. It is our future and we recognise that the companies mentioned can support the old user base better than we can, without diluting our Jag resources too much. One hundred per cent of Atari is about making the Jag a success."

Contact Ad.Lib BBS by connecting your modem to 0191 370 2659 or 0191 370 2885.

MASTER MAGICIAN

MagicMac looks unlikely to appear in a native version for the PowerMac. Don Maple found out why in an exclusive interview with Thomas Tempelmann, the man who developed MagiCMac.

Thomas Tempelmann is an old hand with Ataris, and had an ST from 1985. Thomas was responsible for *Templemon* – a machine language monitor – and also helped develop *Megamax Modula-2*. A few years ago he got into the Mac while porting the cult game *Oxyd* on to it.

When German distributor Application Systems Heidelberg first came up with the idea for *MagiCMac*, the plan was to emulate the Atari's Motorola 680x0 processor on Apple's PowerMacs. In September last year this was deemed too time-consuming and ASH decided to concentrate on an Atari emulator for the more common 680x0-based Macs.

Thomas was approached, and jumped at the opportunity to develop an emulator that was, in principle, similar to *Spectre* (the now discontinued Mac emulator) on the ST. The project involved modifying the original *MagiC* to use Macintosh resources. Its viability was confirmed in just two weeks, thanks to some test routines written by Thomas. A limited prototype was on display at the MacWorld exhibition in Frankfurt last November, and the very first working versions of *MagiCMac* were on sale at the ProTOS exhibition several weeks later (News, *STF 67*).

The project is now basically finished, although Thomas would like to make it possible for Mac and Atari programs to communicate with each other through *MagiCMac* via 'events' or 'messages'. In practical terms this would mean that Atari programs could invoke Mac programs and vice versa. It would also enable bi-directional exchanges of data between Atari and Mac software.

Thomas said a native version for PowerMacs would be quite hard to do, and would require direct support from Apple USA. Coupled with the advent of the next version of the Mac operating system, *System 8*, a lot of things are still up in the air. Watch this space for news of any developments.

Thomas Tempelmann, the MagiCMan behind MagiCMac.

MUSIC FOR THE BLIND
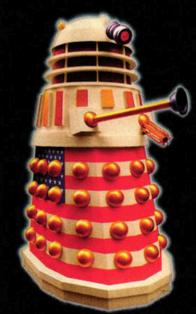
Metaphor is a new graphical interface designed for blind people. Windows, menus and other graphical devices usually lost to the visually impaired are given non-visual equivalents, and the interface communicates with the user via a voice synthesizer.

The system comes with interfaces for *Cubase* and *Cubase Audio* on the Falcon, but is also ST-compatible. Developed for a blind music student, it could open up Atari computing to a whole section of people once excluded from the platform.
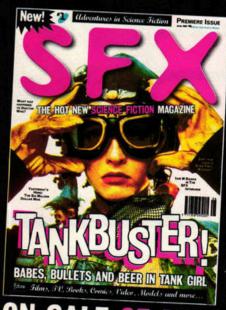
Metaphor has been developed by Aldridge Technology, and looks likely to be distributed by System Solutions. Contact Anthony Aldridge by e-mail at mua01apa@gold.ac.uk for more details.

MEMS '95

If music be the food of love, what was everyone doing at the MIDI, Electronic Music and Recording Show this year? Andy Curtis went along to find out.

MEMS was packed with people demonstrating every type of MIDI and music product imaginable.

MEMS '95 – the MIDI, Electronic Music And Recording Show – was hosted by our sister magazines, *Future Music* and *Total Guitar.*

In sharp contrast to last year's poor attendance, MEMS '95 was packed with people and almost all the traders we approached reported good sales and lots of interest in their products. The floor was jam-full of people demonstrating just about every type of MIDI product imaginable. No-one wanted to miss out on the nation's premier MIDI and music event, and all the major players were there in force.

The big boys

Harman Audio was demonstrating and running seminars related to its *Cubase* program on the Atari, Mac and PC platforms. *Cubase Audio version 3* was much in evidence and Paul Wiffen from Digital Awareness was keen to proclaim the joys of running the package on a C-Lab Falcon Mk2. DA will be distributing the package, consisting of the C-Lab Falcon Mk2 14/500, *Cubase Audio 16 v2.03* and the Falcon Digital Interface (FDI), priced at around £3000+VAT. For more on this, see our review of the C-Lab Falcon Mk2 on page 30.

Neils Larson was on hand, along with other members of the Steinberg team, to field questions on all of Steinberg's products. There was ample seating for people to take advantage of the excellent *Cubase* demos taking place. Contact Harman Audio on ☎ 0181 2075050.

All the major players were there in force.

The Atari faithful

Karl Brandt of System Solutions was selling a large selection of Atari products, including the Atari Falcon and its associated audio add-ons. There were leaflets available about the new *MagiCMac* program but the actual software was not on sale.

MagiCMac enables a standard Mac with System 7 to run well-behaved Atari programs in full colour and at high

> **The emphasis here is on making products that enable you, the musician, to create**

speed. We will be reviewing this revolutionary Macintosh product in the near future. Business must have been good for Mr Brandt, because whenever we wanted a quick word with him there was a cluster of customers around the stand. Contact System Solutions on ☎ 0181 693 3355.

Gasteiner had hoped to be displaying the new Eagle computer at MEMS but it didn't arrive in time. See page 27 for a preview of GeSoft's phenomenal TT clone and expect a full review in a forthcoming issue of *ST FORMAT.*

Gasteiner did have boatloads of what it does best – hard drives. They were all very competitively priced and sizes up to 1.2GByte were available. Contact Gasteiner on ☎ 0181 345 6000.

MIDI files

MIDI Magic was one of many companies present selling MIDI files, and we spoke to company boss Leighton Collins about the effect of the recent copyright law changes on his business. He told us that the extra percentage required by MCPS for the copyright owners of each track is likely to raise the cost of MIDI files by up to £3, making a standard MIDI file of a popular song as much as £8. However, he believes that customers understand the needs of the copyright owners and will adjust to the higher rate once they get over the change period.

What does seem to be a major problem is the increasing number of artists who do not wish to have their songs made into MIDI files at all. Leighton is confident that the MIDI file scene will settle down in the near future – let's hope so. Call MIDI Magic on ☎ 01792 642381.

Many of the MIDI file companies are branching out from simply producing copies of hit records and classical music. Innovative files that provide a backdrop for keyboard practice or jamming along to, guitar effects and percussion effects are now available in quantity. The emphasis here is on making products that enable you, the musician, to create rather than just listen. This sort of forward thinking must be welcomed as it opens up the usefulness of MIDI files. We will be reviewing two such disks from the Twiddly Bits company in the next issue of *ST FORMAT.*

Space-age samples

Time and Space was demonstrating its huge range of sample CDs and CD-ROMs. It's attractive CD-sized catalogue contains a vast array of every conceivable sound sample. Drums, organs, guitar, synth and crowd effects… the lot. Two massive CD jukeboxes were on the stand as well so that us punters could listen to the quality of what was on offer. We were impressed by the sheer depth of coverage this company has. If you're looking for that elusive sample then Time and Space probably has the answer, several times over. Call ☎ 01442 870681.

All in all…

MEMS '95 was an excellent show – *Future Music* did a great job in making it an exciting and worthwhile event. There was a definite buzz around the place with people talking in an upbeat way about the Falcon in all its guises.

Everywhere we looked there were STs and Falcons in use and being promoted. With the relative cheapness of Falcon hardware it is really a force to be reckoned with in the field of hard disk recording. This is really great news and we will keep you updated in The Score. And hopefully we'll see you at MEMS next year. *stf*

EuroNews...

European correspondent Don Maple checks out an exciting new graphics card for the Falcon and an improved ST emulator. Plus: are John Major's Conservatives responsible for your empty wallet?

NOVA-Falcon – a star is born

Even though the Falcon comes with so-called TrueColor as standard, it
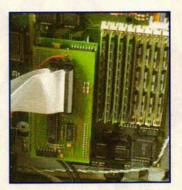
NOVA is a brand new high-end graphic card for the Falcon from Germany.

crawls in this mode – even at low resolutions – as the machine tries hard to keep up with an avalanche of graphic data. NOVA-Falcon is the first graphic card to extend its limited graphic capabilities. It solves the problem by taking over the graphic work, leaving the Falcon to concentrate on other tasks.

Due to limited space in the computer, NOVA-Falcon comes in two parts. The adaptor card plugs into the internal extension slot, then connects with two ribbon cables to an outside box, which

contains various VGA monitor connectors. The NOVA-Falcon package comes with several software utilities, including colour and picture calibration.

One major restriction is that Falcon-NOVA can only be used with 4MByte Falcons, due to the Falcon's limited addressing capabilities. The good news is that NOVA-Falcon really flies at ultra-high resolution and video refresh rates. However, all this comes at a price. In Germany a 1MByte version goes for DM799 (about £380 pounds) and a 2MByte model for DM999 (about £475). For more

Sitting comfortably in this well-endowed machine, the NOVA extends the Falcon's graphic capabilities considerably.
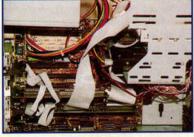
details, write to Computerinsel, Zur Limestherme 4, 93333 Bad Goegging, Germany.

Janus turns 20

VHF HAS DONE IT AGAIN! THE manufacturer of Janus, the excellent ST emulator on a PC card, has only recently introduced the 25MHz accelerator kit for the 68000-based card (EuroNews, STF 69). Now VHF has gone a step further with a brand new emulator card called Janus 20.

The card comes with a Motorola 68020 chip – hence the name – running at 25MHz. The new chip and the faster clock speed result in Janus 20 outperforming even Atari's flagship TT.

In Germany, VHF offers two upgrade paths. The owners of the old card can take the 68000 chip out and plug in a daughterboard with a 68020 at a cost of DM248 (about £120). The other option is to send in the old card and get a

brand new one instead, this time for DM598 (about £280). Included free with both upgrades is new driver software capable of a monochrome mode at 1280 x 1024 pixels and smooth mouse movements. The software can also be purchased separately for DM39 (about £17). For British pricing and availability contact CGS ComputerBild on ☎ 0181 679 730.

Janus, the ST emulator card for PCs, just got a more powerful processor.

Major price hike

ARE MAJOR'S CONSERVATIVES to blame for imminent major increases in the cost of Atari software and hardware?

A few years back, the PM took the pound out of the European monetary exchange system. The pound immediately went into a tail spin and has lost some 30 per cent in value since then. Recent monetary upheavals again

resulted in the British peso... erm... pound taking a beating in relation to the German mark and dropping another 10 per cent.

But why should you care? Well, these days most, if not all, Atari software and hardware originates in Germany. Manufacturers and distributors can't go on absorbing these losses forever – so start saving those pennies.

PD OF THE MONTH

Complementing the cover feature on CD-ROMs, the PD program of the month is *Music Channel*, a CD player with a MOD player thrown in for good measure. Both players can create and read playlists of your favouring MODs and CDs in any order. You can also add comments to each song.
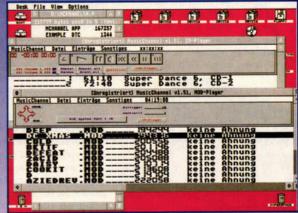
There are two main windows, one for MODs and the other for CDs. The program is written with multitasking in mind, and for added convenience the menus are tied to a window, instead of the desktop menu bar.
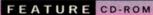
In order to play CDs you must first install METADOS, the CD-ROM driver from Atari, which is available everywhere. The latest version of *Music Channel* is 1.62, available on your favourite BBS as a file called MCHAN162.LZH.

To unlock additional features you must register, whereupon the author will also send you an English-language version.

Music Channel will play all your favourite MODs and CDs in a multitasking environment.

For more information, contact Stephan Bold, Paray-le-Monialstr. 16, 67098 Bad Duerkheim, Germany, or e-mail stephan_bold@lu.maus.de.

THE MODERN REVOLUTION

In a mammoth 7-page *ST FORMAT* special, Frank Charlton and Don Maple find out what's hot and what's not in the CD-ROM market.

COMPACT disc DATA STORAGE

A tari had a CD-ROM drive ready way back when the ST was still wearing nappies – years before Mac and PC owners even knew what CD-ROM was.

Sadly, Atari stopped at the prototype stage, allegedly waiting until drives became affordable.

The CDAR 504 was eventually shown at CeBIT, and even made it to the shops, but nobody bought it. Just as well, really, because it was incompatible with the rest of the known universe. And so – thankfully – we ended up with industry-standard drives.

A selection of ST-specific discs are reviewed on pages 22-24, and you can also access many of the CD-ROMs made for the PC market (avoid Amiga or Mac CDs, which use alien file systems).

For example, a PC CD-ROM full of TrueType fonts, DTP graphics or assorted sounds can be read on your ST, and the files can be used in programs like *Speedo* and *Calamus*. However, unless you have a PC emulator, you won't be able to run PC programs.

Before you start browsing through the latest 5lb PC mag, though, take a look at Gregg Kopchak's list of ST-compatible PC CDs. Currently over 1,000 discs make the grade (that is, 75 per cent of their content is useful to ST owners), and you'll find the list on this month's Cover Disk.

But what about interactive PC titles like *Cinemania*? At the moment there's no way to use them on an ST, but American company It's All Relative is working on a solution – *SARA* (see page 24).

In short, you can buy any vanilla CD-ROM drive advertised in the computer press and connect it to your ST with little or no additional hardware. There are plenty of ST-compatible CDs, and you can read data from PC discs as well.

Given that a single CD can contain as much data as 400 high density floppy disks, the sheer quantity of images, sounds, fonts and data available to you is just staggering. CD-ROM really is the modern revolution.

CD ROM

What's it all about?

Confused by terms like Red Book, multisession and quad-speed? If so, take a gander at the *ST FORMAT* guide to CD-ROM technobabble.

E very new technology has its own special jargon, and CD-ROM is no exception. If you're thinking about buying a drive, it's worth getting a grip on the terminology first, especially if you're buying second-hand.

Colouring books

The Standards Authority publishes standards in books with covers of various different colours, like the Government's White and Green Papers. Since no-one came up with anything more imaginative, the names stuck – hence Red Book, White Book and so on.

The oldest standard is Red Book, which was defined way back in 1980. Red Book laid down the specifications for the audio CDs we all know and love. Without going deep into techy detail, it set the standard for the sampling rate and resolution used to store the audio data.

You probably wouldn't notice if you lost the odd bit of data from a song during playback, but you can imagine how disastrous that would be with computer data – hence the 1985 Yellow Book standard.

However, Yellow didn't actually specify the CD file format, so an early attempt at a standard file system was created, called High Sierra. The International Standards Organisation modified this one in 1988 to produce the ISO-9660 CD-ROM format, which is the standard we know today. All current CD-ROM drives and discs use this common format.

If you've seen discs for the CD-i (Compact Disc Interactive) players from Philips, you've seen Green Book CDs. Invented as a kind of halfway house between formats, Green can store both data and music or graphics. This format isn't used in the ST world.

Talking of CD-i, you've probably seen the new video CDs, with films like *Star Trek 6* appearing in digital format. These conform to the White Book standard, and contain Full-Motion Video (FMV) in a compressed digital format.

PhotoCD

As well as the colour standards we've just covered, you've more than likely seen references to PhotoCD. The PhotoCD format was invented by Kodak, for stor-

> **The PhotoCD format was invented by Kodak, for storing photographs digitally**

ing photographs digitally on CD. It was designed as a replacement for normal film, so PhotoCD needs to be able to store high resolution images in 24-bit TrueColour.

You don't need any special camera gear to take PhotoCD images. Photographic bureaus use scanning equipment to digitise normal negatives or transparencies, then write them to the CD, which can hold up to 100 photos. Each image is stored as a single file, and each file contains five different versions, ranging from a tiny 192x128 pixel image used for cataloguing to a 3072x2048 monster for professional uses.

Digitally stored pictures are harder to damage than normal prints and negatives, and you can easily have prints made if you need them. When you shoot another film, you can add it to the same disc as your last lot, since PhotoCD is a multisession format.

Kodak originally introduced special CD players which could ▶

PhotoCD images come in five resolutions, all embedded in a single massive file.

Image preferences...

Photo CD size	✓ 192 x 128
	384 x 256
	768 x 512
True-colour IMG	1536 x 1024
	3072 x 2048
IMG compression	1-byte

☒ **Baseline TIFF**
☐ **Word-align true-colour IMG**
☐ **Interlace GIF images**

Save   OK   Cancel

CD-ROM-ROM

CD-ROM-ROM is a solution to the problem of connecting IDE drives (see the Good Connections panel) to an ST. It's an adaptor which hooks the drive to your ST via the ROM-cartridge port.

CD-ROM-ROM was designed to work with a specific drive – the double-speed IDE device produced by Mitsumi – and marketed by Compo Software. However, Mitsumi decided to cease production of the double-speed drives, so Compo dropped the interface.

Gasteiner Technologies (☎ 0181 345 6000) has stocks of both the interface and the Mitsumi drives at the time of writing, but how long the drives will be available for is anyone's guess. Still, as PC users move up to faster drives there should be quite a few second-hand Mitsumis kicking about, and this could well be the best solution if you're on a tight budget. We'll be taking a closer look at the full kit from Gasteiner in a future issue of *ST FORMAT*.

Hook up your ST to one of the discontinued Mitsumi drives with this little box of trickery.

GOOD CONNECTIONS

Nothing is simple in the computer world, and this certainly holds true for connecting a CD-ROM drive to the computer. Since Atari saw fit to ignore another industry standard – the SCSI interface – until later days, those of you with STFMs and STEs have the non-standard ACSI port to wrestle with.

A CD-ROM drive can be connected in two different ways. First of all there's SCSI, for those of you fortunate enough to have an Atari with a SCSI port, such as the Falcon030 or the TT. If your Atari only has the ACSI port you will need a host adaptor, as with a hard drive. These are relatively numerous and not that expensive, because ACSI is really a subset of SCSI. Once that's done, the hardware side is as simple as plugging the drive in.

The second flavour of CD-ROM drives is the ATAPI

drive. ATAPI stands for ATA Peripheral Interface, and is more commonly known as IDE. The Falcon's internal hard disk is an IDE drive.

IDE drives are cheaper than SCSI ones – most of the Mitsumi and Sony drives you see in those phonebook-thick PC magazines are IDE drives. You need an IDE interface to hook them to your ST. Gasteiner sells a small gadget which connects a Mitsumi double-speed IDE CD-ROM to your ST via the cartridge port – see the CD-ROM-ROM panel for more details.
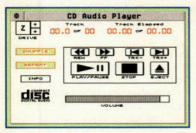
The bottom line is to go with SCSI if at all possible. SCSI drives are faster, and you'll not only be able to connect extra hard disks to the SCSI bus, but also all sorts of other sexy peripherals such as scanners, tape drives and so on.

display PhotoCD images on your TV set, but they never really caught on. The advent of the Philips CD-i (which can play PhotoCD) and cheap CD-ROM technology means that special players aren't needed any more.

Armed with a graphics program capable of reading PhotoCD files, such as *ImageCopy 3.5CD* (£34.95 from FaST Club, ☎ 0115 945 5250) or the shareware *GEMView,* you can muck about with your holiday snaps as much as you like. You really need a Falcon030 or an ST fitted with a graphics card to see them at their best, but you can process your photographs in ways that previously required photographic gear worth thousands of pounds.

Sessions

Originally, CD-ROM discs were designed as WORM (Write Once,

Read Many) systems. There was no way to add more data to the disc at a later date.

When PhotoCD arrived, a new system was developed so that discs could be added to, and your drive could access both the old and new information. Thus, PhotoCD discs are 'multisession'.

The table of contents (TOC) on a CD is a bit like the FAT on an ST disk, in that it tells the drive where to find each file. Multi-session CDs changed that by using a separate TOC for each recorded session.

Only old CD-ROM drives can't read multisession discs, but it's something to watch out for if you buy second-hand. With a single-session drive, you'll only be able to get at the first lot of pictures on a PhotoCD, which means you'll have to wait until you have enough images to fill the disk before having them processed.

Ah, mein host!

If you have a standard ST or STE without a SCSI port, you'll need a device called a host adaptor. This converts data from the ST's DMA port to true SCSI commands that control hard drives and CD-ROMs.

Technology has advanced so much that current adaptors contain their circuitry in a small plug with a cable attached – just plug it in and you're away.

There are three host adaptors currently available: the ICD Link 2 (£89.99 from 1st Computers, ☎ 0113 231 9444), the TopLink (£40 from Gasteiner, ☎ 0181 345 6000) and the Translator (£69.95, or £79.95 with *HD Driver* software, from System Solutions, ☎ 0181 693 1919).

Software drivers

Just like hard drives, CD-ROMs need special software so that your ST or Falcon can access them. Both Atari and ICD Software produced drivers early on, but both were hampered by the fact that they needed *MiNT* or *MultiTOS* to be present. They're also staggeringly slow on a standard 8MHz ST, and not terribly speedy even on a 16MHz Falcon.

The best software you can buy to use with your CD-ROM drive is *ExtenDOS Pro* (£29.95) by Anodyne Software, sold in the UK by

PRIMA HD/CD COMBO

We reviewed this combination of SCSI hard and CD-ROM drives in *ST FORMAT* 70, where it scored a respectable 85%. A fast hard drive and a

Panasonic double-speed CD in one elega box, the Prima is an excellent choice if you're seriously short of desk space, and it's certainly well worth considering if you're about to buy a hard drive anyway. It's the only drive featured here to cor supplied with everything you need to plug in and go, including the driver software, and we liked it a lot.

Product: Prima HD/CD Combo
Price: £469.99
Contact: 1st Computers
Tel: 0113 231 9444
Min system: Any ST/TT or Falcon030

STF RATING: 85%
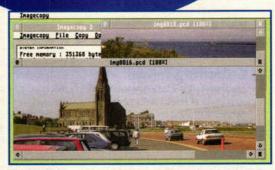
Hard and CD-ROM drives in one box – an elegant, compact solution from 1st Computers.

ExtenDOS Pro – nine out of ten CD-ROM drives said their owners preferred it.

Never spill beer on your holiday snaps again, thanks to PhotoCD technology (then again, the discs do make good coasters...)

System Solutions (☎ 0181 693 1919). It runs on all machines, doesn't need *MultiTOS*, and comes with an accessory to play audio CDs as you work. We gave it 92% and a Gold Award in *ST FORMAT* 71.

Speed kills

Drive manufacturers are also fond of quoting technobabble like 'double-speed' and 'quad-speed'. Double the speed of what?

Audio CD players are single-speed, and read data from the disc at 150K per second – fast enough for music, but painfully slow compared to even older hard drives. Double-speed drives read data at twice the speed of an audio CD player, or 300K per second. Double-speed is the lowest specification you should buy.

With the development of quad and even six times drives, a lot of manufacturers have stopped producing double-speed mechanisms. Mac and PC owners generally want to play CD-ROM games, so it's important for them to have very fast data transfer rates. However, Atari CDs generally contain programs and data files, so speed isn't as critical. You'll probably be chuffed with a standard double-speed drive.

TOSHIBA XM-5301B

Toshiba's XM-5301B is one of the many inexpensive, yet powerful, quad-speed CD-ROM drives that are flooding on to the market. This particular model is based on the 5201B and is, to all intents and purposes, identical except for the speed. The 5201B transferred data at just over triple speed, while the new 5301B is a full quad-speed drive capable of sustained data transfer at 600K per second.

What makes the Tosh stand out is that it employs 'variable speed playback'. Normally, a CD-ROM drive can't read data until the CD in it comes up to speed. The 5301B, on the other hand, starts reading as soon as the CD starts spinning and continues as the CD accelerates. This means faster access and is easier on drive mechanics.

The 5301B supports all of the current CD standards, from PhotoCD

to video CD as well as standard audio CDs. It comes in two versions, the SCSI 5301B and an IDE version, the 5302B. The SCSI version is the one to go for (see the Good Connections panel on page 19). Remember that you'll need to buy a host adaptor to connect it to STs, and some driver software as well.

This is one of the best drives available today, and is highly recommended.

Product: Toshiba XM-5301B
Price: £204.53
Contact: Koch Media
Tel: 01252 714340
Min system: Any ST with a SCSI port or a SCSI interface.

STF RATING: 95%

Toshiba's latest quad-speed XM-5301B CD-ROM drive is fast but doesn't come with all the trimmings.

CD ROM How does it work?

Now you've mastered CD jargon, it's time to find out something about the discs and the way they work. It's all done with lights and mirrors...

We're all familiar with the CDs that took the music industry by storm in the mid-1980s. They're now doing the same to computers in the guise of CD-ROM.

CD-ROMs are standardised at 120mm in diameter with a 15mm hole in the middle. Like LPs, CDs have a single spiral 'track'. Unlike LPs, CDs are played starting from the inside hole and moving out.

The area immediately out from the hole is used to clamp the disk, while the first 4mm of the track area contains the table of contents (TOC). Following this is 33mm of data area, terminated with a 1mm lead. The 3mm on the outer edge are for disk handling.

The data on the CD is stored as tiny, microscopic 'pits' in the plastic base, which is covered by a thin reflective aluminium substrate. The whole thing is then enclosed in clear plastic. Even though the disk is read from the clear side, that side is pretty well protected. It's the other side where the label is that's closer to the actual data. By comparison to other media CDs are pretty rugged, but it still pays to treat them with a certain amount of care. Keep

them in their cases, and only handle them by the edges.

The CD is 'read' with a laser which shines a beam of light over the 'pits' and monitors the reflections. This light isn't in the visible range, so if you were to open the drive while it's working – not that you ever should – you wouldn't be able to see it. Every time this beam hits a 'pit' the light scatters and is no longer detected by the reading mechanism. Based on this, the CD drive sees a pit as the number 0, and a reflective area (also known as 'land') as the number 1.

Contrary to popular belief, the pits are not directly translated into digital data. Instead, the reading mechanism makes note of the timing transitions between off and on areas, just like a hard disk senses magnetic transitions. It's these so-called 'channel bits' that then get translated into actual logical 1s and 0s.

CDs have high data redundancy and there are several levels of error correction. A lot of bits can be damaged and yet the data will be read correctly. This is because it takes 14 channel bits to make up one 8-bit byte.

> **If you were to open the drive while it's working, you wouldn't be able to see the light**

UNDERNEATH YOUR CD

CDs have a single spiral track and are played from the centre to the edge. Different areas do different jobs.

Disc clamping area

TOC (4mm)

Data (33mm)

Lead (1mm)

Handling area (3mm)

APPLE CD-300E PLUS
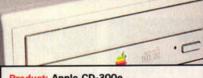
A double-speed SCSI drive, this is the mechanism that Apple supplied as the standard CD-ROM drive for Macs until the recent introduction of the new quad-speed models. It comes with a lot of Mac-specific software and cables, so you'll also need to buy a driver like *ExtenDOS Pro*, and a host adaptor (STs) or a SCSI cable (Falcons).

The back panel features the SCSI connections and ID-change switch, and more unusually, a pair of phono sockets

Now you too can pose with a drive emblazoned with a cute little Apple logo...

for audio output. It has the usual headphone socket like all drives, but the addition of the phono connections mean it's a

doddle to connect to your hi-fi for playing audio CDs. As you'd expect from a company with Apple's reputation, it's a very well-constructed drive and should run for a long, long time without problems.

Gasteiner can supply the CD-300e with whatever cables and drivers you need, or you can just buy the drive and add the rest yourself. It's 'only' double-speed, but it's a corker of a drive – solid and reliable, with a superb pedigree. Well worth a serious look.

GOLD SEAL OF APPROVAL ST FORMAT

Product: Apple CD-300e
Price: £299 for ST, £279 for Falcon
Contact: Gasteiner Technologies
Tel: 0181 345 6000
Min system: Any ST/TT/Falcon030

STF RATING: 95%
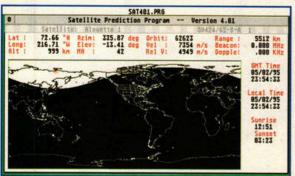
CD ROM
What about discs?

A shiny new CD-ROM drive isn't much use unless you've got some shiny new CD-ROMs to put in it. Don Maple digs out his English-German dictionary and looks at the latest ST-compatible discs.

ASTRONOMIE SOFTWARE SERVICE and JUPITER

At first glance these two discs would seem to be aimed at astronomy

This satellite tracking program is an example of the tools on these two 'out of this world' CD-ROMs.

buffs, but that's not quite the case. The star charts of the night sky, programs about satellite orbits, and gorgeous images of distant galaxies have broad appeal.

There is a certain amount of duplication between the two discs. *Jupiter* contains all programs from *Astronomie Software Service* plus all the newer files, but is missing the star charts. It also contains images of the recent plunge of the Shoemaker-Levy 9 comet into Jupiter, while *Astronomie* contains other celestial images.

Both CDs are bilingual –German and English – which is a refreshing change from other German CDs. They are also multi-format, with programs for both the Atari and the PC.

ROTH EDV takes credit cards, which should make direct ordering easy.

Product: Astronomie Software Service
Files: 10,517
Bytes: 651,628,576
Price: 98DM (about £45), plus P&P

Product: Jupiter
Files: 12,088
Bytes: 555,426,488
Price: DM59 (about £27), plus P&P
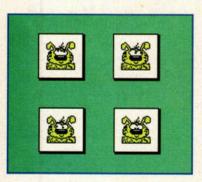
Contact: ROTH EDC
Tel: +49 221 840412

STF RATING: 92%

MAXON DEMO CD

Maxon Computer is a strong believer in *MagiCMac*, the Atari-compatible operating system which enables an Apple Mac to run Atari programs. This CD has been created to demonstrate *MagiCMac* first hand.

Maxon Demo CD can be read both from an ST and a Mac. From

The cartoon character Marsupilami is funny in any language. His eyes follow the mouse and he mumbles when you click on him.

the Atari side you get access to all the demo programs and other goodies on the disk.

From the Apple side you get a demo of *MagiCMac*. Start the program and all of a sudden the Atari files become available to the Mac as well. You can then try out both the demos and the *MagiCMac* itself. The CD also contains about 100MByte of textures, pictures and fonts that you can use in DTP and graphics programs.

The Atari demos comprise most of the professional software for which Germany is famous.

From *Calamus* and DA's *Picture* to *Papyrus* and *Harlekin*, there is something for everyone. The only problem for an English speaker is that it's all in German. Still, if you want to try out *MagiCMac*, the CD is very reasonably priced.

Product: Maxon Demo CD
Price: 25DM (about £12), plus P&P
Contact: MAXON Computer
Tel: +49 6196 481811

STF RATING: 83%

LOHRUM 3

Bernd Lohrum is the German guy who was brave enough to publish

the very first Atari CD-ROM. He was rewarded with well-deserved success and this third CD in the series maintains the high standards of

the first two volumes.
Like the others, this CD-ROM is a compilation with something for everyone. As is to be expected there are plenty of excellent PD and shareware programs as well as numerous graphic and sound files. The CD also contains the complete library of the Elmshorner Computer Club in Germany.

Breaking with the past, the files are only available in uncompressed form. On previous Lohrum CD-ROMs there was a

compressed backup but there was simply no room on *Lohrum 3*.

Although most programs are German in origin, the disc includes a selection of programs and files from all over the world. *Lohrum 3* is imported into the UK by System Solutions.

Product: Lohrum 3
Files: 22,389
Bytes: 458,361,111
Price: £24.95
Contact: System Solutions
Tel: 01753 832212

STF RATING: 93%

A blue mouse has a distressing experience in a FLI animation from the *Lohrum 3* CD-ROM.

DTP GRAFIKEN 1, 2 AND 3

DTP Grafiken, or 'DTP Graphics' in English, is a series of three CDs from Germany. They contain various copyright-free clip-art graphics for use in DTP work.
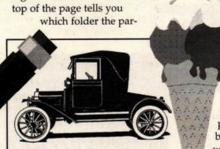
All the graphics are supplied in several formats. On *DTP Grafiken 1* the images are grouped into four folders matching the file formats CVG, EPS, IMG and PCX. The second CD has a similar structure but adds more formats, giving you CDK, CVG, EPS, GEM, IMG, PCX and TIF images. Each folder

is further subdivided by image subject.

The third CD reverses the system, separating the clip-art images into folders by subject first. Each image is then saved multiple times within the same folder, once in each format.

All three discs come with a manual showing all the graphics alongside their filenames, so you have a permanent catalogue. An indicator at the top of the page tells you which folder the par-

ticular image is stored in. This makes it very easy to select and find graphics on any of the CDs.

Other than the copyright notices, the manuals contain no text of any sort, and are in that sense multilingual.

All images are either black and white or greyscale, and they range in resolution across the three CDs. The graphics on the first CD tend to be low resolution, which is reflected in smaller file sizes.

Consequently the byte count of the CD is relatively low even though it contains roughly the same number of graphics as the others. The second CD contains higher resolution graphics, with the third being pretty much full to the brim. However, file size can be deceiving – vector graphics are relatively small but give you potentially the best image, because you can enlarge them without any loss of quality.

Rating actual images is very difficult because it's a

matter of taste. However, the range of subjects and number of graphics is so huge that there will be something for everyone.

Sometimes, but extremely rarely, the images reflect the German origin of the CDs. For example, there are several maps of Germany but none of the other countries, and occasionally there is the odd German sign. However, over 99 per cent of the graphics are international and you should not be bothered by this, or the German folder names.

Overall, all three CDs are recommended for anyone in DTP work, because they provide a huge range of copyright-free clip-art images on many subjects.

The three *DTP Grafiken* CDs contain a wealth of high-quality professional clip-art images for DTP work. All the graphics are supplied in several formats.

Product: DTP Grafiken 1, 2, 3
Files: 4,108 to 8,786
Bytes: 78,024,848 to 623,918,652
Price: DM79 each (about £35) plus P&P
Contact: Xware
Tel: +49 841 490660

STF RATING: 91%

MAXON COMPACT DISC 1

Maxon Computer from Germany has been a dedicated supporter of all things Atari for a very long time. The company publishes and distributes original programs and also

This Maxon Compact Disc shell program extracts disk data from the CD and saves it to your hard disk

maintains one of the largest PD libraries around. Now all those programs – the contents of over 700 disks – are available on a

single CD. Maxon has a comprehensive collection of ST software, but some programs are old and many are in German.

Instead of just scattering files all over the CD, the original PD disk catalogue order is maintained using a special format. This means that you can easily find any disk.

Using the shell program, you specify a disk or range of disks. The program then extracts the required data from the CD, decompresses it and writes it out to your hard disk, either into a folder reflecting the name of the disk, or anywhere you wish. A full catalogue database is also included, and a shell program for *Windows* is

supplied for people with access to a PC CD-ROM drive.

In addition the CD contains several working demos, Falcon programs and the full version of the Maxon hit *CrazySounds Junior*, which adds sounds to all your desktop actions.

Product: Maxon Compact Disc 1
Files: 2,091
Bytes: 408,260,030
Price: DM49 (about £23), plus P&P
Contact: MAXON Computer
Tel: +49 6196 481811

STF RATING: 85%

MISSION 1
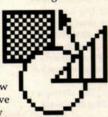
Mission 1 is a brand new German CD with a collection of programs, sound and graphic files for all Atari computers.

German programs predominate, although this is not necessarily the result of the CD being produced in Germany – the overwhelming majority of Atari programmers are German. Most dedicated Atarians already know this, and have learned how

to negotiate German menus (it's really not as difficult as you think), so this should not be a problem.

All programs on the CD have been tested for a virus using a program called *Poison*. In addition to many unregistered

PD/shareware programs, the CD contains a few full versions. There's also a large selection of

In addition to many programs, the *Mission 1* CD also contains numerous decorative fonts for use with *Calamus*.

fonts (*Signum* and *Calamus*) and graphics (*Thought Grafix*).

As a bonus, you'll also find 100MByte collections of 256-colour FLI animations and *Soundtracker* tunes (in MOD format). Finally, there's a LAST_MIN directory with 'just in' programs that arrived shortly before the CD went to press. All-in-all, a good start to what appears to be a new series.

Product: Mission 1
Files: 21,825
Bytes: 606,676,274
Price: DM49 (about £23) + P&P
Contact: Xware
Tel: +49 841 490660

STF RATING: 89%

OXYD MAGNUM
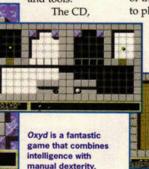
Oxyd Magnum is one of a series of classic German cult games. It runs in colour or monochrome, and on the Falcon, and requires both intelligence and manual dexterity.

You roll a marble around the screen, bouncing off various bricks. The floor under your feet may crumble, and touching a skull brick kills you instantly. When you hit a special brick a symbol is revealed. These come in pairs and you have to match them. This is not as simple as it sounds because you have to remember where the symbols are and solve puzzles along the way.

Having matched all symbols you get to the next level. The game gets progressively more difficult as various obstacles get in the way, but you also get different powers and tools.

The CD, which is multiple-format, also contains PC and Macintosh versions of the game. You can also choose to play in English, German or French, and additional levels are available separately.

Dongleware is currently negotiating with a British distributor, but in the meantime you can order directly by calling the number below.

Oxyd Magnum is sinfully addictive and a real classic – we definitely recommend it.

Oxyd is a fantastic game that combines intelligence with manual dexterity.

Product: Oxyd Magnum
Price: DM69 plus DM30 for P&P (about £45)
Contact: Dongleware Verlags GmbH
Tel: +49 6223 72113

STF RATING: 95%

GOLDEN OLDIES

ST FORMAT has (of course) kept up with the Atari CD-ROM explosion. Here are the CDs we've reviewed:

TITLE	ISSUE	RATING
GEMini Atari CD	58	72%
Lohrum 1 and 2	61	81%
Project Gutenberg	61	64%
Space and Astronomy	61	76%
Compo Power CD 1	66	89%

WHITELINE ALPHA

Delta Labs is a German company that is very active in the Atari world, and *Whiteline Alpha* is the first in what is to be a new series of Atari CD-ROMs. At the time of writing, *Gamma* is just about to hit the streets (there will be no *Beta*).

Whiteline is one of the better compilations, drawing on the complete and rich Delta Lab catalogue. In addition to the complete PD library of 134 disks, the CD also contains several full shareware programs, including *Before Dawn* and *BoxKite*. By purchasing the CD you also get the right to use these shareware programs.

And then there are fonts: 200 *Signum*, 500 TrueType, 300 *GDOS* and 500 *Calamus*. As is becoming common, *Whiteline* also has a user-friendly front-end program to help you browse through the CD.

Overall, it is one of the better CD compilations, but, like practically all CDs today, it's German… so get out that dictionary again.

The *Whiteline* series is being imported into this country by System Solutions.

...but it's all in German, adding a certain 'so, what will this one be?' ambience.

Whiteline Alpha comes with a user-friendly catalogue program...

Product: Whiteline Alpha
Files: 14,863
Bytes: 434,175,185
Price: £39.95
Contact: System Solutions
Tel: 01753 832212

STF RATING: 93%

PHOTO SHOW PRO and SARA

Just as we were going to press two new programs arrived, not from Germany, for a change, but from over the pond. It's All Relative is an American company still in the business of publishing original Atari software – and it gets ten out of ten for originality.

Photo Show Pro is a program to play Kodak's Portfolio CD-ROMs. This is Kodak's multimedia system – it combines images and music into flexible presentations. Kodak only produced software for *Windows* and the Mac, but *Photo Show Pro* does the job for those of us with Atari machines. It comes in Falcon and STE/TT versions.

Even more interesting is *SARA*, the search and retrieval software. Basically, it makes CD-ROMs made for other platforms available to Atari owners.

Unfortunately there are no standards in retrieval software so access to each new CD-ROM must be customised. Among those already supported are *Wayazata World Facts Book*, *Sherlock Holmes on Disc* and *Powerhouse Art History Encyclopedia*.

Both programs require the ExtenDOS Pro CD-ROM driver – see the full review in last month's issue – with extended audio support. In this country It's All Relative products will be imported by 16/32 Systems. For latest news and pricing call ☎ 01634 710788.

Kodak's *Photokina* CD can now be accessed on an Atari using *Photo Show Pro* from American company It's All Relative.

COMING SOON...

As we were writing this special, new Atari CDs and announcements kept flooding in. Here's a sample of what we will be reviewing in future issues:

Bernd Lohrum 4: The latest offering from the man who produced the very first Atari CD.
Whiteline Gamma: Another CD full to the brim with PD programs, including seven fully-registered shareware gems.
Transmission CD: The ultimate demo CD, including the latest throbbing Falcon wonders.
Linux/68k: The latest release of this popular UNIX derivative for Falcons, including a fool-proof installation program.
Publisher's Source: Over 200 images for DTP work, all available both in colour and greyscale.
Bingo!: Yet another collection of PD programs...
Wow!: Numerous fonts and clip-art images for use in DTP.
Data Mania: 3,000 TrueType fonts.
PowerOn: Multimedia galore, including MOD sound files, MPEG/FLI/FLC films and lots of lovely pictures.

Eagle showcase

GeSoft's Atari-compatible bird has finally landed. Armed with oven gloves, Don Maple takes a good look at this hot new machine.

GeSoft's German Eagle in all its glory.

A s Atari carries on ignoring the computer market it created, independent third-party development continues by leaps and bounds. The latest hardware to hit the streets is the Eagle, shown at the ProTOS show in Bonn late last year, and more recently at the Paris Atari Show (*STF* 71, Show Report).

Gone is the attractive grey cube case, because unfortunately it's no longer being manufactured. The German Eagle pictured here is housed in a standard PC mini case instead. The British Eagle may look different again, depending on what design of case Gasteiner, the British importer,

> Eagle's motherboard was reduced to gigantic I/O board with slots for everything

chooses for it. To keep down the cost, Gasteiner will import only the bare basics. Only the motherboard and daughter cards will come from the land of the rising Deutschmark – everything else will be sourced locally.

The hatchling

The idea for the Eagle was hatched in August 1993. Atari had stopped production of the TT, leaving many German power users without a replacement. They demanded either expansions to the TT, or a new computer with expansion slots and a flexible bus system. Upgrading would then be a matter of replacing individual cards rather than having to buy a whole new machine every time.

GeSoft started by creating a flexible motherboard which was processor- and bus-independent. After that it was easy to get a minimum working system by adding the graphic controller and memory cards. These had to be separate, said Peter Konrady of GeSoft, "because every six months there's a new graphics card and people also want more memory." With both of these on separate cards, users can upgrade at will. "In other words," continued Peter, "Eagle's motherboard was reduced to a gigantic I/O card with slots for everything from processor and memory to keyboard and MIDI."

For the buyer this flexible approach offers other advantages, too. There's no need to buy everything at once – instead, you order your computer 'a la carte'. You can start out modestly with an inexpensive base system, and then upgrade as you go. This also means that someone doing DTP work could concentrate their funds on the graphic card and leave out sound completely. On the other hand, a musician would go for maximum MIDI support instead of worrying about TrueColour.

Ruffling the feathers

Three of the internal slots must contain cards with the processor, graphics circuitry and memory. These are also the three cards available today.

The processor card in the first few German Eagles has the 68030 processor used in the Falcon and TT, but all British machines will have a 68040. The RAM card can take up to 256MByte of TT RAM and up to 14MByte of ST RAM. At this time these are normal RAM SIMMs, although next year a PS/2 RAM card upgrade is planned. Finally, the third card is a VME card (the VME bus is where the graphic card connects to). The Eagle currently comes with the Supernova card.

There is no BLiTTER in the Eagle, although it's theoretically possible to add one on an Atari-compatible graphics card. However, available ▶

The new machine exhibits a high degree of compatibility, as demonstrated by its ability to run the *Ease* desktop shown here.

graphics cards for the Eagle outperform the BLiTTER already.

Eagle's motherboard is capable of taking two sets of ROMs. Normally, one set would be the Atari ROMs with TOS 3.06 (the TOS 2.06 look-alike designed for the TT), while the other set can be almost anything. This second set is 32-bit wide and can, for example, be populated with Apple Mac ROMs. They must still be incorporated into the system, but it is theoretically possible to dynamically switch between two operating systems.

Soaring high

Who says Atari computers are dead? Actually the talk is no longer of Atari computers but of Atari-compatibles. The same thing happened in the PC market where PC-compatibles are all the rage today while IBM, the originator of the PC, is struggling to survive – and even bringing out its own compatibles.

New Eagle developments in the months to come will concentrate on various cards. There will be a processor upgrade to the top of the line

> ### It is theoretically possible to dynamically switch between two operating systems

Motorola 68060 processor, as well as a card with a PowerPC processor in November. Also planned for November this year is a card with the PCI bus controller. Finally, a DSP card will make the Eagle more Falcon compatible.

Like all good ideas, the Eagle concept is simple yet ingenious – it makes you wonder why nobody else thought of it first. The future-proof Eagle is certainly an object of desire for professional users and serious Atari fans alike.

The British Eagle may look different from the German version, as Gasteiner will source the case locally.

ON THE BUSES

What makes a computer unique? The answer depends largely on who you ask and what you do with it. However, suppose you want to get to the heart of the matter. Could it be the operating system? Not really, because different computers can run different operating systems. Surely then it must be the processor? Not quite, because computers with the same processor – say, an Amiga and an Atari – are quite different.

No, fellow ornithologists, it's the bus. When two computers are compatible on the bus level everything else falls into place.

The Eagle Bus created by GeSoft is not only Atari-compatible but also extremely flexible. The Eagle can take different processors or emulate other buses, which makes it future-proof. For example, the PCI bus, common in the PC world today, can easily be realised with the Eagle bus. In practical terms this means being able to plug

The Eagle bus in action, with the bottom three slots free and the RAM card on top.
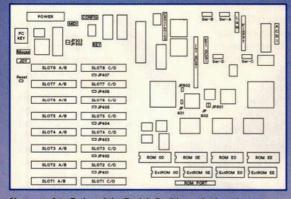
in all those fancy PCI cards. Naturally, you would also need appropriate drivers.

The heart of the Eagle, and also the most expensive part, is the custom chips specially designed by GeSoft. The FPGA (Field Programmable Gate Arrays) chips are conceptually similar to EPROMs (Programmable ROMs) in that programs can be stored on them. However, the 'programs' on FPGAs are really logical gates, which is an even lower level of programming than normally used on ROMs. The Eagle has five of these chips, which control the logic within it. There is also one on the RAM card.

If the expensive FPGAs are equivalent to EPROMs, why don't GeSoft use ASICs, which are the cheap ROM equivalent of FPGAs? Using ASICs could bring the price of the Eagle down quite considerably.

The answer is quite simple. It's a matter of scale. In small numbers the initial costs for ASIC production are far too high. Once the Eagle starts selling in very large numbers then such a move would be feasible.

The Eagle comes with eight slots. Even though they use the standard PC connectors, the signals on the Eagle bus are quite different. GeSoft will supply information about the bus, including circuit diagrams, to anybody who wants them. This refreshingly open approach will make it possible for anyone to design new custom cards for the Eagle.

Above, an A to Z plan of the Eagle's flexible motherboard.

The Eagle can take two operating systems on two sets of ROMs. At the top, TOS, and at the bottom, an alternate OS on 32-bit ROMs.

B	Signal	D	Signal		A	Signal	C	Signal
B1	VCC	D1	DS		A1	VCC	C1	AS
B2	VCC	D2	SIZ0		A2	VCC	C2	RW
B3	GND	D3	FC0		A3	GND	C3	SIZ1
B4	GND	D4	FC2		A4	GND	C4	FC1
B5	A1	D5	DSACK0		A5	A0	C5	STERM
B6	A3	D6	BERR		A6	A2	C6	DSACK1
B7	A5	D7	IPL1		A7	A4	C7	IPL0
B8	A7	D8	AVEC		A8	A6	C8	IPL2
B9	A9	D9	BR		A9	A8	C9	IPEND
B10	A11	D10	BGIN		A10	A10	C10	BGOUT
B11	A13	D11	CBREQ		A11	A12	C11	BGACK
B12	A15	D12	CIIN		A12	A14	C12	CBACK
B13	A17	D13	POR		A13	A16	C13	RESET
B14	A19	D14	GND		A14	A18	C14	GND
B15	A21	D15	-12V		A15	A20	C15	-5V
B16	A23	D16	SYS2		A16	A22	C16	SYS1
B17	A25	D17	SYS4		A17	A24	C17	SYS3
B18	A27	D18	SYS6		A18	A26	C18	SYS5
B19	A29	D19	VME1		A19	A28	C19	SYS7
B20	A31	D20	VME3		A20	A30	C20	VME2
B21	D1	D21	VME5		A21	D0	C21	VME4
B22	D3	D22	VME7		A22	D2	C22	VME6
B23	D5	D23	GND		A23	D4	C23	VMEIACK
B24	D7	D24	RES1		A24	D6	C24	RES0
B25	D9	D25	RES3		A25	D8	C25	RES2
B26	D11	D26	RES5		A26	D10	C26	RES4
B27	D13	D27	RES7		A27	D12	C27	RES6
B28	D15	D28	RES9		A28	D14	C28	RES8
B29	D17	D29	RES11		A29	D16	C29	RES10
B30	D19	D30	RES13		A30	D18	C30	RES12
B31	D21	D31	RES15		A31	D20	C31	RES14
B32	D23	D32	GND		A32	D22	C32	GND
B33	D25	D33	GND		A33	D24	C33	GND
B34	D27	D34	GND		A34	D26	C34	CLK32
B35	D29	D35	GND		A35	D28	C35	GND
B36	D31	D36	GND		A36	D30	C36	GND
B37	GND	D37	GND		A37	GND	C37	CLK50
B38	GND	D38	GND		A38	GND	C38	GND
B39	VCC	D39	GND		A39	VCC	C39	GND
B40	VCC	D40	GND		A40	VCC	C40	GND

J1

These pinouts of the Eagle slots will be provided to anyone who asks for them, to facilitate third-party support.

A bird in the hand

Shortly after Don spoke to them, Frank Charlton caught up with GeSoft's Peter and Gero at Gasteiner's English headquarters.

While Peter and Gero were in England, we had the chance to spend a day in London inspecting the Eagle.

As mentioned earlier, much of the UK Eagle will be sourced and assembled in Britain by Gasteiner. The model on show was built into an attractive and solid PC tower case. A look inside would have fooled most people into thinking they were viewing a PC, since the Eagle's processor, graphics and RAM cards sit upright in standard slots on the motherboard. The assembly quality was very high, and the machine looked and felt very professional.

A look at the back revealed a multitude of ports, including the usual serial and parallel ports. Peter told us the Eagle is capable of supporting multiple serial ports, although he envisaged that most buyers would be happy with one. Since the case design won't allow all the ports to be connected at once, he told us that he and Gasteiner would be happy to discuss individual requirements – a BBS SysOp might want a few extra serial ports, for example, and this could be accommodated.

The Gasteiner Eagle is supplied with a standard 102-key PC keyboard, and any AT keyboard (that is, from a 286 PC or above) can be used – these are far cry from the spongy membrane keys we're used to on the ST and Falcon. Gasteiner is also supplying

a Samsung multisync monitor which has a rock-steady display

The internal hard drive in the model we saw used a 720MByte Quantum Lightning SCSI mechanism – the same basic drive used in System Solutions' MaxiS models (*STF 70, 97%*). The final decision on drives has yet to be made, but the Eagle's open nature means this could probably be sorted out at the time of purchase. The driver software, an updated version of GeSoft's own, comes with the standard formatting and partitioning utilities.

The fast lane

We spent a few hours plundering software from Gasteiner's stockroom and installing it on to the Eagle's internal SCSI hard drive. We've all seen how *MultiTOS* can slow down even an accelerated machine, but on the Eagle, *MultiTOS* wasn't noticeable at all. We had to double-check just to make sure it was there.

The raw speed of the machine – even the 68030 model we used – means multitasking is a very viable option, especially given the amount of memory the Eagle can handle.

The machine performed admirably with five or six applications working simultaneously under *MultiTOS*. A marvellous feat, considering that it's a third-party machine. We expected some problems, but were happy not to find any in our limited tests.

Sluggish programs like

> The open design, and GeSoft's very positive attitude, make the future look bright

TruePaint – not particularly fast even on a 32MHz Falcon – showed an impressive turn of speed. Manipulating huge 256-colour images showed how speedy the Eagle is, even compared to a TT.

The future...

At last the Atari market has a machine with an open and easily expandable architecture. The DSP card – expected later this year – promises full compatibility with programs which are currently Falcon-exclusive, such as *Cubase Audio*. Depending on the final price of this card, the Eagle could become a serious player in the professional direct-to-disk recording world, especially given the current price of the C-Lab Falcon Mk2 (about £3,500). Whereas C-Lab's machine is essentially existing technology repackaged for a very specific market, the Eagle is an innovative design with the bonus of full Atari compatibility.
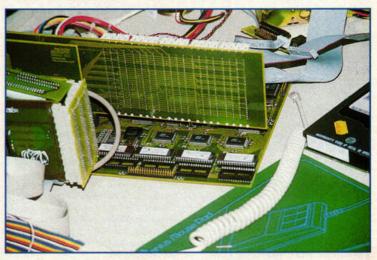
Gasteiner's commitment to the Eagle seems solid, and its working relationship with GeSoft dates back to the days of its first hard drive kits. The imminent arrival of the 68040 and '060 cards is also an exciting development.

The open design, and GeSoft's very positive attitude, make the future for this bird look bright. As Peter Konrady himself said, if they'd been able to get the Eagle on to the market just a year earlier, it could well have sold by the truckload. As it stands, a lot of dedicated Atari users have defected to the Mac and PC platforms.

However, there are a lot of us left who hanker for real power and don't want to throw away years of experience and money. We only had a day to play with the Eagle, but still came away impressed. We should have a machine for a full hands-on review soon, so watch for the definitive conclusions in a future *ST FORMAT*. *stf*

Here you see the 'naked' German Eagle from the memory card side.

Peter Konrady (pictured here) and two other partners co-founded GeSoft in 1986 with the idea of writing software for the then new and exciting ST computer. They had a spreadsheet in mind, but instead they quickly diversified into control systems. Peter also had a store which sold Ataris, which is how he first got in touch with Gero Anschuetz, the Eagle's designer.

This is the still-naked German Eagle from the opposite, ROM slot side.

C-Lab Falcon Mk2

All aboard for 16-track direct-to-disk recording. C-Lab's Falcon Mk2 was designed specifically to meet the demands of *Cubase Audio*.

Behind this deceptively ST-like exterior lies a beast of immense sequencing and digital recording power. So why didn't they re-design the case to reflect this?

S ome would say a Falcon is just a Falcon, but people in the know are having to accept that now there are Falcons and *Falcons*.

The machine causing all the interest is the new C-Lab Falcon Mk2. It is designed specifically to meet the exacting standards of modern direct-to-disk recording software and is being aimed at musicians. The package includes a high-end sequencer and 16-track direct-to-disk recording facilities.

Why a C-Lab Falcon?

Externally and in normal use the C-Lab Falcon will operate as any Falcon would. However, there are a number of differences. For starters, you will notice that you have loads of memory free because it is fitted with the 14MByte RAM upgrade as standard. The internal IDE interface has been ripped out and replaced with a fast SCSI interface, enabling the fitting of a

high-quality audio-compatible 500MByte SCSI hard drive.

The audio input and output circuitry has been upgraded as well, giving up to 15dB less noise on the system. The microphone input has been modified to be a line level input, although it still uses a stereo mini-jack socket. An upgraded analogue to digital (AD) converter has been added which sharpens up the sound quality considerably.

The clock speed has been increased to 32MHz, and it has a nice shiny C-Lab Falcon badge on the top of the case.

Most importantly, the whole system is soak-tested for 24 hours with *Cubase Audio 16* to make sure that your Falcon really does work properly for direct-to-disk recording. On the whole, musicians do

not want to buy a standard Atari Falcon and take a chance on getting it upgraded to work well with *Cubase Audio*. They want a properly guaranteed unit that can be put to work straight away. This is what the C-Lab Falcon offers.

Flying high

The entire point of the machine seems to be to run just one program – *Cubase Audio 16*. Thankfully, C-Lab has been completely successful and the Falcon Mk2 runs *Cubase Audio* very efficiently. The screen updates are slower than expected, particularly when working on audio-intensive pieces, but this is helped considerably by running *NVDI 2.5* at boot-up. The other boon of *NVDI* is that it improves the font in which *Cubase* displays its text. We are, however, left with the feeling that *Cubase Audio 16* would benefit from a further injection of speed.

Audio playback is crisp and virtually hiss free. The only audio hiss noticable was from the samples themselves. The Falcon's Digital Signal Processor chip (DSP) does a superb job with incoming audio, and can add reverb effects in real time at better than CD quality. Once sampled, the sounds are easy to edit and adjust till they give exactly the right effect.

Backing up

Because of the sheer size of the sample files you will create using *Cubase Audio*, it is entirely possible that one song will fill all the available space on the supplied 500Mbyte hard drive. In order to

> **The entire point of the machine seems to be to run just one program – *Cubase Audio 16***

See, it really is different from the Atari Falcon. Well, the badge is different...

start a new song without losing the data from your previous one you will need to use the Falcon Digital Interface (FDI) and a Digital Audio Tape (DAT) machine. Using a simple program you can store the hard disk files as pure data on the DAT machine. On a standard 120-minute tape you may expect to store around 1Gbyte of data. This can make switching between different pieces a relatively slow process. This is the system's biggest drawback, but you can work around it with a little planning.

Falcon power

Cubase Audio is also available for the Apple Macintosh, so why run it on a Falcon? The answer is simple – value for money. If you are starting from scratch, the Falcon direct-to-disk setup will cost you around £3,500. You would have to

This is the business end of the Falcon. The Falcon Digital Interface plugs in the DSP port on the left and provides a link between your Falcon and the rest of your music setup.

DIRECT-TO-DISK RECORDING

Up until recently, all multitrack recording was done using magnetic tape in one form or another. Even digital recordings use tape to store digital information. Direct-to-disk recording actually stores all the audio data on a big hard disk as if it were a series of huge samples, which is exactly what it is.

Normally you would sample into the RAM of your computer, edit the sample, save it to disk, and then load it back into RAM ready for use. However, CD-quality samples are immense, so this is not possible for professional-quality recording unless you have at least 400MByte of RAM fitted to your machine – impossible on an

Atari and prohibitively expensive in any event.

Direct-to-disk recording passes the samples through a RAM cache and then on to the disk. With just 14MByte of RAM the process is smooth and the disk acts like a large bank of virtual memory. On a 500MByte hard disk you can expect to store up to 12 minutes of 16-track audio. As well as being much more flexible than a tape system, this actually works out much cheaper. Data can then be easily transferred to Digital Audio Tape (DAT) for later retrieval and remixing. When everything is complete the audio can be mixed down and mastered on to DAT in the normal way.

The C-Lab Falcon Mk2 will run all the software that has made the Falcon attractive as a graphics computer – however you'll need to add a colour monitor. Here you see *Imagecopy 3*, *Apex Media* and *Studio Photo* in action.

The C-Lab Falcon Mk2 was designed primarily to run *Cubase Audio 16*, which it does very competently. *Cubase* itself is awesome in action.

The Falcon Digital Interface is a fibre optic and coaxial digital link with your DAT machine or other digital gear. It enables you to back up your hard drive to DAT and access your DAT machine's AD converter.

at least double that figure to do the same thing with a Macintosh. Add to that the extra features that *Cubase Audio 16* has on the Falcon – such as time-stretching samples, real-time digital reverb and three channel parametric EQ – and you have a world-beating package.

The big picture

There is a new generation of digital tape recorders on the market. Typically an eight-track model costs around £3,000. Whilst these are true digital machines, they rely on magnetic tape to store the data so they do not offer the fast access

to all parts of a song that a hard drive can. Because they store data in a linear fashion they are not as flexible in use as a direct-to-disk system. The C-Lab Falcon package compares very favourably with this because you get all the extra flexibility and features, plus a fully fledged computer which can also perform a multitude of other tasks, such as word processing, desktop publishing and graphics manipulation.

> Audio playback is crisp... the only audio hiss was from the samples themselves

The FDI

The FDI plugs directly into the DSP output and acts as a DAT or CD interface. It is not only useful for backup purposes, but also for using the AD converter on your DAT machine in preference to the one fitted to the Falcon. It enables input from pre-recorded DAT and signals passed through the DAT machine, as well as a final channel through which to mix down through when the track is finished.

Finally...

The Falcon Mk2 is a well-made and reliable machine. It comes with a full one-year guarantee for both the computer and the accompanying software and hardware. If you are a musician or recording engineer wanting to get into direct-to-disk recording without spending too much, the Falcon Mk2 is cheap, efficient and reliable – it's almost too good to be true.

If you are a die-hard Atari enthusiast you may not be as tempted by the complete package, preferring to buy an Atari Falcon and upgrade it to audio specification. This is by far the cheaper route, but if the Falcon is to make in-roads into the semi-professional and professional markets, we cannot expect everyone to do this. The complete functionality of the C-Lab Falcon Mk2 package makes it a very necessary product, and

The C-Lab Falcon Mk2 package provides everything you need to enter the glamorous world of direct-to-disk recording. The software is excellent and, compared to other platforms, the price is very tempting.

one that should sell well through music stores. *stf*

ANDY CURTIS
Thanks to Rob Meek at Sound Control in Newcastle for letting us put his demonstration C-Lab Falcon package through its paces.

Product: The C-Lab Falcon Mk2 Musician's Package
Price: £3,523.82
Contact: Sound Control Hi-Tech
Tel: 0191 232 4175

AUDIO-COMPATIBLE DRIVES

Ever since the first abortive attempts to get an Atari Falcon to work with direct-to-disk recording software there has been some controversy about which drives do or do not work with audio applications. It is often claimed that if you get hold of a drive with a sufficiently fast access time then all will be well. However, the truth is a little more involved than that.

The problem with direct-to-disk recording is that it requires a continuous stream of data to be written to the disk without interruption. This continuous access of the drive can cause some read/write heads to

overheat. A thermal cut-out on the drive will then lift the head off for a fraction of a second in order to let it cool down, interrupting the write process.

One solution is to use a drive that will stay in write mode no matter what. This means expensive drives of very high quality. The other solution is to use a Falcon with 14Mbyte of RAM fitted, in which case there is always enough free memory to buffer the disk read/write process. This takes the pressure off the drive. On a C-Lab Falcon all this is tested before they leave the factory, so you can be sure your computer will do the job.

Digital Awareness is distributing the C-Lab Falcon package and you can expect to find it in your local music store. Here's what you get for your money:

● The C-lab Falcon Mk2 itself
● The Falcon Digital Interface
● A 14-inch mono monitor
● *Cubase Audio 16 v2*
● A complete set of cables

STF VERDICT

C-Lab Falcon Mk2

HIGHS
■ Guaranteed to work with *Cubase Audio 16*
■ Internal SCSI drive

LOWS
■ DAT backup is rather slow
■ Mono monitor

In short...
A cheap and efficient all-in direct-to-disk recording package. Great kit, great value. **91%**

DeskJet 540

Changing DJs quicker than Radio 1, Hewlett Packard launches another mono inkjet printer. This one can be persuaded to print in colour, too.

GOLD SEAL OF APPROVAL · ST FORMAT

Hewlett Packard's new DeskJet 540 is a departure from the familiar lump we knew and loved. Suddenly it's all smooth lines and rounded corners.

Many ST owners have a DeskJet – it's probably the most popular inkjet printer ever made. Hewlett Packard introduced the DeskJet range in 1988, and there have been many different models since. We've looked at most of them in *ST FORMAT*, and have always given them top marks for reliability and good quality print at reasonable prices. Most ST software works well with DeskJets, and the more expensive models can print in colour.

HP's backroom boys have recently given their old workhorse a complete makeover. The result is the DeskJet 540.

Smooth curves

Opening up the carton, you notice straight away that the usual square stone doorstep has been replaced by a rounded, compact shape.

HP calls the new chassis 'industrial design' and says the remodelling is not just cosmetic – the printer incorporates a number of improvements over the DeskJets 520 and 500C it replaces. These include a better paper handling system, new firmware, quicker processing, faster firing of the inkjet cartridge and a on-board RAM of 512K.

Setting up is easy. Just plug the power lead to the mains, and link your parallel printer cable to the ST. There are only two illuminated control switches, in contrast to the proliferation found on previous models, and no DIP switches. Settings and font selection are controlled through software.

This makes the printer simple to operate, but it's less versatile than earlier models, and everything is more dependent on suitable printer drivers being available. Arnor is writing a new DeskJet 540 driver for *Protext*, and other publishers will no doubt follow suit.

Glorious colour

The printer comes complete with a mono inkjet cartridge, black ink being ideal for text. If you want to print in colour, just swap the black printhead for an HP colour cartridge. This isn't supplied as standard, but for about £35 you can buy the optional Colour Kit, which comprises a three-colour printhead cartridge and a nifty storage container to accomodate it.

Hinge up the top cover on the DeskJet 540 and the printhead travels to the centre, enabling you to snap out the mono cartridge and pop the colour one into place.

Under your software's control the cyan (light blue), yellow and magenta (pinky red) inks combine to produce the illusion of many different colours. Although the DeskJet 540 cannot simultaneously print black for fully professional results, it gives a passable imitation with the very dark brown produced when all three colours are mixed.

More expensive DeskJets have both the colour and black cartridge printing side by side, but the 540 only lets you have one cartridge at a time. Some software (such as *Imagecopy*) enables you to print the colour elements first, then change cartridges and overprint your page with the black, giving better results.

Testing times

Using *Protext* to output our *ST FORMAT* test page (sixty lines of text on an A4 page), the new DeskJet took about a minute to finish the job. The quality was very good, but printing was no faster than previous models. To test the printer's graphical abilities, we tried a mono DTP page from *PageStream*, and some colour printouts from *Imagecopy*. The printouts were excellent, and printing was very fast at just over two minutes for an A4 page of text and graphics. The colour results were up to the high standard of earlier and dearer DeskJets.

This new machine will suit most users perfectly. With HP's name and backup you can't go wrong, and the street price is already falling. *stf*

PETER CRUSH

> The usual square stone doorstep has been replaced by a rounded, compact shape

Built-in Fonts

CG Times	Univers	Letter Gothic	Courier
CG Times Bold	Univers Bold	Letter Gothic Bold	Courier Bold
CG Times Italic	Univers Italic	Letter Gothic Italic	Courier Italic
CG Times Bold Italic	Univers Bold Italic	Letter Gothic Bold Italic	Courier Bold Italic

The DeskJet 540's black text is sharp and clear, and there are plenty of built-in fonts.

Colour printing (using *Imagecopy*) is up to HP's usual high standard.

This *PageStream* flyer, complete with graphics, printed out quickly and the result is very acceptable.

Product: DeskJet 540
Price: £275
Contact: Hewlett Packard
Tel: 01344 369222
Min system: All STs, parallel printer cable required

SPECIFICATION

Size: 436mm wide, 199mm high, 405mm deep; weight 5.3kg.
Fonts: Courier, CG Times, Letter Gothic and Univers, all in upright, italic, normal and bold, in a range of point sizes mostly up to 14pt.
Media: Built-in auto-sheetfeeder handles 100 pages of A4, Letter or Legal paper, 20 envelopes, 30 cards, transparencies.
Resolution: Via HP PCL Level 3 codes gives 300 x 600 dpi for text, and 300 x 300 dpi for colour graphics output.
Power consumption: 2W when on standby, 12W when printing.

STF VERDICT

DeskJet 540

HIGHS
- Excellent mono entry-level machine
- Converts to colour easily
- Three year warranty

LOWS
- Cartridge swapping needed to get full CMYK printing
- No DIP switches, only controllable by software

In short...
This budget-priced, high-spec machine deserves to be a very popular printer **91%**

TUS HD module

Double the amount of data you can store on a disk with an easy-to-install high density floppy drive module from The Upgrade Shop.

One of the easiest and most cost effective ways to enhance the performance of your ST is to fit a high density (HD) drive. Unfortunately, you can't just change the drive mechanism. You will need to fit a component on to your ST's mother board to make the upgrade work properly.

The Upgrade Shop appears to have come up with a very elegant solution to this problem. The TUS HD drive module is compatible with a wide range of STs – basically everything from a TOS 1.4 machine upwards. It is also the only package we have seen which supports an external HD drive as well as an internal one.

The benefits

So why do you want a HD drive in the first place? The answer is that you don't absolutely need one, but they can make life a great deal easier for you when it comes to jobs like backing up your hard drive, where the number of disks you use can be cut by over 50 per cent.

This tiny module is the heart of the HD drive setup. It contains everything you need to enable your ST to work with an HD drive.

If you run a floppy-only system the amount of data you can store on a disk becomes vital. Many current packages are very large and some, such as *Cubase*, struggle to fit on one double density (DD) floppy with all modules installed. The extra space can also be useful for storing extra fonts on your program disks. High density really is the answer if you can't afford to invest in a hard drive.

Installation

You will need to strip your ST right down to its circuit board, and be prepared to do some soldering as well. Don't worry, though, because the manual explains each step you need to perform in detail. Although scant on pictures, it is very clear and concise in all its explanations. So long as you have done some basic soldering, you will find this upgrade easy to carry out.
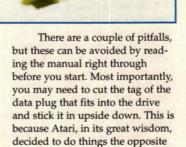
> **So long as you have done some basic soldering, you will find this upgrade easy**

This rather elegant device is an external HD drive. It has been modified with an extra lead so that it can be plugged into your upgraded ST.

There are a couple of pitfalls, but these can be avoided by reading the manual right through before you start. Most importantly, you may need to cut the tag of the data plug that fits into the drive and stick it in upside down. This is because Atari, in its great wisdom, decided to do things the opposite way round from the rest of the world. However, so long as you read the manual, all will be well.

If you don't fancy messing with your ST's innards, The Upgrade Shop also offers a reasonably-priced installation service.

A small proportion of STs cannot be upgraded. If, for some reason, your ST fits into this category TUS offers a no-quibble ten-day money-back guarantee as long as the package has not been damaged or modified in any way.

Software support

The Upgrade Shop has gone to great lengths to make sure that the software supports TOS versions as low as 1.4. Below this the results are inconsistent, so 1.4 is recommended as the lowest TOS version which can be used.

The software does two fundamental things. It installs a cookie (see Jargon boxout) to let your ST know that there is a high density drive attached, and it sets the step rate for the drive to 6ms. It is very easy to use and it performed competently for us. An

HD disk formatting program is also supplied with the module.

External drives

The TUS HD drive kit can be supplied with an external drive, making it the most adaptable of kits currently available. You can even install two HD drives – one internal, one external – if you want to go the whole hog. This certainly facilitates disk copying. *stf*

ANDY CURTIS

JARGON

TOS: Stands for (and is) The Operating System of your ST.
Step rate: The rate at which the ST accesses a floppy drive. It is normally set to 3ms for a double density drive.
Cookie: A piece of system information installed at boot-up.

Product: TUS High Density Module
Price: Internal drive £58.00, external £79.99, both £109.99
Contact: The Upgrade Shop
Tel: 01625 503448
Min system: Almost all STs with TOS 1.4 or above

This is where the module fits on to the circuit board of your ST. The manual makes it very clear which way round to put it.

HIGH DENSITY DISKS

It is important to use good quality high density disks because the ST is not as tolerant as Macs and PCs. Your ST was not designed to work with HD disks and problems will be encountered if you use cheap disks – so buy branded ones that have a guarantee with them.

It is worth noting that HD disks do not last as long as their double density counterparts. Nor are they a 'super' disk that is better than a standard DD disk. If you format an HD disk as DD you are very likely to find that the format is unstable.

We do not recommend drilling holes through DD disks (or cutting off the corners) to force your drive to recognise them as HD disks. The particle density of the DD disks is different and will struggle to support a HD format.

STF VERDICT • STF VERDICT • STF VER

TUS HD Module

HIGHS
- Well-finished components
- Easy to fit
- External drive available

LOWS
- The manual would benefit from more pictures and diagrams

In short...
A well-constructed and reliable upgrade package that is easy to fit and use.

92%

Thought! 2.2

Armed only with the latest version of *Thought!*, ST FORMAT enters the esoteric world of structured design. What's that? Read on...

Thought! has a nifty customisable desktop which looks great in high res (800x600).

Existing *Thought!* users will be pleased to see this capable new version of the 'ideas processor', but the rest of us are still scratching our heads over just what it does. The answer is in the title: *Thought!* is a hybrid product designed to ease the thinking process.
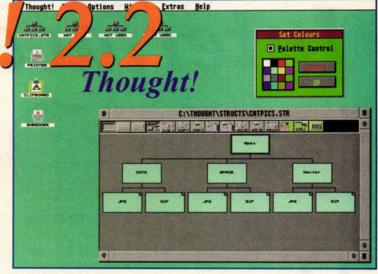
That may sound a bit dull, but this new version of *Thought!* is much better looking than its predecessor and shows real potential (if you want the low-down on the original version, see STF 57). It has reached the level of more costly PC-compatible programs, while retaining and improving on the functionality of the original.

What's new?

Apart from the lovely customisable colour interface on the Falcon and TT, most of the changes in this version are behind the scenes fea-

tures. You can now output a structure's contents as a textual list – using the Generate option – rather than just as the diagram. This means that once you have designed a program, for example, you can produce the code listing directly from the symbolic chart with very little extra effort.

Linked files can be included in this operation, making it easy for writers using *Thought!* to plan out plot lines or story threads to output the finished opus at the click of a mouse.

Templates are now available to customise the data entry properties of a symbol, making it easy to create a simple set of database fields instead of just a text note. This feature becomes even more useful when combined with the ability to call other programs from *Thought!* by linking them to symbols. Thus you could create a

family tree complete with pictures of your favourite relatives by storing the filenames along with the title and comments and linking in an image viewer program. Clicking on an individual data symbol would then display the image directly.

Many programs can be executed (via a command shell), including some non-GEM applications like *APEX Media*.

Roll your own

The most intriguing improvement is the new macro language: a set of commands which allow you to program individual symbols with various actions. The language consists mainly of text-processing commands, but could be used to produce queries on the data represented by the tree structure.

In the example of the genealogical tree, this could be used to traverse a particular bloodline, trace the line of descent and output family details to a formatted report. However, some effort might be required in order to get the results you want.

In short

Thought! is a unique product on any computer, and its existence is a testament to the versatility of the Atari range. It has a wide range of applications, and will be genuinely useful to anyone whose work requires a structured approach. However, the cerebral nature of the software
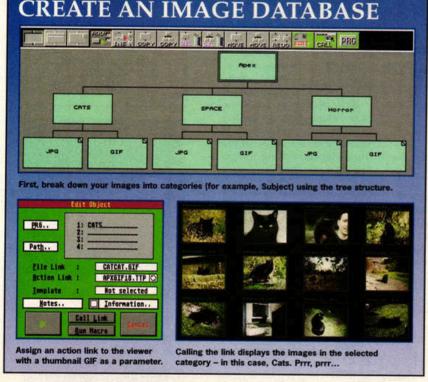
may deter casual users.

Although the manual contains lots of ideas for using *Thought!*, some of these are over-optimistic. The creation of a personal address book, for example, is best tackled by a more conventional database. Then again, those of you bored rigid by text-only lists might prefer a graphical approach to data management.

Thought! will be of most use for the sort of tasks performed by programmers, systems analysts and process designers. Unless, of course, you can think of something else to use it for. *stf*

DUG ARMSTRONG

ST VERDICT

Thought! 2.2

HIGHS
- Easy to use
- Very flexible
- Supports screen expanders such as *Blowup030* and *Screenblaster*

LOWS
- The manual's a bit technical

In short...
A unique product that will be useful to anyone whose work requires a structured approach. **90%**

CREATE AN IMAGE DATABASE

First, break down your images into categories (for example, Subject) using the tree structure.

Assign an action link to the viewer with a thumbnail GIF as a parameter.

Calling the link displays the images in the selected category – in this case, Cats. Prrr, prrr...

Interface 2

The latest in a short line of resource file editors, *Interface 2* makes it easy to create icons, dialogs and menus for your GEM programs.

The *Interface 2* icon editor can handle icons in 2, 4, 16 and 256 colours, and is better than any other we've seen.

O ne of the better things about GEM is its standardised interface, complete with windows, icons and dialog boxes. Programs share a similar 'look and feel', so once you get used to using one, you can adapt to another application fairly easily.
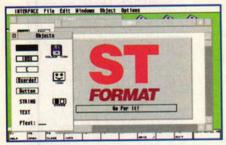
That's the theory, anyway, but a lot of programmers throw out GEM and replace it with their own interface. Some of them work well – *Apex Media*, for instance – but others can be a pig to master.

One of the problems with using GEM is the creation of the elements which make up the user interface – menus, dialogs and so forth – which is why programmers use resource file editors.

Multilingual, moi?

Interface 2 from Compo Software is the latest in a short line of resource editors. For years HiSoft's *WERCS* was the de-facto standard in the field, with only PD offerings like *ORCS* to really challenge it within the UK. *Interface 2* changes all that. Whatever language you program in

(well, almost), *Interface* can make your life much easier. The program outputs a standard GEM .RSC file, and can create and maintain the necessary header files for common C compilers, Pascal, Modula-2, generic BASIC and *GFA BASIC*.

Interface is itself a masterpiece of good design. All dialogs are non-modal, so the program runs beautifully under a multitasking system. It uses its own Desktop design, and RSC files can be opened using the file selector, or by navigating the icons as you would on the 'real' Desktop. Every button and menu entry is clearly explained, with on-line help available in most situations.

Compo is supplying a fully-anglicised version of the German manual. Unlike some translated manuals, it reads well and is easy to follow. It's also comprehensive and well-indexed, making it easy to find the section you need. However, if you've used a resource editor before you'll probably find that the manual is superfluous, because *Interface* is a real delight to use.
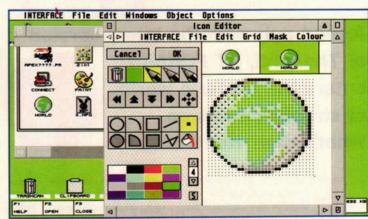
Icon do that!

Interface looks great in colour modes on the Falcon, and performs beautifully as well. It fully supports the extended resource format used by newer versions of the Falcon AES, so it is easy to create 3D buttons and dialogs. Now you have no excuse for dowdy-looking '030 software!

The built-in icon editor also doubles up very well for editing your DESKICON.RSC file – whether it be colour on the Falcon or mono on a TOS 2 ST – and can even

import icons from *Windows* PCs. You can cut icons from graphics files, and again everything is windowed.

All standard GEM resource trees and objects are provided. Menu creation is blissfully straightforward, since *Interface* can automatically pad strings out with spaces so that they fit in with the longest menu entry. Adding objects to a tree is also simple – drag them across from the object window to your current form. Editing is fully mouse-controlled, and text can be automatically centred for you – if you've ever done this by hand, you'll appreciate this feature. A clipboard can be used to move objects from one tree to another, and across multiple files. Holding [SHIFT] while dragging to the clipboard creates a copy, rather than cutting the object.
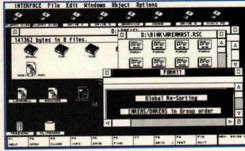
Off to *WERCS*...

The superb design of *Interface* makes it easy to produce very professional-looking results with little practice. You do need to understand a little about how RSC files work, but using *Interface* can actually teach you this, too. Comparing it to *WERCS* is like standing a Rolls Royce next to an old Skoda.

Ask any serious Atari programmer, and the chances are he or she uses *Interface* regularly –

lots of the German software you already use probably had its look and feel designed with *Interface*. If you're at all serious about your programming, this is one tool you shouldn't be without. Highly recommended. *stf*

FRANK CHARLTON

> *Interface* looks great in colour modes on the Falcon, and performs beautifully as well

The Desktop system is easy to navigate, with currently loaded files appearing as these jack-in-the-box icons.

Product: Interface 2
Price: £49
Contact: Compo Software
Tel: 01487 773582
Min system: T/STE/TT/Falcon, 512K RAM

The object window is on the left. Drag an element across to create a prototype ready for editing.

RESOURCE FILES

A resource file holds the information needed to build an application's interface. Spending time on a clear interface design can improve the friendliness and usability of a program by leaps and bounds.

STF VERDICT

Interface 2

HIGHS
■ Uses GEM to the full
■ Full AES 4.0 support
■ Intuitive – you probably won't need the manual

LOWS
■ Slightly slow screen updates

In short...
If you program with GEM, you need this. A superbly designed piece of software.

90%

Team

The perfect end to a perfect* season: Team has finally arrived on the STE and Falcon, and boy, does it play a mean game of football!

Penalty shoot-outs are an exciting, if debatable, way to settle football matches. At least you can rewrite history with *Team*.

The footie simulation to rewrite the book on overhead football games has finally arrived. If, like me, you're a football fan with a real passion for the game, you're going to love *Team*. It scores on all levels – beneath the attractive graphics and atmospheric sound effects is a true football simulation that's as realistic as it is exciting.

Team is played from an overhead view point, where you guide your team to victory by taking control of the player nearest to the ball. Use your team's formation to pick out players, get up the other end and get the result you're after.

All of the FA Premier and World Cup '94 teams are included, and you can edit them to incorporate your favourite players. Impact will soon be releasing data disks for other leagues, including the Scottish, English Endsleigh League and Italian Serie A clubs.

On tour
Once the game has loaded, you can either sit through the opening sequence or move straight on to the main menu, where you can elect to play a friendly match or create a league or cup competition. If you decide to play a friendly match, you are prompted to select two teams from the currently loaded set. You can play against a friend or the computer, or watch your Atari battle it out by itself.

The league and cup competitions give you more options to play around with. First, select how many teams you want (up to 24 in a league, and 16 in a cup competition). Any, all or none can be computer controlled. Then, in the case of a league, you pick how many times you play each side and how many points are available for a win.

There are even more options when you select a knockout tournament. You can play each of the four rounds over one or two legs (with the option to include the 'away goals' rule), for instance. Drawn matches can be decided by extra time, penalties, a replay or a combination of all three. This means you can effectively create the last sixteen section of any knockout tournament, from the Coca-Cola Cup right up

Throw caution to the wind and pick an attacking tactic when your team is struggling
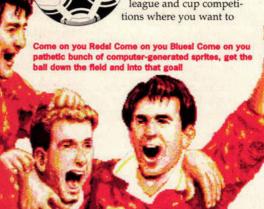
to the dizzy heights of the Auto Windscreen Shield.

Yet more options
Impact has worked hard on the gameplay side of *Team*. All the options have a real bearing on the game itself, and aren't superfluous in any way. You can specify how long you want your matches to last (from two to 20 minutes in total) and whether the referee should wave cards at every foul or just let players hack each other to bits. Even the conditions are up for grabs – you can decide whether there's a wind to contend with (making long ball games more difficult) and choose the condition of the pitch (which will affect the bounce of the ball as well as the players' legs).

These last three options can all be set to random, which is useful for league and cup competitions where you want to

You can play *Team* with no overscan, but the lack of pitch available for you to view proceedings will make picking out team mates with long balls that much harder.

ACTION REPLAYS

Team incorporates what must be the ultimate action replay. You can replay the last six seconds at any time in the game simply by pressing [R]. If you like what you've seen, just press [S] to save the replay to disk. All the data takes just 16K, and your magic moment can be loaded into the Action Replay editing suite later.

Once you've got your replay running you can watch it forwards or backwards at any one of four speeds, including frame by frame advance. The direction and speed are selected via the joystick, so it's very easy to control. This enables you to work out just how the ball

cannoned into the back of the net off the bar, three defenders and the inside of the post.

You can view your finest strikes again just by pressing [R] to see a replay of the last six seconds of action.

Come on you Reds! Come on you Blues! Come on you pathetic bunch of computer-generated sprites, get the ball down the field and into that goal!

simulate the unfairness of real life. You can also change each player's controls (*Team* can be played from the keyboard or with the Jaguar powerpad).
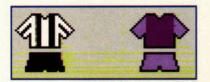
In the dressing room
Once you've configured the game, you're ready to play. Go to the dressing room screen and pick your side. Here you can alter your team's tactics, depending on whether you want to play a defensive or attacking formation. From there, it's on to the pitch and the game itself.

Once the game kicks off you can dribble, pass, shoot and (more often than not) chase the ball, utilising whichever one of your players is closest. The computer-generated sides are designed to be as realistic as possible, so don't expect Leicester City to compete effectively against Newcastle United. In the predictable world of computer-controlled football, Leicester's victories will be few

You know a football game is good when you switch it off in temper, accusing the computer of being a cheat, then reload it less than five minutes later to start again. This has happened with *Team*.

and far between when the computer competes against itself.

You, of course, bring an entirely new element into the equation. Once you're good enough, you'll be able to make lesser sides trounce previously superior opponents.

One bug that's been fixed since the demo version graced issue 70's Cover Disk is that the screen centres on any player about to be cautioned by the ref, rather than on the ball. This means you no longer lose players without being aware of it because the ball was up the other end of the pitch while your player was being booked for the second time.

At the touchline
You can substitute players, switch them around (useful when a player has been sent off and you want to plug a gap in your defence) and even alter the tactics whenever the ball goes out of play. There's nothing like going 1-0 ahead after five minutes and switching to a 5-4-1 formation to frustrate your friend's efforts to get an equaliser.

Conversely, you can always throw caution to the wind and pick an attacking tactic when your team is struggling to keep on level terms. Just as in real football, this can leave gaps at the back which can be exploited in a breakaway move by the opposition. If you've seen it in real life, chances are you'll encounter it in *Team*.
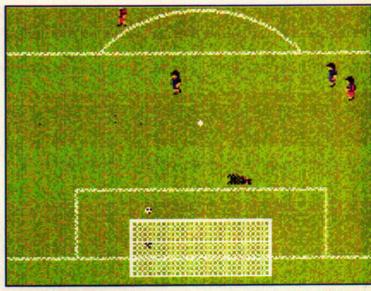
If you want to emulate your favourite players' silky skills or crunching tackles, you'll be able to – with practice. The ball responds according to real-life physics and the players and their environment are solid, so you can't just ghost through opponents and other objects as in *Sensible Soccer*.

> **It's not easy to calmly place the ball when two defenders are bearing down on you**

You can tell what pitch you're playing on by its colour. This is the dry variety. Look out for the extra bounce on the ball.

Team even manages to bring luck into the equation. Just as in real football, the game can be decided by the woodwork or a mix-up in defence. Missing sitters is easy – it's not easy to calmly place the ball in the right place when two defenders are bearing down on you.

The atmosphere can certainly affect your judgement – and it's easy to see how that 'player' blasted the ball wide when it would have been so easy to score.

But is it football?
Team succeeds because it's realistic. The graphics are superb (try going back to *Sensible Soccer* after *Team*), and make the game a coherent whole, but ultimately *Team* wins out because of the gameplay. Controlling your players may seem nigh on impossible at first, but practice will enable you to turn 360 degrees just like your opponents. The sensitivity of the fire controls ensures that, just as in the real game, you'll never completely master anything other than short sharp passes. The movement that produces a spectacular dipping 40-yard strike on one occasion will send the next ball high and wide, all because you didn't quite manage to judge the angle and height correctly the second time.

Gripes? It's difficult to find anything to complain about in a game that's been written by someone who's not only a genuine football fan, but also knows more about the STE and Falcon hardware than most. *Team* oozes class

at every opportunity – it's difficult to isolate certain elements for specific praise when the whole thing hangs together so well.

The only criticism is that you can't turn off the built-in music, which can get irritating, especially when you'd rather have the Leeds United 1972 Cup Final song blasting out of your stereo.

It might also have been nice to design your own tactics, but that would take *Team* into *Player Manager* territory – giving you the gameplay of *Kick Off* with a management section bolted on. Now there's a thought for *Team 2… stf*
NICK PEERS

CREATE A TEAM
If you don't like the idea of Chris Sutton leaving Norwich for Blackburn, or you fancy Merthyr Tydfil's chances against Brazil, you'll be glad to know that you can alter teams or even create your own from scratch. You can not only change the teams' names, manager and players, but also alter their home and away strips, player hair and skin colours and even the team's default tactics. This option includes the facility to load and save team sets (each set takes up a minuscule 15K or so). Look out for future data disks that will ensure *Team* stays fully in the picture as far as contemporary football goes.

Hurrah! *Team* enables you to recreate your own favourite footballing side. Here's a team we picked completely at random.

Team

HIGHS
- Excellent graphics
- Realistic
- Superb gameplay

LOWS
- That damn music gets annoying after a while

In short...
Team scores highly in every area and relegates Sensible Soccer to the fourth division. **94%**

STF VERDICT ◇ STF VERDICT ◇ STF V

SubStation

Underwater hell, or a free-moving 3D environment full of nasty alien sprites? *SubStation* has been billed as *Doom* for the ST... but how does it measure up?

Pointing a gun at marauding bad guys and blasting them away can be fun.

T he underwater power base *SubStation* is over-run with aliens, and it's your job to liberate it. Acting on behalf of the military, you're in for several hours of creeping around the installation, killing anything that gets in your way. In game terms, you're wandering around a free-moving 3D environment, blasting the hell out of bitmapped sprites.

SubStation belongs to a well-established genre of computer games inspired by *Ultima Underworld* and id Software's *Doom*, both developed on the PC. Anyone who's been anywhere near a PC (or a Jaguar, which *Doom* helped to sell) will know how *Doom* works – its mixture of heavy weaponry, gory deaths and exploration keeps players addicted, terrified or totally grossed out.

SubStation certainly works in a very similar way to *Doom* – bitmapped sprites

As you catch bullets from the utterly unavoidable blokes, the blood turns everything pink.

are used for everything other than walls. This is the most effective way to give the impression of 3D without slowing the game down.

Let's play

When you've made your way through the inevitable disk swaps, menus, options and briefings that such games entail, you'll find yourself standing in the first section of the station, armed with a knife, a pistol and a handful of bullets. More sophisticated weaponry has to be found in the many secret rooms scattered throughout the game, or bought with the profits from your missions.

Each mission takes place in a fairly large complex of rooms and corridors, with doors blocking off some rooms. Some require keys to open, while others merely stop the aliens from grouping, and attacking

> You'll find rifles, grenade launchers, chain guns, automatics, bullets and bombs

The chain gun is a good way to dispose of the bad guys, providing you can aim it accurately.

you en masse. The addition of lifts makes for extra-large mazes with some isolated areas, adding a puzzle element to the onslaught.

When you move your character, however, you realise you're not playing *Doom* – that game's texture-mapped buildings have been replaced with a series of square, flat rooms with grey ceilings and floors, and white walls. This is disappointing – a lot of the atmosphere in a game like this comes from the look and feel of the areas you are travelling through.

Unfortunately, *SubStation* is played out in a sparse arena with only a few plants, canisters, computers and pieces of furniture to brighten up the game. This is not just an aesthetic problem – navigation is difficult because the rooms all look the same, and it's hard to spot features. Ultimately the adrenalin moves (nippy turns) and the ability to run like hell conspire with the scenery to get you lost, disorientated and confused. And, as you remain lost, annoyed.

Let's not

The next problem with *SubStation* is the resolution. Though the display is not short of pixels, the large, free environment you thought you were playing in is a lot more restrictive than you at first thought. The game is still working on a grid system, so a small table containing an interesting object blocks off the playing area for a few metres in either direction. Being able to hug walls and peep around corners

(*Ultima Underworld*-style) would have improved the gameplay, but you can't get near enough to anything to use it for cover.

All of this gives the impression that *SubStation* was written from a programmer's viewpoint, giving little consideration to gameplay. Sadly, the number of people you kill is vastly outweighed by the number of doors you open.

Oh, do let's

It's not all bad, though – *SubStation* may not deliver what everyone was hoping for, but if you stop comparing it to *Doom* you'll find that *SubStation* is a fun 3D shoot-'em-up, the likes of which the Falcon hasn't yet seen.

Each mission gives you a chance to equip your man, and you shouldn't miss it. Among the weaponry on sale you'll find high-powered rifles, grenade launchers, chain guns, automatics, a pile of bullets and some sulphuric acid bombs. All of this costs money, which isn't readily available – you'll spend a lot of time searching for anything you can find in the levels themselves.

The missions start as fairly easy outings in the underwater complex, but get steadily more challenging as the game progresses. One surprising factor is that you start each mission in the same state you finished the last one –

This is your chance to kit out with some extra weaponry.

TWO-PLAYER

Games like this really come into their own when you're in the position to link two machines together, joining a friend in the hostile, alien environment. The MIDIlink system is capable of handling up to four players, each taking a different colour and playing what's essentially their own game, save for the fact that there are up to three other real people

wandering around the map with them. This leads to all the other advantages of multi-player games: alliances, battles and back-stabbing take place with astounding regularity.

If you have facilities for linking the game (a MIDI cable, basically), it's well worth trying – gather together friends, beer, pizza and firearms for an evening's carnage.

It does get a bit gory occasionally, but there's nothing that'll really turn your stomach.

your boss will quite happily send a squaddie whose health is at 12 per cent back into the warzone. One of the first things you'll have to master is the art of not getting hit, which can be quite a feat when the bad guys are a lot better with a gun than you are.

SubStation certainly gives you a lot to

Only the map will tell you whether you're in the same room you were in half an hour ago.

master. The speed at which you turn and the size of the minimum step means that aiming isn't easy – you can't swing your sights on to anything, as the movement isn't smooth or slow enough.

It is pretty, after all

If you consider presentation and style an important part of game-playing, you'll be pleased to hear that, aside from the lack of decent texture mapping, a lot of thought has been put into making *SubStation* feel right.

The stereo sound, for instance, is truly excellent and gives you a good idea of where, as well as what, the sound is coming from. The out-of-game sequences have excellent music, while the slow, menacing grinding of the power station components adds depth to the missions. The atmospheric feel of pacing down a corridor toward a turbine, rifle poised to obliterate the alien lurking around the next corner, gives the game a slow, tense feel. Unfortunately, the rare occasions when you do meet something

horrible barely manage to do this tension justice.

Though the ultimate objective of each level is to find the exit, the missions are carefully planned, and the briefings successfully add a sense of purpose to all the wandering and killing.

Blast away

All in all, *SubStation* isn't quite as bad a game as the downbeat parts of this review suggest. It may not have the level of detail and complexity of *Doom*, or the planning and foresight of *Ultima Underworld*, but it does holds its own as a 3D blast-'em-down.

I couldn't help thinking a lot could have been added, and wishing there was a little more to the game than exploration and death. However, if you're keen to experience copious quantities of both, *SubStation* is a game you'll enjoy. *stf*
DAVE BARRINGTON

Product: SubStation
Price: £19.99
Contact: JCA Europe
Tel: 01734 452416
Min system: 1MByte STE or Falcon only

THE SUBSTATION CHALLENGE

Design a SubStation level like this one and you could win a copy of the game.

KEY
SP	Starting point	**GC**	Green access card
EP	Exit point	**RC**	Red access card
D	Door	**R**	Rifle
YD	Yellow access door	**SG**	Subgun
GD	Green access door	**MG**	Minigun
RD	Red access door	**G**	Stationary guard
YC	Yellow access card	**RG**	Random guard
		PG	Patrolling guard

You've read the review and played the demo... now win a copy of the game. Unique Development Sweden is giving away ten copies of *SubStation*, plus three copies of the *ST FORMAT* Gold-winning *Obsession*, to the ten people who design the best *SubStation* mazes. In addition, the winning entry will be turned into a playable level for inclusion on our October Cover Disk.

So, what do you have to do? There are quite a few rules you need to follow to design a successful level.

First, your entry should be submitted on graph paper. Include a key indicating the acronyms used for objects such as cards and weapons (see above).

Your maze can have a maximum of three levels, connected by elevators. Each level can be a maximum of 30 squares by 30 squares. The elevators should be marked with an E and be directly above/beneath each other.

A wall or door takes up a whole square – not just the side of one. Objects, such as the subgun, minigun and rifle, and the yellow, red and green cards, all take up one square too. You should also indicate a starting point and an exit point.

Be careful about where you place your access cards and their associated doors – the player needs to be able to get, say, the yellow card before he or she reaches the yellow door, not after!

You should also think carefully about where you position your guards. There are three different types: guards (which stand still, guarding a specific area), random guards (which walk randomly about the entire area), and pattern guards (which follow a pattern that you specify). You can have as many of these as you like, but remember you'll have to fight them all.

Don't worry about placing med kits, ammo and food – UDS will take care of that. Have fun.

THE RULES
1) Send your entries to: Underwater Hell, *ST FORMAT*, Future Publishing, 30 Monmouth Street, Bath, Avon BA1 2BW. Entries must arrive by Mon 10 July 1995.
2) Employees of Future Publishing and UDS are not eligible to enter.
3) The prizes are as follows...
First prize: copies of *SubStation* and *Obsession*, plus the chance to flaunt your design skills to the world.
Second and third prize: copies of *SubStation* and *Obsession*
Seven runner-up prizes: *SubStation*
There is no cash alternative and the editor's decision is final.

Super League Manager

Depressed about the way your favorite team is playing? Take over the reins yourself.

Loads of people want to be football stars – you see them practising in parks. People in sheepskin jackets, though, are would-be managers.

Are you depressed about the way your football club played this year? Could you do a better job? Okay, prove it.

There's more to football than kicking a ball around – someone has to keep the players in shape, organised, playing and paid. In *Super League Manager*, that someone is you. The action centers mainly on your desk, the place where the magic really happens.

This is where it all the top management action happens – at your desk.

He played a belter

In *Manager* you're responsible for everything from team training to the club's finances, so you're ultimately responsible for the team's success. As the week goes by you have to make sure your players are in good condition, prepare formations and tactics for the Saturday match, deal with the team's physiotherapist, keep the chairman happy and, most importantly, water the plants. Most of the functions and options are accessed from the desk, using the fabulous telescopic arm that all football managers are born with.

The world the game is set in is designed to make the outcomes of your decisions as realistic as possible – you're playing against the other managers, not a computer, and the other clubs are intent on beating you. You'll do badly in your first season because fresh-faced managers always take a while to get used to their jobs.

Buy buy

You can always make things a little easier by buying more competent players and selling off the rubbish ones. *Manager* contains an excellent (and realistic) system for transferring players – the stats attached to each player betray the fact that there's a lot of calculation going on behind the scenes, and adds another edge to the game.

Before you get too attached to Folkford United, you should remember that this is a management sim, so you don't have to spend the rest of your career with a bunch of no-hope cowboys. As you play, you'll be approached by other clubs, and given the chance to take a different career path.

The whistle blows

Football management sims aren't exactly everyone's cup of savlon. The emphasis is on decision making as opposed to football, so there's no real action, and it's hard to tell how well you're doing, though the manager league table helps somewhat.

If you hate *Manager*, it'll be because very little changes as you play through the game. You can progress to the next league, but on a day-to-day level the game is exactly the same – you spend your time on the same screens, watching the same things over and over again.

If you like it, it'll be because it is designed to let you get on with the good side of being a manager. It enables you to push a team to glory in a realistically-weighted artificial world where every decision, figure and action has a bearing on every other

> The action centers mainly on your desk, the place where the magic really happens

The Sunday papers are the best way to find out about yesterday's games.

result. It may not be quite the same as real-life football (you're playing in the Audiogenic Super League), but it has to be the closest thing to football management we've seen yet. *stf*

DAVE BARRINGTON

STF VERDICT

Super League Manager

HIGHS
- Realistic simulation world
- Loads of stats
- Plant watering a must

LOWS
- Very little changes
- Boring if you aren't into football management

In short...

A strong management game dominated by pure thought and extensive statistics.

85%

It's up to you to treat players fairly and equally...

...setting gruelling exercise plans to keep them at the peak of fitness...

...and paying them just enough to stay legal.

GAMES

ARCADE

G.247 MEGAPEDE: The classic blast the caterpillar 'Centipede' game (1Mb)
G.395 DYNABUSTER: Bomb laying and dodging arcade game (STE, 1Mb)
G.393 GRAND PRIX CHAMPION: Compete as a driver in the Formula One championship.
G.366 DAVE MUNSIE GAMES: 9 games from the master programmer, including Frogger (1Mb)
G.355 WING LORD: Aerial duelling game in the style of the classic 'Joust'.
G.380 STARBALL: Pinball game - arguably the best PD game on the ST!
G.381 MAX: Help Max find his girlfriend. A 'cute' arcade platform game (1Mb)
G.333 SUPER PSYCHO KART: High speed platform game to rescue piglets (1Mb)
G.286 ROCKFALL - SPECIAL EDITION: Tunnelling/diamond collecting puzzle game
G.281 PSYCHO PIG: Platform shoot'em up with Rambo-esque pig. (2 disks/£3.00)
G.279 OPERATION GARFIELD: Frantic 'Operation Wolf' type shoot'em up action. (STE)
G.250 CYBERNETICS: Good, challenging 'Defender' type arcade game.
G.80 TETRIS & PILE UP: Two very good versions of the Tetris arcade game.
G.171 HACMAN II: 1 megabyte version of Pacman, 100 new levels!
G.110 LLAMATRON: 100 levels of fast arcade action with wicked sound FX.
G.150 COLUMNS: An impressive relative of the Tetris tumbling block game (1Mb).
G.201 BLAT!: Tetris style three in a row, falling blocks with many added features.

FANTASY/ROLE PLAY

G.351 TOWERS: First-person view role playing fantasy adventure game (2 disks/£3.00)
G.308 WALLS OF ILLUSION: The ultimate Dungeonmaster clone with English instructions (1Mb).
G.5 MORIA: A complex fantasy D&D based role play game. (1Mb)
G.370 MINDMELT: Fantasy adventure with an overhead view.
G.343 BLUDGEON: Solo fantasy adventure using the Bludgeon combat system.
G.288 DARKLYTE: 'Space Crusade' type droids wargame.
G.262 ALIENS! Space Marines v Aliens strategy combat game.
G.115 MYSTIC WELL: Complete Dungeonmaster style adventure game.

PUZZLE

G.387 SPACESWEEPER: A challenging 'Minesweeper' game in three dimensions!
G.315 SKULLS: Addictive up to date reworking of Landmines/Minefield (1Mb STE)
G.306 LOGIC PROBLEMS II: Three more logic problems from Ben Weston
G.311 JIGSAW: A computerised jigsaw puzzle (1Mb)
G.280 COLOUR CLASH: Adventure/Maze game with puzzles by Animalsoft
G.269 QUIZMASTER: Multi-choice answer general knowledge quiz (STE)

ADVENTURES

G.394 THE SECRET PARK: A text adventure with graphics for children.
G.225 CAILYN'VORN: D&D type fantasy adventure set on a far earth-like planet.
G.321 INVESTIGATION: Graphic adventure in the style of Sierra On-Line (2 disks/£3.00)
G.200 ANARCHY ACADEMY: 3D graphic adventure to blow up the school!
G.140 A NIGHT ON THE TOWN: An adventure with the opportunity to meet the girl of your
dreams and ...well, the rest is up to you.
G.222 GRANDAD AND THE QUEST...3D graphics adventure by Ian Scott. Shareware (1Mb)
G.303 GRANDAD 2 AND THE SEARCH FOR THE SANDWICHES: Graphic adventure
(1Mb 2 disks/£3.00)
G.156 THE AWE CHASM: An adult adventure featuring Snatch and Crunch (over 18's only)
G.167 SUSAN: An adult adventure (over 18's only)
G.91 QUEST FOR THE HOLY GRAIL: Pythonesque madcap humour.
G.202 UNNKULIAN UNDERWORLD: Highly rated large scale text fantasy adventure.

STRATEGY & OTHERS

G.131 STAR TREK - THE GAME: Defeat the Klingon threat to the galaxy (1Mb)
G.386 STAR TREK - KLINGON WARS: A Starship Enterprise battle simulation (1Mb)
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G.237 CHAOS: Madcap game of battling wizards by Martin Brownlow (1Mb or .5Mb)
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BU.90 MATCH IT: Possibly the most addictive game ever devised
BU.89 HORSE RACING SIM: Quality sim from the sale ring to the track
BU.30 QUEST FOR GALAXIA: The "Galaxians" return to your ST
BU.70 PACMAN ST: The definitive version by Robert Leong
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C.22 TEDDYTERM: A superb multi-function communications program
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M.138 MORSE CODE TUTOR: Practice and perfect your skills
C.24 OFF-LINE READERS: Four off-line reader programs

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B.39 ASTEROIDS: A loving restoration   B.15 ROLL N NUDGE: Fruit Machine
B.20 HACMAN: Pacman action   B.36 8 BALL POOL: Bar game simulation
B.27 FROGGY: The arcade classic   B.50 STAR TREK: Save the Federation

AUTHORS

As a leading P.D. library for the Atari ST and Falcon computers we are always seeking to
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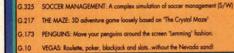copy at the address above. We respond to ALL submissions and enquiries.
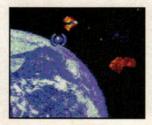
PD Action

Nick Peers gets his teeth into another plateful of action-packed PD games and demos.

ASTEROIDIA
LAPD
ST/STE/Falcon, 1MByte

DAVE MUNSIE HAS WRITTEN A number of classic arcade games for the ST, and this *Asteroids* variant proves his talent for updating old gems is improving with age.

GAME OF THE MONTH — ST FORMAT
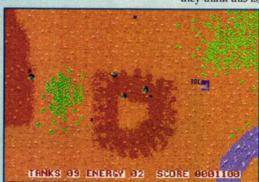
The action takes place either in the depths of space, if you have an STFM or, on the STE and Falcon, in orbit around a succession of beautifully-rendered planets. You must destroy a set number of asteroids by reducing them to their component parts before blasting them to mere

Asteroidia on the Falcon takes your breath away.

atoms. Blue rocks can hide bonuses (such shield replenishment, or astronauts to rescue for points bonuses), or dangerous enemies who evade your fire and penetrate your shields.

To encourage registration, this version (like Dave's last release, *Frantick*, which scored 73% in *STF 67*) gives you only one life to play with. Where *Asteroidia* scores over *Frantick* is in the inclusion of shields, enabling you to take several hits or collisions

ARMOURED OPERATION
Power PD, Disk PWR1387
1MByte required

FORMERLY A licenceware title, *Armoured Operation* is a very limited battle simulation. You are a megalo-maniac hell-bent on adding the fair Isle of Powerfist to your collection of countries. To do so, you select a number of tanks with which you

TANKS 09 ENERGY 02   SCORE 0001100

"When you said we were going to Saturn for a holiday I didn't expect you to take your damn work with you, Felix."

before being destroyed. This makes the game last longer and provides a greater incentive to register the program.

Registering with LAPD for just £10 gives you a personal key-code, which enables you to play the game fully. Registration is vital if you wish to see the later stages of the game. In addition, registered users can play a bloodier version of the game, or take a break for a quick game of *Space Pong* against the computer.

rumble around each village blasting or running over the little soldiers who are trying to protect their village and the cause of freedom. Little blighters. What do they think this is, *Star Trek*?

It's certainly a challenging game. The addition of large land- and air-based defences in larger villages effectively turns the tables and is a good example of how *Armoured Operation* gets increasingly difficult. However, it is just too monotonous to be played more than a few times.
STF Rating: 53%

Don't hold your breath, *Armoured Operation* doesn't tread any new ground. Nor does it advance the cause of ST gaming excellence.

Although not as deep as *Stardust* (*STF* 68, 94%), *Asteroidia* is the kind of game that will keep you coming back for 'just one more quick blast.' A highly polished and well-executed variant on a popular theme.
STF RATING: 86%

STONE COLD SOBER
LAPD, Disk L97 (£4.00)
All Ataris, 1MByte required

STONE COLD SOBER IS AIMED AT THOSE OF you who like a little bit of gritty realism in your adventuring lives. Objects such as urinals and dodgy brickwork make appearances here, there and everywhere throughout the game. *Stone Cold Sober's* plot is equally bizarre.

The major problem with adventure games is that you have to spend hours typing in routine commands like 'Examine wall' and 'Go north.' To its credit, *Stone Cold*

The Frying Fish is not the most pleasant pub in the world. It's a perfect location for the kind of down-and-out you play in *Stone Cold Sober*.
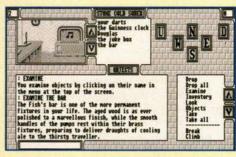
Sober's interface takes some of the banality out of these mundane actions.

The plot is simple: you are Tim, an unemployed alcoholic loser who begins the game in the Frying Fish pub. The well-crafted background story should be read carefully, as it contains a number of hints on how you should progress.

Once you've explored and left the Frying Fish pub, you'll be told of your quest, which involves dubious arcane rituals, or something.

Thankfully the story moves along at an entertaining pace and you can wander round without repetitive 'You can't do that' or 'I don't understand' messages getting in the way.

Stone Cold Sober has a unique sense of humour that sets it apart from other adventure

It may not be suitable for children, but *Stone Cold Sober* is good entertainment if you like gentle adult humour.

games. It should attract anyone interested in a strange quest with rich, slightly off-beat descriptions and an attractive (and informative) interface. Adventure fans tired of slaying yet another dragon should also find something new here to keep them happy. All in all, a good game that could fill up of several days of your life.
STF RATING: 81%
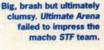
ULTIMATE ARENA
Riverdene PDL, Disk STE324
1MByte STEs

ULTIMATE ARENA IS A DEMO of a French game which proves that *Mortal Kombat* is at least visually possible on the STE. The graphics are big, brash, detailed and well animated. The demo gives you the chance to do battle with one of the seven warriors that appear in the full game (instructions for obtaining the game are included at the end of the demo. You'll need to brush up your French first, though).

Once the novelty of the big character sprites wears off, however, you're left with the problem of gameplay. The controls are sluggish, and nothing you seem to do has much effect on your opponent – aside from producing a few grunts and groans. Consequently *Ultimate Arena* just doesn't hack it, and earlier beat-'em-up games such as *Street Fighter 2* (STF 44, 91%) offer a much better way of getting rid of the day's frustrations. *Ultimate Arena's* graphics are superficially more realistic, but it just doesn't cut the mustard.

STF RATING: 58%

POVERTY
From POV 2, Southbourne Avenue, Poulton-le-Fylde, Lancs FY6 8AW. E-mail MRSD1@BNFL.co.uk
4MByte Falcon only

POVERTY MARKS THE return of the legendary POV demo-coding team. This is a showcase of their talents, no more, no less. It's basically a collection of images (see the accompanying montage for some kind of idea of what's enclosed) swirling around to a well sampled, but techno nevertheless, backbeat.

It's everything you expect from a demo, minus the annoying scrolly messages that leave you grasping for the reset button. Not earth shattering, but worth a quick look.

STF RATING: 68%

Big, brash but ultimately clumsy. *Ultimate Arena* failed to impress the macho *STF* team.

They say that violence solves nothing, but it's a good way of venting your frustrations…

ELECTRON DEMO
AGPD, Disks D110/111
1MByte STs recommended (not TOS 2.06 compatible)

THIS PAIR OF DISKS comprises several sequences rolled into one program. The *Bottom* demo consists of a few pictures which, when clicked, play sound samples. The Stars screen features a few poorly executed sound-chip tunes before the program moves on to a swirly psychedelic screen. You must sit through this without touching the keyboard or else the program will crash.

The second disk consists of a few MOD tunes and Photochrome images that are memorable only in that your ST is displaying over 19,200 colours on the screen at once.

The most impressive part of the program is the digitised images, which are quite well done. If you really like *Bottom* or *Monty Python* you might find this demo momentarily entertaining, but otherwise… look elsewhere.

STF RATING: 41%
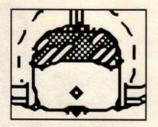
Yes, yes, I see. But where's a Gumby when you need one?

PD ACTION ROUND-UP

So many games come your way courtesy of PD Action that you'd be forgiven for forgetting what was reviewed when. Thank goodness, then, for this indispensable guide to what's been reviewed in the past four months:

GAME	PD LIBRARY	ISSUE	RATING
Pacman on Es 2/Tomtar	Power PD	68	90%
Conquest 2: The Viking Hordes	LAPD	69	87%
Aliens	STellar PD	70	85%
Datachess 2	Floppyshop	70	85%
Serenade Menu v17	STellar PD	68	84%
PD Pack Eight	Chaos PD	69	82%
Fruity/Match It	Transp. Dreams	68	78%
Noughts and Mad Crosses	Power PD	68	76%
Pothole 2	Chaos PD	70	75%
Falctris	Ad.Lib	71	71%
Project Purify	LAPD	69	63%
Revival	Power PD	71	59%
Max	Power PD	69	55%
Grand Prix Manager	Floppyshop	68	54%
Pop!	LAPD	69	51%
International Manager	LAPD	70	49%
Quick Flip	LAPD	71	40%
Crazy Letters	LAPD	70	35%
Starburst	Power PD	69	20%
Mad	Chaos PD	70	20%

PD Choice

All the latest and greatest PD applications, plus the obligatory *Star Trek* reference.

▶ GEMBENCH 4.03
HENSA Software Archives
All Ataris

OFIR GAL'S *GEMBENCH* HAS become the industry-standard benchmark program for the Atari. It performs a variety of different tests, based around the screen update and maths functions of your computer, enabling you to find out what performance your machine is capable of. The results are presented as a percentage mark (100% is the average score).

This benchmark is adjusted by selecting a machine's configuration to compare your own setup with. For example, the screenshot compares a humble STE with *NVDI 2.03* installed with the mighty Pak 68/3 running at 40MHz – hence the relatively poor performance of

APPLICATION OF THE MONTH ST FORMAT

the STE. *GEMBench* comes with a host of different machine configurations for you to compare your own system with, and provides the most comprehensive benchmarking procedure yet.

The program comes into its own when you've got additional hardware or software accelerators (such

GEMBench is the kind of program which reinforces the value of hardware accelerators. Look how poorly the STE performed compared against the Pak accelerator, even with NVDI installed.

MULTICAD
Floppyshop, Disk ART 4642
All Ataris, monochrome monitor required

MULTICAD IS A POWERFUL COMPUTER-AIDED design package which makes designing flat plans, circuit boards and other grid-based material easy. While it avoids competing with the commercial 'big boys', the program serves as a perfect introduction to computer-aided design.

Once it has loaded, you can set up the page as you want it. Several standard sizes, such as A4, are supported. *MultiCAD* also features snap-to-guides, which help you keep your plans as accurate as possible.

You can draw using all the common tools, such as freehand and line, or insert common elements from one of the libraries, such as common electrical components. In addition there are a number of tools which make the designing process even easier.

as *NVDI 3*, reviewed last issue, or the Pak 68/3 from issue 70) attached to your machine and you want to see how much of a difference they make.

The only negative point is that the documentation is only available in hypertext format, so if you haven't got the ST's own hypertext

A more realistic test would be to compare the STE with NVDI installed with an STE without it. See how dramatically the results improve, proving what a good investment NVDI is.

For example, you can create a number of polygons by determining their shape and size beforehand. This is much easier than exercising fine mouse control.
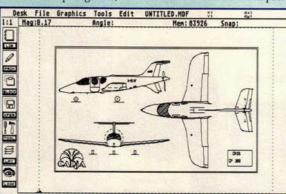
It is *MultiCAD's* user interface that makes it stand out from its shareware opponents. You access a group of sub-menus by clicking on one of the icons to the left of the screen. Within each section is a bank of icons ready to be displayed as required. You can either click on them, or speed the process up by learning the keyboard short-cuts for common operations.

Registering removes the 5K limit on drawing size, and the author will send you the full 80-page manual. With all the impressive tools and options on offer, he's completely justified in placing these restrictions – and the annoying shareware message – on what is a thoroughly-polished program.

STF RATING: 91%

MultiCAD offers the perfect introduction to computer-aided design. Soon you too can be redesigning your entire house with the minimum of fuss.

program (*ST Guide*, also available from HENSA), you're in trouble. Despite this, *GEMBench* should be a part of any serious ST owner's software collection.

STF Rating: 93%

SUPERVIEW
Floppyshop, Disk UTL4541
All Ataris

SUPERVIEW IS DESIGNED TO REPLACE YOUR Atari's limited Show/Print/Cancel function when reading text files. It supports up to nine files in memory at once, can be called as an accessory from any GEM program, and enables you to

view various picture files (*Neochrome*, *Degas* and *Spectrum 512*) and play sound samples.

Once installed in your AUTO folder, *SuperView* waits until you've double-clicked on a supported file before deciding what to do with it – at least in theory. *SuperView* is of most use to STE and STFM owners without TOS 2.06 installed. If you've got a Falcon or TOS 2.06, you can only use *SuperView* either as an accessory or

by dragging the required file on to the TTP file that's in the package. This makes it somewhat clumsy and of limited value, spoiling what could have been an essential utility to own. Get the commercial package *View 2* (STF 66, 90%) instead. It's much more versatile.

STF RATING: 70%
(STs with TOS 1.62 or less)
55% (Ataris with TOS 2.06 or higher)

POWER MAGAZINE ISSUE 26
Power PD, Disk PWR1406
STs only, colour or monochrome. Not Falcon compatible

POWER PD'S LATEST ISSUE FEATURES AN updated interface and a special for *Star Trek* fans everywhere, plus the usual mix of up-to-date news, views and reviews. *Power* is always filled with top-notch articles covering all things Atari, and it's probably the best disk mag out there for keeping you in touch with the Atari users' scene.

There's plenty to read, with the often contentious debates indicating that the Atari is a long way from being dead and buried in most peoples' minds. Overall, *Power 26* is an excellent example of a well established disk mag, and will provide enough in the way of reading material to last you until the next issue is released in July.
STF RATING: 89%

Power is a well-established disk mag with extensive contacts that ensure it's always up-to-date.

FANTASY PICTURES & IMG FILE VIEWER
Riverdene PDL, Disk ART39
All Ataris, all resolutions (colour recommended), 1MByte required

THIS COMPILATION FROM Riverdene comprises seven 16-colour IMG files, plus *Image Viewer 6* so you can view them all. The pictures themselves are superbly-detailed scans of various science fiction paintings – the only downside being that they're all shades of the same colour (mostly golden brown) in order to get the best detail possible. Coloured IMG files can be imported into other programs for your own private use, and with the arrival of *Papyrus 4* and its colour support, you may find them useful.
STF RATING: 70%

GOLDEN DAWN MODULE COLLECTION 12
AGPD, Disk MOD 76
MOD player not Falcon compatible

ALTHOUGH BY NO MEANS earth-shattering, this disk is refreshing in that the music on it largely avoids the irritating dance and house tunes that dominate most MOD collections. That said, the highlights are few and far between: there are reasonable renditions of Jean-Michel Jarre's *Equinoxe Part Five* and the theme from *Captain Pugwash* (under the guise of *More Lemmings*), and a couple of atmospheric originals, including the nicely-constructed *Citadel*. If you collect this stuff, you'll lap up the 22 tracks.
STF RATING: 69%

This is the compilation to go for if – for whatever reason – you are looking for a rendition of the Captain Pugwash theme.

SERENADE MODULE COMPILATION 8
Power PD, Disk PWR987
Player not Falcon compatible

THIS COMPILATION OPENS with a pleasant sounding piano tune that makes a mellow change from the usual dance-based MODs. Of the other eight tunes, *Fairlight* and a useful rendition of the *Thunderbirds* tune stand out in what is an average disk overall.
STF RATING: 58%

These superbly-detailed wolves from Riverdene PDL's Fantasy Pictures disk can be imported into DTP programs like Papyrus 4, or just admired as they are.

PD CHOICE ROUND-UP

Missed a back issue? Want to know when we reviewed a particular piece of PD in the last few months? Then look no further than this definitive guide to PD reviews over the past four issues.

TITLE	PD LIBRARY	TYPE	ISSUE	RATING
Speed of Light 3.7b	Cover Disk 72	Art	71	93%
Warp Issue One	Keefy's PD	Disk mag	70	92%
NovaDisk 6	James Bird	Disk mag	71	92%
Selectric 1.10E	Ad-Lib	Utility	69	91%
Autowaschen Verboten	Floppyshop	Falcon	70	90%
Freedom 1.11	HENSA	Utility	71	90%
Falcon Utilities	Floppyshop	Falcon	68	89%
Toys on Disk	GL-PD	Misc	71	86%
Third Dimension 10	Floppyshop	Disk mag	69	85%
Grafix PD Demo	Silly Software	Art	71	84%
525 v2	Ad-Lib	Utility	69	83%
STellar Diskzine 14	STellar PD	Disk mag	69	83%
Compact Office	Chaos PD	Utility	69	81%
Modest	Ad-Lib PD	Music	68	80%
BoxKite	FaST Club	Utility	69	80%
Ghostlink	Riverdene	Utility	71	80%
Chinese H'scope/I Ching	Goodmans PD	Misc	68	79%
Calamus Font Utilities	Locutus PDL	Utility	70	79%
Lexicon	LAPD	Misc	70	79%
Ozbornz Modules 3	Transp. Dreams	Music	68	78%
RAE Tutor	Floppyshop	Misc	68	76%
Visual Illusions	LAPD	Misc	69	75%
Strange Circumstance	Floppyshop	Falcon	70	75%
Even More Falcon Utilities	Floppyshop	Falcon	68	71%
Clipart Disks	STellar PD	Art	70	70/61%
Text Help Files/Utilities	Merlin	Utility	69	66%
Panther Owners Group 7	POG	Disk mag	71	66%
Magnet 9/Gullbach	Floppyshop	Falcon	68	65%
STellar MOD Collections	STellar PD	PD	70	65/50%
Lottery and Pools	Predictors	Misc	70	62%
Mystic Mick's Lottery	Transp. Dreams	Misc	71	60%
Soccer Kid Music Demo	AGPD	Music	70	59%
Trannies 1	Transp. Dreams	Disk mag	69	54%
UFOlogy	STellar PD	Misc	68	38%

GET YOURSELF
connected...

Over the last few months, ST FORMAT has been expounding the virtues of the Internet. Proud boasts have been made about the impact this electronic media will have on all our lives. Now that future has arrived! ST FORMAT has stepped onto the Net with its very own page on the World Wide Web.

The ST FORMAT home page enables you to check out next month's features, e-mail the team, search for back issues, pick up the latest news, buy mail order products, take out a subscription or even read reviews of the latest PD.

As well as ST FORMAT, FutureNet also carries snippets and features from other Future Publishing mags, including .net, Edge, Ultimate Future Games, Future

This Apple Mac screen grab shows you the kind of things you'll find on *ST FORMAT's* Web pages.

ST FORMAT

The world's biggest-selling ST magazine

Welcome to the **ST FORMAT** home page, the Web centre for the world's biggest-selling ST magazine. Our mission is to being you news and reviews about every piece of software and hardware produced for the ST, STE and Falcon, as well as practical, creative and technical advice to help you make the most of your Atari computer.

Each month, ST FORMAT carries a double-density disk featuring well over 1.25 MBytes of the latest and greatest software from around the globe. To discover just what ST FORMAT has to offer you, check out the pages held here on FutureNet. We think you'll like what you see ...

Karen Levell, Editor
Contact: klevell@futurenet.co.uk

Music, Cycling Plus and *MBUK.* So why not pay us a visit soon?

Karen Levell.

http://www.futurenet.co.uk

ST Answers

You wouldn't believe the stress-related trauma Clive Parker has experienced working on this batch of *Star Trek* Answers. He's receiving counselling in California.

DATALORE

Q I've been trying – so far unsuccessfully – to use software downloaded from an FTP site on my Atari 1040STE. I have been using *Netscape* on a PC and downloading the files on to 720K disks formatted for MS-DOS, which I use to transfer the software to my STE.

I realise the LZH and ZIP files need to be decompressed first, but the dearchiving software, which comes in the form of TOS and TTP files, will not run at all. I don't understand why it doesn't work – does saving an ST file on a PC alter the arrangement of the file? The files all have the correct names and are the right size.

Do you have to use an ST if you want to download Atari software from the Internet? I didn't think that was the case.
Simon Willis, via e-mail

A You shouldn't have any problems downloading ST files from the Internet using the Netscape Navigator *Web browser*.

ST ZIP is probably the best ZIP compression program you can get for compacting files on your ST. Well, I like it.

Saving the file to a PC disk should have no effect on the contents of the program, and shouldn't affect the way the software works. ZIP and LZH compression are both used on the PC, and files compressed using these methods on a PC can be unpacked using the equivalent compression software on the ST.

In fact, when I used to compile the ST FORMAT *Cover Disks*, I used a Mac to download ST files from CompuServe, CIX, BBSs and Internet sites, transferred them to an MS-DOS disk, and then copied them to the hard drive of my ST. They always transferred without problems.

I suspect your problems have more to do with your compression software. Contact one of the PD libraries listed in the ST FORMAT directory on page 75 and order the latest versions of ST ZIP and LH Arc. They are both GEM-based compression programs that make it very easy for you to pack and unpack files.

THE LOSS

Q I have a very big problem with my hard drive.

Diamond Edge is great for finding problems with hard drives, but you should get the ICD Professional Hard Drive Utilities for formatting. They're much more reliable than the AHDI software.

Can you please advise me what to do? I have a new Falcon with 4MByte of memory, *Cubase Audio* and a new SyQuest 270MByte removable hard drive.

The SyQuest drive has crashed twice, and now there are several dozen bad sectors. I had four tracks recorded using *Cubase Audio*, and halfway through playing back those four tracks, the music just stopped and the drive made bad clicking noises. I checked the drive with *Diamond Edge* and found many bad sectors.

I re-formatted the drive, using the Mark bad options to identify bad sectors. This time while recording the fourth track, the same thing happened. Now I have even more bad sectors. I just can't believe it.

Now the drive will not format at all using *AHDI* version 6.06. Is my new cartridge ruined? What am I doing wrong? I thought the 270 drive was all right for use with *Cubase Audio*.
Brian Becroft, via e-mail

A I'm not sure what the exact problem is, but there are two things that spring to mind. The first is that you may have a faulty SyQuest drive or cartridge. Get them both checked out first at a computer repair centre.

Secondly, I don't think that a SyQuest drive is fast enough to cope with D2D (direct to disk) recording using the Falcon. You need a very fast, dedicated SCSI drive with plenty of capacity to record using *Cubase Audio*. Removable media has significantly slower disk access times than a dedicated hard drive.

Finally, it's a good idea to get rid of the AHDI software and replace it with the ICD Professional Hard Drive Utility *software*. It's easier to use, faster and more efficient. And it also supports all kinds of removable media without any problems. I don't know where you can get the ICD software in New Zealand, but you can order it from System Solutions in the UK, call ☎ +44 (0)1753 832212. It retails for £39.95.

DATA'S DAY

Q I am about to compile an inventory of several thousand items, in several categories. Can you suggest a database that will help me?
Austin H Meeson, Walsall

A There are a couple of good commercial applications you can choose between. Take a look at the database head-to-head feature in ST FORMAT 67, where we compared the features of Twist 2 and Superbase Professional.

Of the two programs, Twist 2 is ➧

DISASTER
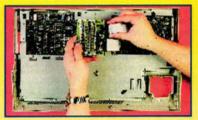
Eagle-eyed readers might have noticed that the photos accompanying steps 4, 5 and 6 of the STFM memory upgrade (*STF 71*, page 22) looked remarkably similar to those for steps 1, 2 and 3. Actually they were exactly the same – our apologies for the mixup. Here are the three photographs you should have seen.
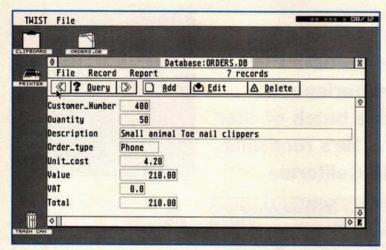
4 Fix the MMU (Memory Management Unit) adaptor over the MMU chip. In almost every STFM you can clip it into place. It takes a lot of pressure to fix it on to the MMU, but be careful you don't bend the legs.

5 Fold the ribbon cables from the two adaptors so that they run tidily to the area near the disk drive ribbon cable. Also check to make sure that the cables can't get trapped when you replace the shield.

6 Replace the shield and thread the two ribbon cables out through the disk drive hole. Get the main Xtra-RAM board and plug the ribbon cables into it. Use sticky tabs to fix the board to the top of the shield.

TWIST File

Database:ORDERS.DB

File   Record   Report   7 records

◁ ? Query ▷ | ☐ Add | 🖫 Edit | ⚠ Delete

Customer_Number   400
Quantity   50
Description   Small animal Toe nail clippers
Order_type   Phone
Unit_cost   4.20
Value   210.00
VAT   0.0
Total   210.00

Twist 2 is perfect for cataloguing your nail clipper collection, your vast depository of left-handed floppy disks and almost anything else you can think of.

best suited to your needs. While *Superbase Professional* is a superb relational database with very powerful functions and a built-in database design language, it's much too complex for the relatively simple catalogue you want to create. Twist 2 is newer, faster and easy to configure. It's ideal for your needs.

Both applications require a minimum of 1MByte of RAM to run – this is the minimum memory you should have in your ST for serious applications. You can get Twist 2 from HiSoft (☎ 01525 718181) for £89.95. Call and ask about special offers and bundle deals.

THE NEXT PHASE

Q I want to add a 1.44MByte high density (HD) floppy drive to my system, but I don't want to replace the internal drive. Is there any way I can add an additional external 1.44MByte HD drive to my STE?
A R Hull, Oxted, Surrey

A Take a look at the review of the TUS HD module on page 34 of this issue. You can use this upgrade to add an internal or external (or both) 1.44MByte HD drive to your ST.

The external drive kit costs £79.99 from The Upgrade Shop, but it can be fiddly to install if you're not used to soldering components on a circuit board. If you don't feel confident about doing the job yourself, call The Upgrade Shop on ☎ 01625 503448 and ask about its fitting service.

IDENTITY CRISIS

Q I use *Protext 4.3* for letters and articles, and I need to send them to someone who uses a PC. I know that I can save the text as ASCII so it can be imported into a PC word processor, but I need to find a program to format 720K DOS-compatible disks to copy the files on to.

I would prefer a PD program, but if something suitable

has been on an *ST FORMAT* Cover Disk, that would be even better because I have the complete collection of *ST FORMAT* disks.
Guy Walker, BFPO 43

A There are numerous PD programs available to format MS-DOS standard disks, but because you have the ST FORMAT collection you can use Knife ST from Cover Disk 42. It has many functions and features, including a definable formatting option that makes it possible for you to create PC-compatible MS-DOS disks.

Knife ST can also help you to recover deleted files, examine and alter data in programs and files, alter the directory structure of a disk, or even change the attributes of a file to hide programs or data from prying eyes. It ignores all the disk protection built into GEMDOS, so be very careful.
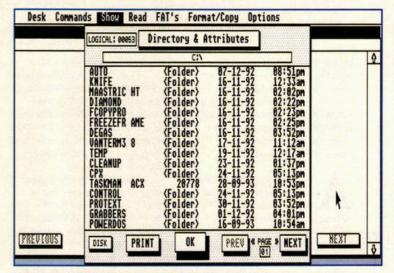
If you haven't got the disk with Knife ST, it is available from HiSoft (☎ 01525 718181) for £24.95.

RELICS

Q I have discovered a Commodore 700 series Super Pet and an 8250 LP dual 5.25inch floppy drive tucked away in a cupboard. Can I connect the drive to my STE, or should I return it to its resting place?
D F Saunders, Corby, Northants

A Who? Oh, Commodore. I remember. Unfortunately, the Commodore 700 series Super Pet and its peripherals are so, er, old that they are now classed as historical relics. If the Pet and its drives work, they may be worth something in a few years. You might even see them on Antiques Roadshow by the turn of the century. (I've got my old ZX Spectrum stored away to pay for my retirement.) But don't be fooled into thinking it's worth a fortune. Yet.

The Commodore 8250 LP drives are not compatible with your ST. In fact, they're not really compatible with anything except the Pet.

Desk Commands Show Read FAT's Format/Copy Options

LOGICAL: 000053   Directory & Attributes

C:\

AUTO	(Folder)	07-12-92	08:51pm
KNIFE	(Folder)	16-11-92	12:33am
MAASTRIC HT	(Folder)	16-11-92	02:02pm
DIAMOND	(Folder)	16-11-92	02:22pm
FCOPYPRO	(Folder)	16-11-92	02:23pm
FREEZEFR AME	(Folder)	16-11-92	02:25pm
DEGAS	(Folder)	16-11-92	03:52pm
VANTERM3 8	(Folder)	17-11-92	11:12am
TEMP	(Folder)	19-11-92	12:17am
CLEANUP	(Folder)	23-11-92	01:37pm
CPX	(Folder)	24-11-92	05:13pm
TASKMAN ACX	20778	28-09-93	10:53pm
CONTROL	(Folder)	24-11-92	05:13pm
PROTEXT	(Folder)	30-11-92	03:52pm
GRABBERS	(Folder)	01-12-92	04:01pm
POWERDOS	(Folder)	16-09-93	10:54am

PREVIOUS | DISK | PRINT | OK | PREV ◀ PAGE ▶ 01 | NEXT | NEXT

You can use *Knife ST* for much more than formatting disks, but make sure you know exactly what you are doing before you perform digital surgery on a disk.
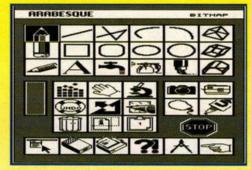
THE BEST OF BOTH WORLDS

I want to install GDOS on my system to use with *Arabesque* from Cover Disk 53. I have the GDOS-B disk for 24-pin printers, but there were no instructions with it, and there aren't any on-screen instructions. Can you please tell me how to set up GDOS with *Arabesque*.
Anthony Youd, Tyne & Wear

stf: You don't actually need GDOS installed to use GDOS fonts within Arabesque, so you've got the best of both worlds – GDOS fonts without the hassle of installing GDOS. If you look at the Arabesque Masterclass in ST FORMAT 54, you'll find that it includes full instructions for using GDOS fonts as part of the feature. If you missed issue 54, I'll repeat the instructions here.

One of the unique features of Arabesque is its ability to use up to five GDOS fonts even if your ST system doesn't have GDOS installed. To access the GDOS font loading function, right-click on the Text icon in the main menu. This displays the Text Attributes menu. This menu consists of the usual text functions

ARABESQUE   BITMAP

Most of *Arabesque's* functions are accessed from the main menu. The Text icon is the large capital A in the third row down from the top.

with bold, light, italics, underlined and outlined modes. The text can be set to run in any direction and at various line spacings. You can load up to five GDOS fonts by clicking on any of the boxes marked Free under the Font menu.

You are then taken to the file selector and you simply select and load in the GDOS font of your choice. it's easy when you know how.

For full details of installing GDOS using the ready-made, easy-to-use setups on Cover Disk 54, see the special GDOS boxout on page 51 of ST Answers 70. Unfortunately, there are no more copies of issue 54 available from the ST FORMAT back issue service, but you should be able to get a copy by placing an advert on the ST FORMAT reader ads page.

Text Attributes

ATTRIBUTES   FONT
■ Normal   ☐ System
☐ **Bold**   ☐ ATSS10
☐ Light   ☐ ATTP10
☐ *italics*   ■ ATTR24
☐ Underlined   ☐ Free
☐ Outlined   ☐ Free

DIRECTION ◇ ◁ ▷ ▽
LINE SPACING 1 1½ 2

The Text Attributes menu is simple to use. Select your font, style and direction by clicking on the relevant box.

CONTAGION

About two years ago I suffered from exactly the same symptoms described by Mike Southwell (*STF 67*). Sometimes loading a disk resulted in the drive spinning continuously without any data being transferred to the memory of the ST. I thought I had a faulty drive, so I tried to get it fixed, without success.

By chance, I loaded a disk formatted, and virus-protected, by *Fastcopy Pro*. Everything started to work perfectly after that. It turns out that most of my disks were infected by the ancient *BPL* virus (also known as the *Signum A* or *Signum B* virus). I spent the following night virus-checking my heavily infected software collection using the *Ultimate Virus Killer*.
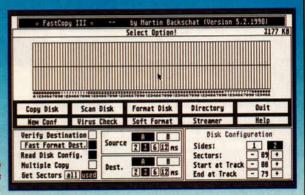
I didn't realise that viruses could affect hardware in this way. Since then I have never had any problems with my ST. If you have the same problems with your ST, boot with a virus-protected disk and see what happens.
Luciano Lambertini, Bologna, Italy

Thanks for that advice, Luciano. Remember, if you are using a virus killer on your disks, don't use it with commercial game disks because they look just like a virus to a virus killer.

If you haven't got the commercial version of *Fastcopy Pro*, you can always get *Fastcopy 3* from your friendly PD library.

```
» FastCopy III «    --    by Martin Backschat (Version 5.2.1990)
                  Select Option!                           3177 KB

[Copy Disk]  [Scan Disk]  [Format Disk]  [Directory]  [Quit]
[New Conf]   [Virus Check] [Soft Format] [Streamer]   [Help]
Verify Destination □              Disk Configuration
Fast Format Dest.    Source  A  B    Sides:      □ 1  2
Read Disk Config.    2 3 6 12 ns     Sectors:    - 09 +
Multiple Copy  □     Dest.   A  B    Start at Track - 00 +
Get Sectors [all][used]  2 3 6 12 ns  End at Track  - 79 +
```
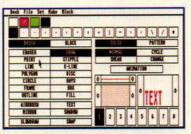
CAUSE AND EFFECT

Q I run a high resolution mono monitor – an SM124 – and a colour television with my ST. I frequently swap between the two for word processing and games, and I'm a bit worried about the wear and tear on the monitor port. And it gets pretty annoying.

Is there any way I can switch between the two? I know there are switchers for changing between high and low resolution monitors, but I am using the colour television via the RF port.
William Ockendon, Horsham, West Sussex

Create your icons the easy way using *Degas Elite*, then cut them out and save them to disk. Easy peasy.

A *You can use a standard monitor switcher to swap between your monitor and TV. Your ST detects a signal from the high resolution monitor to switch into high res mode. It does this whether there is a colour monitor attached or not. So you can leave both the monitor and the TV plugged in, and use the switcher to flip between them by flipping screen resolutions.*

So, you can save yourself some hassle by purchasing a monitor switcher from First Computer Centre (☎ 0113 231 9444) for £17.99.

PEN PALS

Q I find *MakeIcon* from *ST FORMAT* Cover Disk 48 difficult to use, and *Neodesk* is almost as fiddly.

Can I use the Tabby graphics tablet and pen to create icons? If so, how do I save them as an RSC file? I don't want to buy the Tabby if I can't use it to create icons.
David Philips, Glasgow

A *The Tabby graphics tablet won't make it any easier to create icons – that depends entirely on the software you are using. You can always create your icons in a paint program like* Degas Elite *(STF 30, 90%), or* CrackArt *(STF 61, 94%).* Degas Elite *enables you to cut out blocks from the screen and save them to disk. These blocks can be saved in icon format and then loaded into* MakeIcon *and saved as RSC files in the usual way.*

Virus guide

Keep your disk collection safe – as promised in last month's ST Answers, here's Part One of our guide to protecting yourself from computer viruses.

Viruses aren't all as unpleasant as this AIDS virus.

You try to load your expensive document processor for another creative session – and nothing happens. The master disk has been wiped by a virus and your software is gone, £100 deleted in a puff of logic and there's nothing you can do about it. What a nightmare.

So where do viruses come from? What are they and how do they ruin disks? How do you know if you have a virus on any of your disks? And how the hell do you get rid of a virus once your disks have become infected? There are a few simple steps you can take to ensure that the risk of getting a virus is reduced.

Silicon Avatar

A virus is just a small program with certain functions programmed into it that may be harmful to floppy disks. An especially vulnerable area is the boot sector of a disk. This is where most viruses hide themselves on a disk. If a disk has a special auto-loading boot sector which runs the software, it is destroyed. Most commercial programs load in this way.

Because a virus is simply a program, it can only get on to a disk by being saved there from the memory of your ST. The next time the disk is booted, the virus loads into memory and waits for another disk to be inserted in the drive. If a disk is inserted without a copy of the virus on it, the virus transfers a copy of itself to the disk the next time the drive is accessed

A digital virus does not work ▶

CODE OF HONOUR

An anti-virus works exactly the same way as a destructive virus. It loads into memory from the boot sector of a disk and saves itself to uninfected disks. The anti-virus checks every disk you put in the drive and lets you know if there is executable code in the boot sector, which indicates that it may contain a virus. There are over 50 anti-virus applications available.

Most anti-viruses cannot tell the difference between different types of boot sector code, they just let you know that something is lurking there. It's up to you to check what's actually in the boot sector and decide what to do about it.

THE VENGEANCE FACTOR

It's easy to check a disk with *Ultimate Virus Killer 6*. Click on the search 'n' destroy option to get started.

Put a suspect disk in drive A to check if it has a virus. You never know what may be lurking on any of your disks.

The Red Alert bar and an ominous bell tells you there's something on the boot sector that may be harmful.

Actually it's the Cover Disk from *ST FORMAT* 57 with a special executable boot sector I created to fool you.

in the same way as a biological virus – you can't transfer it from one disk to another by putting them side by side. Just like all software that loads into your ST's memory, the virus vanishes when you switch off your machine. It doesn't stay tucked away in a cosy corner of your ST waiting to leap into action the next time you switch on. However, some viruses can linger in memory for a while and survive a warm reset – initiated by pressing the spring-loaded button on the back of your ST. To make sure that a virus is erased from the memory of your ST, switch off the power for at least 30 seconds before re-booting.

Bloodlines

There are two main kinds of virus that can infect a disk: boot sector viruses and link viruses.

A boot sector virus is a small program that saves itself to the first sector of a floppy disk. When you boot up your ST, it examines the boot sector of the disk in the drive to see if there is a program there. If there is a program present, it runs immediately. Commercial games use this type of software to boot your ST.

Boot sector viruses use this method to run and copy themselves into memory. It doesn't make anything happen when it does this, you won't even know that it's there. However, when you put another disk in the drive to run another application, the virus

accesses the disk and copies itself to the boot sector, deleting any information already contained there. This is how commercial games are destroyed – the virus simply erases the code that starts the game.

Some viruses keep track of how many times they infect disks. When a specific number of disks have been infected, the virus activates its destructive routines. Symptoms of a virus in action can include your ST crashing, erasing the tracks on a floppy disk that

Symptoms of a virus can include your ST crashing or printing a stupid message

contain the FATs and directory information or just printing a stupid message on-screen. At the very least, viruses are annoying and troublesome.

Attached

A link virus is a completely different type of program. Instead of storing itself in the boot sector of a floppy disk, it attaches its code to another program. In this way, it hides there disguised as part of one of your normal program files. Other than using a special virus killer, the only way you can tell that a program has a link virus attached is to memorise the length

of each of your programs and utilities. If you've got a hard drive packed with files, and hard drives usually are, this is no easy task.

On the ST boot sector viruses are much more common than link viruses, with over 70 different strains and variations known. In contrast, there are only five known link viruses in existence.

Pre-emptive strike

Virus killer programs check the boot sector of a disk to see if there is executable code hidden there. If something is detected, you can use the virus killer software to erase it and leave the area clear. *Ultimate Virus Killer (UVK)* actually leaves data in the boot sector to fool viruses into thinking that they have already infected the disk, so they ignore it. To fall in line with the biological parallel, this function is called immunisation.

The major commercial virus killer, *UVK* is the most comprehensive program of its kind and can recognise over 1,500 different boot sectors. It can also can repair the boot sectors of over 700 commercial games. see the special offer below if you don't have a copy.

There are shareware and PD virus killers available from PD libraries, BBSs and the Internet, but they are not as sophisticated or as powerful as UVK and lack many of its functions. The best, and most powerful, shareware virus killer is called *Sagrotan*, but there are many others. *stf*

THE BATTLE

1 Always keep your disks write-protected unless you actually need to save data on to them.

2 Buy *Ultimate Virus Killer 6*. It's only £9.95 if you buy it from us – see the special offer panel at the bottom of the page.

3 If you can't afford *UVK* then get a PD virus killer, which will cost you a couple of pounds from any good PD library.

4 Always check PD, shareware and disks from your friends. You never know what may be lurking furtively on a disk.

5 Don't be fooled into thinking you're safe if you always boot from your hard drive. Some link viruses can attach themselves to files on hard drives.

6 Never think that you'll never get an infected disk, because that's just asking for trouble.
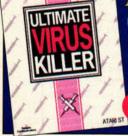
7 Never use a virus killer on a commercial game disk, because the special data on the game's boot disk looks like a virus. You could destroy the game you were trying to protect.

8 It's just as important to back up your floppy disks as it is to back up a hard drive.

9 If you're not sure how to make a back-up floppy, use the *ST FORMAT* Cover Disk Back Up program from, er, the Cover Disk.

10 Never use a virus killer that automatically erases the boot sectors of disks without checking them. You could end up destroying your software.

This month Frank Charlton rides his camel through the Internet software desert and finds palm trees, fresh water and a gem-based shell for *AtariNOS*.

alt.comms.stf@

Those of you who've used *AtariNOS* on the Internet, or followed Simon's tutorials in previous issues, will have seen that Internet software on the ST is somewhat lacking in the prettiness department. *NOS* and its associated programs are wonderful pieces of programming, but they use a basic TOS interface and rely heavily on command lines. The e-mailer and newsreader are especially awkward to begin with. If you've ever glanced at the Mac and PC software in *ST FORMAT*'s sister mag *.net*, you may well have gone green at the gills.

It seems Dave Levi and Phil Yeadon thought so too, so they got to work on something called *Oasis*. It's rightly named too, since it's a refreshing change in the Net software desert. *Oasis* is a fully GEMmed 'shell' for *AtariNOS*, replacing the old TOS-based shell for all offline actions. So, no more tangling with key presses to add or change newsgroups, and configuring your account settings is handled with standard GEM dialogs and mouse actions. Better still, *Oasis* dispenses with the basic e-mail program supplied with *NOS*, and junks the erratic and occasionally buggy newsreader.

EASY E-MAIL

Oasis handles e-mail in a fashion not unlike the software available on the Mac. Clicking the 'Post Box'

menu entry opens a window containing a short summary of each piece of e-mail you have waiting for you. A quick glance reveals the sender, date, time and subject line. You can scroll though your mail with the mouse very quickly – an absolute joy if you've ever used the *NOS* mailer.

Reading a piece of mail is as simple as double-clicking on the line, which opens the text in a full-sized window. While reading, you can reply with a click, and quote the original message for reference. Close the window when you're done and the mail line is marked with a tick to show you've read it. Deleting single messages, or whole batches, is easy.

HERE IS THE NEWS

Snews, the newsreader supplied with *NOS*, was fiddly to use, to say the least. It isn't being developed by the original author any more, and the final version (1.08) had the odd nasty bug which crashed the program when you'd posted a message of your own.

Oasis replaces it with a GEMmed equivalent, which operates in a very similar manner to the mailer. Articles can be browsed and read with the mouse, and replying to a posting will quote the original for you to edit. The big feature which lifts *Oasis* over *Snews* is the way it handles maintenance. Adding a new newsgroup can be done straight from a dialog

Oasis stores your commonly used e-mail addresses in the Yellow Pages. Sending e-mail is as simple as clicking on the entry for the person you want to mail.

if you know the group's name, or you can click on 'Select', which pops up a window with a huge list of available groups for you to browse. Once you've found the one you want, a quick double-click activates it ready for your next log-on. If you have *NOS* set up to retrieve a list of new groups when you call, *Oasis* can show you these, too. You need not miss out when alt.fan.clives.wallet finally arrives.

The only piece of the original *AtariNOS* kit used by *Oasis* is NOS.TTP itself. Yep, *NOS* is still called for all online functions, so we aren't quite in Nirvana yet – you'll still have to tangle with cryptic command lines for ftp, telnet and so on. Phil and Dave have said that they do intend to replace *NOS* with a GEM equivalent in the fullness of time, and despite raging arguments about this in demon.ip.support.atari, they may well come good on this promise.

Oasis also hides an inactive menu entry marked 'Spider', which presents you with a dialog promising a much-anticipated graphical World Wide Web Browser for the ST. Some have said they'll believe it when they see it – I say more power to Dave and Phil for trying, and if *Oasis* itself is anything

to go by then they have my full support on the project. As ever, more news as I get it.

GET IN TOUCH

If you want to check *Oasis* out, connect to ftp.demon.co.uk and move to the path /pub/atari/oasis. New versions appear there as soon as they're ready. Contact Phil and Dave at phil@yeadontt.demon.co.uk and Dave@levihome.demon.co.uk.

Oasis handles Usenet News in a slick fashion, too. Adding new groups from the huge list of available newsgroups is done with a mouse click.

E-mail without tears at last, thanks to the GEM-happy *Oasis*, a refreshing change in the Net software desert. A quick glance reveals sender, subject, date and time.

You can write to Frank at: alt.comms.stf, *ST FORMAT*, Future Publishing, 30 Monmouth St, Bath, Avon BA1 2BW or e-mail him at: frank@tachyon.demon.co.uk, or stformat@cix.compulink.co.uk, or Frank.Charlton@adlib.centron.com.

Don Maple pays homage to the Internet, that ultimate repository of all knowledge in the known multiverse – including vast galaxies of code.

Assembly Line

There's no doubt that the Internet is the best thing since EORed bits. The two gems below were spotted around various dimly lit information superhighway back alleys, the sort of places where assembly geniuses lurk in dark doorways and it's often hard to tell the hardware from the software. Oh, all right then, I saw them in a couple of newsgroups.

BINARY TO BCD
One of the common tasks in assembler is the conversion of numbers between different representations. Usually, this involves computationally expensive division and multiplication instructions. But, as the nifty code snippet in Panel One shows, this conversion can be done equally well without them.

The code can handle numbers over 32 bits in size as well, but you have to use an `ABCD.B -(Ax),-(Ay)` instruction to store the results in RAM instead of registers.

If you want to get fancy you can also do fixed point numbers using this method, but you must first tame the fraction. Depending on how many digits are required

the value must first be multiplied. For example, to get a five-digit integer the multiplier would be 10000.00000 followed by rounding off of the fraction. All that's left is to convert the integer portion as shown in Panel One and then place the decimal point five places from the right.

JOY TO ALL
This next bit is for game programmers wanting to read the joystick. On the ST this can only be reliably done in assembler.

First of all both joystick ports are handled by the keyboard processor. This sampling of joystick position can occur in one of two modes. Command $14 forces the return of every joystick movement. Command $15 terminates this mode and awaits explicit requests. These requests, in turn, are performed with command $16 to the keyboard processor, and that's the mode used here.

The code in Panel Two assumes command $15 has already been sent, the MFP interrupts are turned off and the data is read directly off the ACIA.

And that's it for now. RTS until next month...

MOTOROLA ON THE NET
If you have access to the Internet you also have access to a vast amount of assembly code, although there isn't any one particular place where the code is stored. The stuff is everywhere and you just need to snoop around any well-stocked ftp site.

Surprisingly, Motorola doesn't have an ftp site, but according to its HQ in the US it is "looking at the possibilities". However, one essential newsgroup for any 68K assembly fan is comp.sys.m68k. You won't find a lot of traffic, but what you do get is normally of outstanding quality.

One thing Motorola does offer is a free fax service called MFAX, which is tied to the Internet. You just send an e-mail with your request and Motorola sends you desired documents by fax. The catch is there's no index so, with over 30,000 documents on file, you need to know what you are looking for beforehand. For more about the service, just send an e-mail with the word 'help' in the body of the message to: RMFAX0@email.sps.mot.com.

You will receive a short text file explaining the syntax and everything else you need to know.

PANEL ONE
```
;
;  in: D0.L - unsigned binary value
; out: packed BCD value in D5.B to D1.B
;
BIN2BCD
        CLR.B   D1      ;clear
        CLR.B   D2      ;the
        CLR.B   D3      ;five
        CLR.B   D4      ;destination
        CLR.B   D5      ;registers
        NEG.L   D0      ;test for zero
        BEQ.S   @2      ;nothing here
        NEG.L   D0      ;initialise carry
@0      ADDX.L  D0,D0   ;shift value
        BCC.S   @0      ;until first decimal
@1      ABCD.B  D1,D1   ;percolate the bit
        ABCD.B  D2,D2   ;through registers
        ABCD.B  D3,D3   ;(that's the
        ABCD.B  D4,D4   ;nifty part!)
        ABCD.B  D5,D5
        ADD.L   D0,D0   ;next decimal, done?
        BNE.S   @1      ;nope!
@2
        RTS             ;yup!
```

PANEL TWO
```
;
; assumes MFP interrupts are off and
; keyboard processor received command $15
; out: D1.B - joy 0 value, D2.B - joy 1 value
;
chk_acia
        btst.b  #1,$fffc00      ;test TDRE bit
        beq.s   chk_acia        ;wait until sender empty
        move.b  #$16,KB_DATA    ;then send request packet
IKBD_receive
        btst.b  #0,$fffc00      ;test RDRF bit
        beq.s   IKBD_receive    ;wait until command sent
get_header
        move.b  $fffc02,d0      ;get header byte (#$fd)
wait_joytick0
        btst.b  #7,$fffc00      ;test SR7
        beq.s   wait_joystick0  ;wait for joy 0 data
        move.b  $fffc02,d1      ;get joystick0 data byte
wait_joystick1
        btst.b  #7,$fffc00      ;test SR7
        beq.s   wait_joystick1  ;wait for joy 1 data
        move.b  $fffc02,d2      ;get joystick1 data byte
```

If you have any queries about assembly programming, send them to Don Maple at Assembly Line, *ST FORMAT*, Future Publishing, 30 Monmouth St, Bath, Avon BA1 2BW or e-mail him at: donm@ucon.gun.de.

After breaking another camera by having his photograph taken again (watch this space), Mac Marsden cheers himself up with your GFA queries.

GFA Workshop

USING C ROUTINES

Q I am a rather experienced programmer in *GFA* and now I have this question. I have a number of C libraries as Enhanced GEM. Is there a way to include and use this library in *GFA* programs? After I use INLINE to include the library in my program, how can I call the routines? Is there a way to find the address of every function so I can use them?
Spiros via e-mail

A Spiros, thank you for taking the time to send an e-mail, but I am afraid the answers to your queries are very negative. Over the years using GFA Basic I have been unable to include any C libraries.
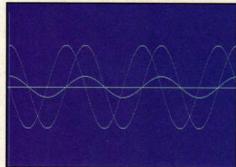
The only way I have found of using C is to use INLINE or MAL-LOC. Then use them by using the command:
`C:addr%({x,y,...})`
where addr% is the INLINE address, and x and y are parameters that will be passed on to the C code. If you prefix the parameters with L or W they can be sent as either a 32- or 16-bit

word. For example `c:ad%(L:x,W:y,z)` would send x as 32 bits and y as 16.

As for finding and using the address of every function, remember that you have to stipulate the length of each INLINE statement you use. If you have a different INLINE statement/address for each function you wish to include in your program, then using the separate routines should be easy. It may initially mean re-writing your C functions but in the long run it should be worthwhile if you want to continue in this direction.

IN A SPIN

Q I would like to draw sine wave graphs of varying sizes on the screen but I cannot understand how to use the

SIN/COS commands. Can you please help? Could you possibly include a program listing?
Mark Redman, Sheffield

A Mark, the program listing in Panel One should help your understanding of SIN/COS commands. The two line statements set up the grid (this could be added to by adding scale markers). The variable 'across' is used for moving the trace across the screen and 'up' controls the y position on screen. The 'For f' loop runs through three full circles. The x and y variables hold the position co-ordinates and the PLOT statements plot the selected points on screen.
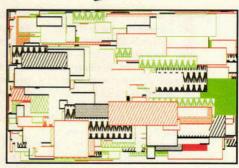
Look at the graph output and see what you can achieve with just a simple program – it's up to you to add the finishing touches. Good luck.

RANDOM BOXES

Q I am in the process of writing a program for my young son and would like to include my own screen-saver within the program, which would be called if nothing happens for a certain amount of time.

The problem is that I cannot find a command to automatically fill a box randomly placed on the screen. Is there such a command and how would I use it?
Mark Davis, Newton Abbot

A Well, Mark, the command you are looking for is `PBOX x,y,xx,yy,` which draws a filled rectangle. In the example listing you can see what can be achieved using the DEFFILL and RANDOM commands with PBOX. The screen shot shows the sort of results that can be achieved.

These randomly-filled rectangles were generated using a loop containing PBOX and RANDOM commands.

```
DO
    a$=INKEY$
    x=RANDOM(480)
    y=RANDOM(150)
    xx=RANDOM(200)+x
    yy=RANDOM(50)+y
    DEFFILL
RANDOM(4),RANDOM(4),RANDOM(4)
    PBOX x,y,xx,yy
LOOP WHILE a$=""
```

This program is very straightforward. The variable a$ is monitoring for a key press (it could be set to look for a mouse button being pressed or a specific key). The variables x, y, xx, yy are given random values within the confines of the screen (medium res). The x and y values are 200 and 50 pixels short of full screen while xx and yy are given a random value of the difference between x and y and full screen co-ordinates. This makes sure the rectangles are all drawn within the 640x200 boundary and none go outside the screen. DEFFILL x,y,z sets the rectangle colour/fill pattern. The program will continue to run until your son presses a key.

Three graph traces showing the results you can achieve from a simple program using COS and SIN.

PANEL ONE

```
REM SIN/COS LISTING
LINE 10,10,10,300          Vertical line.
LINE 5,100,640,100         Horizontal line.
across=10                  Note across has the same x
                           co-ordinates as vertical line.

up=100
FOR f=0 TO 6*PI STEP 0.03  Try altering the step value.
  x=up*COS(f)              Change the starting point of
                           the graph by making x=up*sin(f)
  y=up*SIN(f)              and y=up*cos(f).
  PLOT across,(200-x)/2    Note the relationship of
                           (200 and /2) and (800 and /8)
  PLOT across,(200-(-y))/2 for the scaling of the height
                           of the graph.
  PLOT across,(800-x)/8
  across=across+1          Try altering the increment
                           value to +4, +10, +0.5 and so on.
NEXT f
```
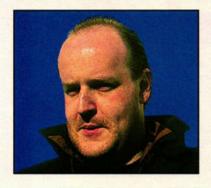
Still under the vice-like grip of Frank Charlton, this month's *STOS* Corner features great graphics, dynamic data transfer and excellent extensions.

STOS Corner

JUST A MEMORY

Q I have a program which loads some picture files to disk as it runs. When I compile it to GEM so it runs from the Desktop, the Compiler includes the picture files into the compiled program. I want to stop this, as I want my compiled program to load them from disk, just like the interpreted version. How can I do this?
Lee Ashmore, Thetford

The *STOS* Compiler is good, but be very careful that you're not compiling more than you need to.

A *Lee, this might sound daft, but the answer is simple – don't run your program before you compile it.*
When you run programs from within STOS, the Interpreter will reserve the memory banks you have requested, and load the files. If you quit the program and go to compile it, those banks are still reserved, and your picture files are still in memory, so the Compiler includes them.
Once you're sure your program is working as you want it to, save it to disk as usual, type NEW to clear your listing, and load it from disk again. Don't type RUN, just start the Compiler and off you go.

COMMUNICATION

Q Which is better for data transmission between two to four computers? A modem cable or MIDI leads?
Andrew Robertson, Strathclyde

A *It depends what you want to do. If you're planning a multi-player game like MIDIMaze which uses a separate ST for each player, then the MIDI cables are your best bet. Using the serial port with a null-modem cable will mean you can only connect two STs together. Since the MIDI ports have both in and out, and are designed for linking more than two devices, you can link up quite a few machines. On a standard ST, the serial port can only go as fast as 19,200bps, but MIDI can transmit and receive at over 31,000bps, so your game will spend less time waiting for data. Let us know how you get on with your multi-player game, we love 'em to bits here at ST FORMAT.*

HAPPY HAPPY JOY!

Q Is there any way to read the PowerPad controllers which come with the Atari Jaguar from within *STOS*? By using the *STE Extension* command I have had some success, but it really isn't perfect.
James Marson, Maltby

A *When the STE Extension was written, there wasn't really anything you could plug into the STE's enhanced joystick ports, so it's no big surprise the rou-*

The STE and Falcon can take advantage of the Jaguar's controllers, too. Zero-5 can do it, and so can you...

tine isn't perfect. Fortunately, Les Greenhalgh – the author of the excellent STOS Control Extension – has written a routine to read the PowerPads in your game. He's making it available to registered users of STOS Control, which is well worth the money even without this bonus. If you haven't got STOS Control, check your favourite PD Library and get your cheque off.

If you want snazzy plasma and odd colour effects like this, you'll have to get to grips with assembly language.

THE PLASMATICS

Q I have a lot of demos and I'm very impressed with the 'plasma' screen effects. How can I create one for a *STOS* demo I'm writing?
Nick Lemon, Cardiff

A *Nick, the demos you've seen are almost always written in assembly language. Even the ones which claim to be fully written in STOS usually have a bit of assembler tucked away somewhere. However good STOS is, it simply isn't up to the complex calculations and palette-switching techniques used for the effects.*
If you want to do something

like this you'll have to tackle some assembly language programming yourself, and creating a plasma effect would take a lot of learning – demo programmers eat, sleep and breathe with their ST to come up with impressive effects like that.

TOP NOTCH!

Q Did Top Notch Software release any extensions after *The Missing Link*? Is it still going? Can I still register *The Missing Link* if Top Notch has disappeared?
Alan George, Nottingham

A *As far as we know, The Missing Link was the last extension written by Billy and Colin. They were always difficult to get hold of, so Goodman Enterprises (☎ 01782 335650) took over registration of The Missing Link.*

For more on STOS programming, see the tutorial on page 66.

Write to: *STOS* Corner, *ST FORMAT*, Future Publishing, 30 Monmouth St, Bath, Avon BA1 2BW or e-mail Frank at: frank@tachyon.demon.co.uk, or stformat@cix.compulink.co.uk, or Frank.Charlton@adlib.centron.com.

Following on from last month's introduction to HiSoft C, Mac Marsden shows you how to start programming, beginning with variable handling.

HiSoft C Centre

As with any C-based programming, in *HiSoft C* you begin by declaring – or telling the system – what variables are going to be used in each function.

There are two types of variables – numbers and characters. The character arrays look after all the text, while the numerical ones look after all of the maths functions. This month we will take a look at the numerical variables, and next issue I will explain how to use the character arrays.

So, what you need is a small sample program, where you will set some variables, do some simple maths and then print the results to the screen. Examine the example listing in Panel One.

In Example Program One, you are asked to enter a whole number [scanf("%d",&x);]. This number is then shown on screen. Two more numbers are asked for, separated by a space. These numbers are also printed on screen with the 'printf' function. If you are used to other languages then this printf function may seem a little strange but once you have

become familiar with it you will see that it is very useful.

The variables x, y and z hold the values you input, while the variable 'temp' holds the results of all mathematical operations. In this very simple program we begin by multiplying x with x, then add all of the inputted numbers together, then finally multiply the three numbers together. If we wished to work in fractions then we would have to alter all of the '%d' statements to become '%f' and instead of using the statement:

int x,y,z,temp;

we would have to use:

float x,y,z,temp;

(examine the example listing in Panel Two). Do not worry too much about the printf function or the declaration and use of the different types of variables, as with time and use they will become very familiar – in fact you will think nothing about initialising the variables in your programs.

Example Program Two works in a similar way to Example One, but uses decimals instead of integers. You will see in the first and third printf statements the output has been limited to three and two decimal places respectively. The %f statement was changed to %0.3f and %0.2f limiting the output of numbers after the decimal place. Try adding your own maths functions to the above examples – don't be afraid to experiment.

Next month, character arrays. *stf*

```
Please enter a number in the range (1 to 10) then press return.
9

The number entered was 9

Now enter another two numbers (1-10) separated by a space
then press return. 15 7

Your two numbers were 5 7

Now we will square x which has the value 9 : So 9 * 9 = 81

Adding them all together: 9 + 5 + 7 = 21

Multiplying all together 9 * 5  * 7 = 315

Press any key to return.
```

The screen output from Example Program One (Panel One), showing the integer results.

PANEL ONE

```
/* Example Program One */
/* Simple program showing the initialisation and manipulation of
integers (whole numbers) */
main()
{
    int x,y,z,temp;

    printf("Please enter a number in the range (1 to 10) then
                            press return.");          (all one line)
    scanf("%d", &x); /* get number from keyboard */
    printf("\nThe number entered was %d",x);
    printf("\n\nNow enter another two numbers (1-10) separated by a
                        space then press return.\n");   (all one line)
    scanf("%d %d", &y, &z);
    printf("\nYour two numbers were %d %d\n\n",y,z);
    printf("Now we will square x which has the value %d ",x);
    temp=x*x; /* square x */
    printf(": So %d * %d = %d",x,x,temp);
    temp=x+y+z; /* Add numbers */
    printf("\n\nAdding them all together: %d + %d + %d =
                        %d",x,y,z,temp);             (all one line)
    temp=x*y*z; /* Multiply numbers */
    printf("\n\nMultiplying all together %d * %d  * %d =
                        %d",x,y,z,temp);             (all one line)
    printf("\n\nPress any key to return.");
    evnt_kbrd();
}
```

PANEL TWO

```
/* Example Program Two */
/* Simple program showing the initialisation and manipulation of
decimal numbers */
main()
{
    float x = 10.98734, y = 7.876, z = 9.123456789, temp;

    temp = x+y+z;
    printf("\n\nAdding all number together: %f + %f + %f =
                        %f",x,y,z,temp);             (all one line)
    printf ("\nAnswer limited to 3 decimal places.");
    temp = x * y  * z;
    printf("\n\nMultiplying all numbers together: %f * %f * %f =
                        %f",x,y,z,temp);             (all one line)
    printf("\nAnswer is limited to 2 decimal places.);
    printf("\n\nPress any key to return.");
}
```

VARIABLES

A variable is a name or reference to a piece of data, such as a number or character, whose value can be altered within a program. This name can be made up from characters and numbers, but *must* always begin with a character, for example: x, y, a1, b3, mac4, day, date and so on.

Write to Mac at *HiSoft C* Centre, *ST FORMAT*, Future Publishing, 30 Monmouth St, Bath, Avon BA1 2BW or e-mail him at mac@mentor.demon.co.uk.

ADVERTISERS INDEX

The Score

And coming right up after the MIDI and music news, folks, is the second part of Andy Curtis' rootin' tootin' real-time recording tutorial.

MEMS '95: an opportunity to talk to the people in the know...

The Prologue-2 takes MIDI input and converts it to the old CV and GATE system, bringing a new lease of life to your analogue synthesisers.

MEMS '95

THE MEMS SHOW WAS GREAT, as you will have seen from the show review on page 15. It was good to talk to those in the know about what might be happening in the future. One thing's for sure, there are lots of great products lined up for the ST and Falcon in the future. We may also have good news for those of you with an unofficial copy of *Cubase 2*. Watch this space for more details.

As far as the MIDI file situa-tion goes it seems that EMI, the giant record company, are playing their own hand and not using MCPS. EMI's support for MIDI file producers is good, but the prices are even higher than those of the MCPS. This means a definite hike in the price of commercial MIDI files, by as much as £3 per song, but, with luck, that is all. There doesn't appear to be a mad dash to join the ranks of those artists who will not agree to MIDI file licences.

MIDI to CV

With the current trend towards analogue synths, many people are paying out for expensive MIDI retrofits to their keyboards to give them that all important MIDI com-patibility. If your keyboard has the old analogue CV and GATE sys-tem installed there is now the Prologue-2 MIDI to CV interface, which operates four independent MIDI processors. It costs a trifling £293.75 and can control up to eight independent analogue synths. The cash benefits over eight MIDI retrofits are very considerable.

If this sounds like your sort of thing, call Design Laboratories on ☎ 0171 586 0357. Watch out next month for a full review of the Prologue-2 Plus, a complete MIDI to analogue interface which processes audio from your MIDI keyboard in an analogue fashion.

Steinberg PC3

THREE EXTRA MIDI OUTPUTS are provided by the new PC3 (£169) from Harman Audio (☎ 0181 207 5050), giving Falcon and ST owners an extra 48 chan-nels of MIDI via the parallel port. If you cannot make do with one or two banks of MIDI channels (stan-dard ST or 16+ cartridge) then the PC3 could be your answer. It is, of course, completely *Cubase*-compat-ible. For other sequencers, it may be wise to wait till a few people have had chance to play with the PC3. Word will soon be out regard-ing what works and what doesn't.

ROLAND PC200MK2 MOTHER KEYBOARD

£165, Tech Mate, ☎ 01206 793355

If you tell Tech Mate you saw this Roland keyboard in *ST FORMAT*, you won't have to pay for delivery!

If you're looking around for a cheap mother key-board, you are likely to encounter the Roland PC200 sooner or later. It is aimed at the kind of person who needs a well-specified mother key-board, but who doesn't want to spend £500 or more on a more professional offering.

Features
The PC200Mk2 is a four octave touch-sensitive MIDI mother keyboard with a single MIDI output and a socket for a sustain pedal foot-switch. It can run from batteries (supplied) or a DC mains adapter (not supplied). The usual Roland com-bined pitchbend and modulation control is fitted, along with a data entry slider which can be set to control a variety of data inputs. Although only a four-octave keyboard (49 notes), there are octave shift buttons enabling you to play in what-ever register you desire. The keyboard can be set to output MIDI on the channel of your choos-ing and there are other functions to emulate the numeric keypad and the [Enter] key.

Under pressure...
We gave the keyboard a full workout by using it to put together the little MIDI file featured in the real-time recording tutorial. The unit is designed purely for data input, rather than synthesis, so there are more data input controls than you would find on even a high-end synth keyboard.

The easy control over velocity levels was most welcome. It is possible to modify the veloci-ty curve according to each sound used. We used a high velocity output for the drums and a much lower one for the background parts and this worked very well, saving a lot of time in the edit pages that would otherwise have been needed.

The keyboard response was positive and reassuring, making it satisfying to play. The biggest problem was the sheer lack of notes. If you are used to playing a real piano you will be totally at sea – four octaves is really not enough. However, if you are used to working with small keyboards, you shouldn't have any problems.

The final word...
We mentioned the Studio 49 (£99) as a basic starter MIDI keyboard last month. The PC200 has an awful lot more to offer for the extra £64. The Studio 49 has no pitch or modulation wheel controls, and no sustain pedal input socket. It really is just 49 keys. The PC200 is a small, but fully-featured MIDI mother keyboard, and as such it is well worth the extra money.

If you were to combine the PC200Mk2 with the Korg 05R/W reviewed last month you would have a nice little MIDI setup for £564. Add anoth-er £99 for *Cubase Lite* and you should be able to produce some very professional-sounding pieces.
STF RATING 86%

Real-time recording

The second and final part of this tutorial makes use of a specially-recorded MIDI file, which you'll find on the Cover Disk. Load it into your favourite sequencer, then check out the annotated diagram to the right. It probably won't look exactly like this on your sequencer, but the diagram should tell you enough to get your gear set up correctly.

Real-time drumming

There are three versions of the drum part on this little demo. The first two tracks are the basic drum beat that we entered quite mechanically last month. They were used to get the feel of the tempo and as a guide to putting down the pitched parts.

We used a basic 12-bar riff to give you something to jam to, and then added two further complete drum parts to show you the benefits of recording in true real time. In both cases we played the parts non-stop from start to finish, just as a live drummer would. The first is a half-speed part which alters the feel of the piece dramatically, while the second is more like the initial beat, but with a few flourishes. Using the track mute controls on your sequencer, try switching between the parts and note the differences. Next, play your own drum part along with the sequence and see what other kinds of rhythms fit with the music. Remember to leave the metronome on to guide you.

On with the music…

We have provided you with two bass parts to play with as well. Once again, switch between them and note the differences and the

Arrang 5 STF_DEMO.MID

Snap				BAR		Mouse	4. 1. 0	Quantize	16 9	Cycle Rec	Mix	AQ

A	M	C	T	Track	Chn	Output
	●		♪	**Kick Snar**	16	Printer 3
	●		♪	**Hats**	16	Printer
	●		♪	**Drums 2**	16	Printer
	●		♪	**Drums 3** 4	16	Printer
1			♪	**Piano**	13	Modem
	●		♪	**Bass 1**	2	Printer
			♪	**Bass 2**	2	Printer
			♪	**Attack Or**	5	Modem
			♪	**Glock** 10	6	Modem
			♪	**Brass Sta**	8	Printer

Track list (right): Kick Snar 2, Hats, Drums 2, Drums 3, Piano, Bass 1 8, Bass 2, Attack Or, Glock 7, Brass Sta 6

1 These tracks are muted because they are different versions of the drum and bass parts. Drums 2 and 3 are different approaches to drumming in real time to this music.

2 These are the original drum parts we worked on last month, only we've extended them by 4 bars to make a 12-bar cycle.

3 These are the output assignments. Ours were done on the Mac version of Cubase, so you may need to alter them on your setup.

4 These are the track names. They describe the instruments we have used. If they don't appear on your sequencer automatically then you can add them manually as per the diagram.

5 Erm, this is the title of the track.

6 The main tune, played on a brass ensemble.

7 This glock part is mellow, yet percussive, it plays a counter melody that compliments the main tune.

8 These two parts are actually identical. We

used a bell-like organ sound to mix in with the piano and provide a nice texture.

9 For most of this piece we used a quantize value of 16 (or semi-quaver).

10 These are the MIDI channel assignments. Assign a different one for each instrument (such as drums, bass etc) you use.
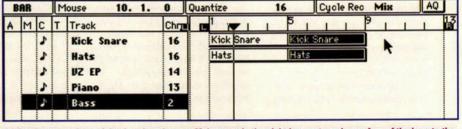
effect they have. Now's your chance to mute them both and add a kickin' bass line that leaves our effort for dead.

Actually, by the time you've changed the drum part and done a great new bass line you might as well change the other pitched parts as well and create a completely different piece. Feel free to hack away to your heart's content. Before you know it you will be creating your own pieces and finding new and interesting ways to develop your musical talent.

Concentrate on playing every part live on the keyboard and editing it later. Use the quantize function sparingly (we used a value of 16 [semi-quaver] to tidy up the rough edges on the demo track) and your work will start to sound a lot more convincing. More than anything, make sure you enjoy yourself. After all, you're a fully paid up real-time recording MIDI musician now – aren't you?

BAR				Mouse	10. 1. 0	Quantize	16	Cycle Rec	Mix	AQ

A	M	C	T	Track	Chn
			♪	Kick Snare	16
			♪	Hats	16
			♪	UZ EP	14
			♪	Piano	13
			♪	Bass	2

Adding four more bars of the drumbeat is easy. Make a cut in the eight bar parts and copy four of the bars to the end of the parts, giving you twelve bars. Now copy them again, and again… hey presto, the extended dance mix.

MIDI JARGON ULTRA-BUSTER PART THREE

This is the third of our jargon buster spectaculars. If you missed a part, don't worry, we'll be putting the whole thing on the Cover Disk eventually.

List edit, grid edit, it's all really the same thing – a list of all MIDI events and a piano roll-style graphical display.

List Edit
In Cubase, Grid Edit is now know as List Edit. The keyboard short cut is still [CTRL]+[G] though.

Locators
The Locators describe the beginning and end of a block of music, which can be played repeatedly in a cycle (thus annoying the neighbours). To make a block of eight bars you could have the left locator at the start of bar one and the right locator at the start of bar nine, thus leaving eight clear bars in between.

Logical Edit
Another Cubase edit page designed to enable you to work easily with large blocks of data to convert velocities, pitch and a whole host of other things. More mathematical than graphical.

Metronome
Used to mark the tempo. The metronome will click or beep on each beat of the bar without being recorded by your sequencer.

MIDI
Musical Instrument Digital Interface. This is what makes it possible for a wide variety of instruments to be linked with a sequencer and played simultaneously. Each instrument must be fitted with a MIDI interface and all the instruments are joined with special MIDI cables. MIDI itself carries no musical sound. It is simply serial data which tells the synths exactly what to play.

Mix Down
At the end of a conventional analogue recording session you would mix down the multi-track recording on to a stereo master deck for listening to at home. In sequencing it means

Quick questions

GM SEQUENCER

Q I have an STE (1MByte) and a General Music CD 3 keyboard. The keyboard has a GeneralMusic mode, and I would like to buy a reasonably priced, non-professional sequencer, programmed to address the GeneralMusic mode directly. From the description of *Concerto* in *ST FORMAT* 68, it seems to have many features I'm looking for, but does it have the GeneralMusic one? Alternatively, can you recommend one that does?
F Levin, via e-mail

A We think that you are refering to General MIDI in the question, in which case we can tell you that it is not necessary for a sequencer to be GM-compatible. As long as it can assign program change numbers to a sound then you can work with a GM synth such *Sequencer One Plus*, *Breakthru* (both from Gajits, ☎ 0161 236 2515) and *Cubase Lite* (Harman Audio, ☎ 0181 207 5050) would all be ideal for the job.

A QUICKIE!

Q I've been trying to change the program bank in my Casio MT-750, but I can't find the function within *Concerto*.
Krister Isberg, via e-mail

A No, you can't. You would need a more sophisticated sequencer package, such as *Cubase* (from Harman Audio, ☎ 0181 207 5050) to do it – sorry.

Concerto is a great sequencing program, but sound bank switching is beyond it.

MIDI PLAYBACK

Q Is it possible to play back a MIDI file without the need for a sequencer and a MIDI instrument? I would like to listen to these files but I have no MIDI equipment at all. Is there a utility that will convert them to MOD files, which I can play?
G Greaves, Chessington

A Unfortunately, such a utility does not exist for the ST. If you have a Falcon then there may be something available soon – keep an eye on the news section.
To be honest, it is unlikely that such a program will be written. If anyone out there knows different, please drop us a line.

MUSIC REFERENCE BOOK

by Peter Buick and Vic Lennard,
ISBN 1-870775-34-1
£12.95, PC Publishing,
☎ 01732 770893

Music Technology Reference Book is a serious reference manual which aims to provide technical information for the competent MIDI musician. After an interesting foreword by Alan Parsons (of The Alan Parsons Project), the book launches into MIDI specifications and technical information with no further ado.

It starts with descriptions of MIDI and MIDI standards, then moves on to Synthesis and Sequencing, Sampling, Music, Recording, Audio, Electronics and finally Computing. The authors have attempted to cover every single area of MIDI and music with reference to modern day techniques and equipment.

Coverage of subjects is exhaustive with extensive charts, diagrams and informative notes. The presentation is clear and the well-thought out layout makes it easy to find the answer to a query. As well as an excellent index there is a superb glossary which is worth browsing through.

The only chapter that seemed out of place was the Music one. It consists of lists of chords and drum patterns as screenshots from the *Cubase* drum edit page. I fail to see how a competent musician would need to refer to such data. This is not technical reference data, it is basic music theory, and it does not seem to fit in with the general tone and level of the book.

The only other grumble worth voicing relates to the excellent charts which are supposed to photocopy and use in your studio. These would have been far better on separate sheets as the book's binding makes them almost impossible to photocopy well.

It was good to see the Atari ST and Falcon mentioned in the book as they are definitely two of the leading machines in the field of MIDI, music and recording.

This is not a book you will read from cover to cover (I did, but then I had to). The language is clear and easy to understand, but no attempt is made at humour at any point. This may be a good thing, given the type of book it is. Would you really want to see the same gag every time you looked up the format of a MIDI type 1 file?

It is a volume that you will find handy to dip into for scraps of information and it would not be out of place in any recording studio or music shop. Even if you find that some of the information is unnecessary, there's bound to be enough that's relevant to make having this book well worthwhile.
STF RATING 81%

Music Technology Reference Book is a straight-down-the-line technical info manual for music and MIDI enthusiasts with nothing left out. Well, very nearly nothing.

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something similar, namely the combining of several parts in a sequence to be expressed as just one part.

Mixer Map
A mixer map can be set up to control almost any feature of a synth from within *Cubase*. Typically, you might assign a fader to control MIDI volume on one MIDI channel. It is then possible to control the volume of that channel in real time and record your changes in order to fully automate the task on replay.

Mixer maps can be anything you want them to be. Here is a simple volume control and a program change bank. All the changes you make here can be recorded in real time.

Mother Keyboard
See Keyboard (*STF 71*).

Multi-Timbrality
The number of MIDI channels which can be addressed independently and simultaneously on a synth or module. Eight part multi-timbral means that eight sounds can be played on eight channels totally independently from one synth.
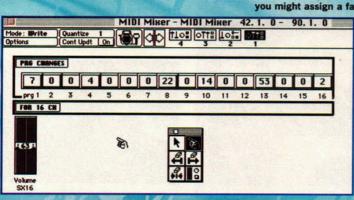
Mute
In sequencing terms, this means to totally shut off the sound from one or more channels.

Note-On/Off
These are the simplest kind of MIDI messages. Note-on means 'play this note', note-off means 'stop playing this note'. Told you it was simple.

Tune in next month for yet more ultra-busting...

STOS tutorial

Following on from last month's introduction to STOS animation, game programmer Tony Greenwood shows you how to detect collisions... and organise some sound effects to go with them.

Warp disk magazine (STF 70, 92%) features clear SAMpled sound at 3kHz.

A n important part of programming is your choice of music and sound effects. STOS has its own music accessory and built-in music commands but, as with the STOS sound effects, these are not up to today's game making standards. Fortunately, there are various alternatives.

Music

Chip music is by far the most versatile as it plays on interrupt and takes up very little memory. Any PD library will supply you with disks full of titles. Playing the music is simple: just use the 'Musauto' command from The Missing Link extension.

MOD files can also be played, but only by using a PD machine code program that leaves you with no processor time at all. This is therefore only useful for static screens such as your game intro or high score table.

STE owners can now play MODs in the background using the new STE Tracker extension,

A scene from STOSser diskzine – see issue 71, page 66 for more information.

available from your local PD library. There is a tracker extension for STFM owners as well, but this involves converting your MOD into an ABK file with the software provided. Some sound quality is lost in the process but it does at least enable you to play a MOD file and still have a

little processor time left for your game's intro routine.

Sound effects

Sound effects do bring your game to life, and need not take up large amounts of processor time. Investigate your chip music files, as various sounds are often

> **You could advertise for someone owning a sampling cartridge to be your sound man**

included. For example, if you use a value higher than one as the tune number in Killing.mus by Count Zero you will find 20 sound effects and three tunes.

However SAMple files are the most popular. Used in conjunction with a sampling cartridge they give you full control over the type, size, quality and speed of the sound effect best suited to your needs. You can obtain disks full of SAM files from your preferred PD library, or you could advertise for someone owning a cartridge to be your sound man.

However, SAMpled sounds do take up processor time – the higher the sample rate the better the quality, but more processor time is needed to play it. For a short SAMple such as a gun shot or footstep you can use the minimum 3kHz and still retain clarity. The processor time used with this rate is minimal. The STOS Maestro 'Samplay' command has a 5kHz minimum playback frequency, while The Missing Links 'Digiplay' has a 3kHz minimum and uses less processor time on equal kHz.

When using any music or samples from the public domain you must always read any of the accompanying READ.ME files to ensure that copyright is not retained by any other parties. If you recognise a tune, or a sample sounds familiar, then don't use it.

EXTENSIONS

Extensions are updates to STOS and so far I have made numerous references to The Missing Link (available from Goodman International, ☎ 01782 335650). For game-makers this is the most powerful extension and replaces many of the original STOS commands, as well as introducing its own routines.

Game-making is not, however, the only task to which it is suited. The recently released commercial package Video Supreme (£29.95, Goodman International, as above) is coded in STOS Basic. It uses this extension to great effect to enhance the audio and visual aspects of the program.

STOS Basic is used to make a wide variety of programs. Educational programs, applications, and serious software are there for all to see in the public domain and commercial arenas.

See, you really can do anything with STOS extensions!

STOS Basic is used here to help modem owners access the Net.

STOS EXTENSIONS LIST

TITLE	COMMANDS	RATING
3D	Full 3D studio package	★★★
Compiler	Compile your STOS.BAS files	★★★★★
Compact	Pack/unpack picture files	★★★★★
Control	Games/serious	★★★
Cyber	Run CYBER.SEQ files	★★★★
EXTRAv2.10	Serious, 50+ commands	★★★★★
Extract	Pack/unpack IMG files	★★
GBP	Various commands	★
Joystick	Allows twin joysticks	★
Maestro	Samples player/manipulator	★★★★
MIDI	MIDI manipulation	★★
Misty	Demos/games/serious	★★★★★
Missing Link	Games/serious	★★★★★
No Border 2.1	Remove top/bottom borders	★
Quick	Various games/serious	★★
Squash	Pack/unpack *STOS* files	★
Stars	Create STAR fields	★★★★★
STE Blitter	STE blitter chip controller	★★★★
STE	STE sound/ports/colour etc	★★★★★
STEEXT	STE sounds	★
STE_Tracker	STE MOD player	★★★★★
Tracker	STFM MOD player	★★★
TOME21	Game map creator	★
Useful	Varied commands	★
VIDI	Use with VIDI grabber	★★★★

Crash bang wallop!

Collision detection is more than just checking to see if two sprites collide. You must use a routine that is versatile enough to detect floors, walls, objects and keep a track of the exact x,y co-ordinates of your main character.

You must use a routine that is versatile enough to also detect floors, walls and objects.

The only way to make a multi-directional scrolling platform game of high quality is to use *The Missing Link's* MAP commands. The maps are made up of an x number of 16x16 square blocks previously designed by yourself. Use the supplied software to

design the map – you have the option to use the same blocks as many times as you wish. The position of every single block is then stored in a memory bank, providing you with simple, fast and easy-to-use commands that allow you to keep track of every single block at any given time during your game.

The 'which block' command enables you to detect which block is at any position you specify, so if you keep your main character in the centre of the play area and only move the map (as discussed in last month's tutorial), you can find which block is under your main character with just one command in your main loop.

Everything is governed by the 16-pixel horizontal boundary rule. This can be used to your advantage and makes collision detection a simple task.

Place your main character at a central position on your map at co-ordinates that contain multiples of 16. If you now move everything 16 pixels at a time you have achieved pixel-perfect detection, but your map is moving far too fast. A little trickery is needed: set your map to move two pixels at a time for slow smooth scrolling. When the joystick is detected you will need to move your map eight times two pixels instead of just two pixels. This gives the illusion of moving slowly while keeping your routine on a multiple of 16.

A good example of this system is the shooting routine used in *HERO*. The main character is 32 pixels high, while the baddies are all 16 pixels high. This enabled me to detect whether a baddie was in line with the top 16 pixels or the lower 16 pixels of the main character. A standing and kneeling animation routine was added, injecting a little bit more reality into the game.

If your main character shoots a gun and the baddie directly in line dies, it is blindingly obvious what has happened. There is no need to show the bullet floating along. This can save you a lot of programming, and avoiding the extra sprite will give the computer much-needed processor time. *stf*

STOS NEWS

Software houses have a habit of keeping projects a secret until near completion for fear of others copying their ideas. However, I have tested an early version of the much awaited Eagle extension and it has 106 very useful new commands. Although the release date is uncertain, this is one to look out for.

A 'multimedia authoring package' similar to the type seen on the PC is to be released within the next three months. Again *STOS* is ideal for this type of program.

An authoring package enables you to put together text, music, samples, pictures and animations into one program. The user can then read through the information by interacting with the package, for example by clicking on buttons and boxes. The person putting the package together doesn't need any programming skills as most of the work is done by dragging the various pieces of text and graphics on to the pages ready for use.

HERO is to be revamped and re-released at a realistically low price through STOSSER SOFTWARE. Bob Goodfellow and I (the co-producers of *HERO*) have also started work on a totally new game entitled *TIME SLIPS*. The new game will feature a three-quarter 3D effect environment where the main character will have the ability to walk around objects, such as trees and buildings. The emphasis will be on role-playing, problem solving and feature routines not only new to *STOS* but also not normally found on the STFM.

The above-mentioned environment is achieved with eight-way scrolling that surpasses the smoothness managed in HERO. A two-plane parallax full-screen scroll has also been created for a sub-level. These routines have been tested with a larger than normal main character sprite.

There is no release date as yet for *TIME SLIPS* as work has only just begun in earnest, but we will keep you informed.

Coming soon... a follow-up to *HERO*.

A new *STOS* user group is being formed, called *STOS* Friend Chip. It is aimed at programmers all over Europe. There are no fees involved and a regular disk magazine is to be produced. For more information and a copy of the first user disk contact: Wilfried Kickstein (Take-5-Team), Lindenstr 16, 96482 Ahorn-Schorkendorf, Germany. You will need to send a disk that contains PD software, preferably *STOS*-related, and return postage.

Along with the famous *Fun School*, *Magic Storybook* proves that *STOS* is the the tops for producing educational software – as well as games, applications and serious software.

TOP TEN ACCESSORIES

Compiler	Used with compiler software
Sprite	Sprite design and manipulation
Compact	Picture packer
Display	Read doc files/instructions etc
Whatmbk	Keep track of stray banks
Make	Converts BNKs to Missing Link format
Mouscolo	Mouse X, Y co-ordinates and pixel colour
Fontdisp	View and change fonts for different projects
Link	Quick reference to the link commands
STOS Paint 2	Art package for last minute touch-ups

STOS Paint 2 – an art package as a *STOS* accessory.

Pablo tutorial

By now you should be confident with most of *Pablo Paint's* features, so Frank Charlton's final *Pablo* tutorial looks at playing with colours and smoothing out those jaggies...

Most effective 16-colour images are constructed from variations on similar colours. This one uses lots of grey, because it's a shot of our beloved ST.

I f you worked through last month's *Pablo* tutorial, you'll have seen how to use a very rough freehand sketch as the raw beginning of a cartoon-type image. The basic cartoon used just four colours – the background, a pink flesh tone, black and white. This month we're going to deal with the colour palette, and how to gradually expand it for the best results, as well as examining techniques used to give the impression of more colours and smoother lines.

> It's quite easy to fool the eye into thinking there are more colours than there actually are

Colour me blue

One of the worst things you can do when starting a new picture is to commit yourself to a set colour palette right from the start. We mentioned not getting too bogged down with the level of detail last month, and this applies to your selection of colours, too.
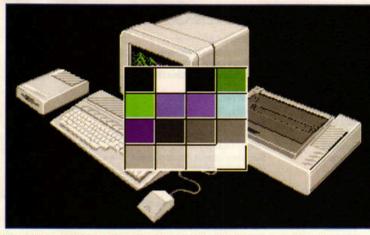
If you choose your palette too early, you'll be tempted to add bits here and there in various colours. When you come to polish the image, you'll probably find you've run out of slots for new colours – remember, you only have sixteen colours to play with in the ST's low resolution mode.

To begin with, aim to fill roughly half of the available colour slots, just to give yourself a rough idea of what you're heading for in the final palette. Always leave at least a couple of slots free for last minute changes – there's nothing worse than getting near the end of a picture and finding you need a colour you don't have room in the palette for. It's easier to leave space

than to remove a colour you can do without from a half-finished picture.

To finish off the cartoon pig, expand the palette by adding variations on the shades you've already used. Since we started with a light flesh pink, you might as well use two more slots for darker flesh tones.

Using the Colour Edit icon, make a note of how the sliders are set for the colour's RGB settings (or RVB in *Pablo's* case – the author is French, after all, so green is *verde*). Switch to a free slot, and alter the sliders so they're one setting lower in each case. For most colours, this will give you a darker shade. For the pig you'll need two darker shades of pink – the darkest should be almost brown

Since we're going to be anti-aliasing the picture later you'll also need a few shades between black and white. While you are at it, fill up some more slots with the three shades of grey just below white. After all that you should have nine occupied colour slots, leaving seven spare for later additions.

In spite of the very limited amount of colours available, we've managed to smooth the edges of this logo out. This is very heavy anti-aliasing though, to achieve a specific blurred effect rather than just smooth edges.

Anti-Aliasing

When you look at some of the static screens in games, or some of the entries sent in to Pixel Painting, you might notice that they don't suffer from jagged, stepped edges. You would be forgiven for thinking that the artist had managed to use more than sixteen colours, since the edges seem to blend so smoothly. They haven't, usually – they've smoothed off the 'jaggies' with a technique called anti-aliasing.
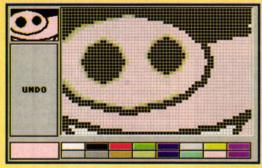
On a display screen, it's quite easy to fool the eye into thinking that there are more colours than there actually are. Anti-aliasing works by smoothing the drastic change between two different colours by filling in the gaps with shades between the two.
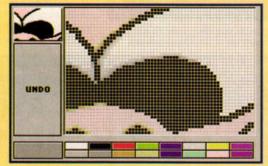
For example, you couldn't get much further apart than black and white, could you? To ease such a drastic transition, you could anti-alias with shades of grey. The general rule is that the darker colours are used sparingly, with more splashes of the lighter shade to achieve the blending effect.

The effect only works because the pixels which make up images on your ST's screen are small – if you magnify a section,

ANTI-ALIAS SMITH AND JONES

Go into Zoom mode – *Pablo* displays the magnified section alongside the original. Start with the pig's nose, and add single pixels in the dark brownish-pink, then more in the lighter colour. Sometimes the effect works better if you replace one or two of the harsh black pixels with the dark brown.

Now you've tested the effect of the pink shades, move the Zoom to the eyes. Since black and white are so different, anti-alias with three intermediate shades. The same technique applies as before. You'll find that you can make use of the very light grey for subtle shading, too.
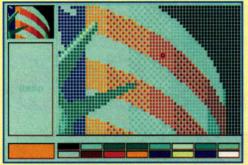
DITHERING ABOUT

Another way to get the effect of more colours is to use a method called dithering. If you look at some printed comics – especially old ones from the 1950s – you'll see dithering at work. Basically, it's another way of fooling the eye by using two similar colours close together. If you only had room in your palette for a dark and light red, you can give the impression of an intermediate hue by dithering the two together. It isn't as effective as using the 'real' colour, but it's an acceptable compromise in most cases. Again, it's a job for *Pablo's* Zoom mode.

To get the middle shades of red and blue on the US flag in this classic *Neochrome* picture, the artist has created a dithered 'checkerboard' pattern using the two regular shades. The effect is very obvious in Zoom mode, but works quite well at normal resolution. Here's a little tip – save time drawing the checkerboard pattern by building it up from adjacent diagonal lines.

you can see the anti-aliased bits. Look at the picture normally though, and your eye starts to interpret the shades of grey as a smoother transition between two hard colours.

Some art packages have a Smooth or Blur function, which does this job automatically for you. The problem with this is that these functions tend to be non-selective – they either blur everything or nothing at all.

Pablo doesn't have an automatic tool, so you need to do your anti-aliasing manually (see the Anti-Alias Smith and Jones panel to find out how it's done). It's a tedious job, but well worth spending some time on since it can make your finished picture look so much more polished.

Hot Spots

Pablo's Zoom function is easy to use, but doesn't enable you to use anything other than a basic single-point freehand drawing tool. Some art packages offer an alternative function called a Hot spot zoom. This just means that the area under the mouse pointer is shown in magnified form, in a little window of its own. The advantage of this is that it's available for all tools, and also for precise cursor placement when you cut and paste blocks.

Pablo shows its French roots here, since Loup actually refers to the magnifying pointer.

It's a shame *Pablo* doesn't have a hot spot magnifier, eh? Well, you'd be forgiven for believing that, but it does have one. It's not obvious where to find it though, so we will show you how to activate it.

Hot spot zoom isn't what you suffer from after too much chicken vindaloo, it's a very useful tool.

Go back to *Pablo's* main menu screen. In the top right corner, you'll see an anonymous grey button marked 'P'. This leads to the Parameters Box. Here you can set options for lots of things, including text sizes and a grid for that 'Etch-a-Sketch' picture you've been hankering to do.

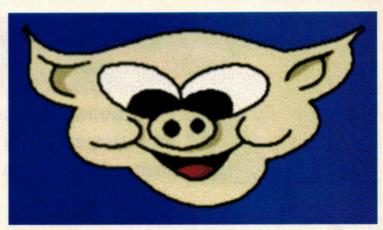One option is cryptically labelled VISOR – another little bit of Pablo's French heritage peeking through. What this actually does is let you choose from a set of seven different mouse-pointers. The standard cross-hair pointer is probably the most useful one, since you can easily see where the cursor is for alignment. Borders is similar to the cross-hair, but without the off-putting lines following the mouse movement. Scrolling is pure gimmickry, with a strobe effect leaving a trail behind the pointer – not much use, really.

The one we're interested in is labelled Loup, and activates the hot spot zoomer. Select it, and right-click the mouse to move back to your picture. As well as the

Just in case anyone's curious, I did knuckle down and finish shading and anti-aliasing the cartoon pig. Here he is in his final porcine glory.

IRREGULAR CUTS

A few people have asked about cutting oddly-shaped blocks from images without cutting the surrounding area, too. From the Block Toolbox, select the icon which looks like a stickman in a rope lasso (no, it does, honestly). This is the rubber-band cutter.

Start by clicking the mouse, and you'll see a dotted line follow the mouse movement. Clicking again fixes a second point, and starts a new line. By doing this you can carefully surround the object you want to cut with this rubber band, without chopping into neighbouring objects.

Once you've surrounded the area, simply right-click the mouse to cut the object ready for pasting or manipulation. Note that you don't have to be exact with the

Chopping an irregular block from your work is easy with the nifty rubber-band tool. Here we're lassoing the 'S' for some nefarious purpose lost in the mists of time.

finishing point either – once you're clear of surrounding objects, *Pablo* assumes that your right-click means you've finished, and closes the irregular object for you automatically, in a direct line between start and end points.

standard cross-hair mouse pointer, you'll now see that the pointer is surrounded by a square box. Moving the mouse about your image will magnify a small section of the picture beneath the pointer in that little box.

Now you can see exactly where the pointer is in more detail,

and setting up those fiddly lines or cut and paste jobs is a doddle. It takes a bit of getting used to since it's not as flexible as a 'real' hot spot zoom like the one found in *Deluxe Paint*, but it's a useful and powerful tool, especially for adding detail. Most artists need it sooner or later. *stf*

YOU CAN DO BETTER...

We're sure you can do better than a simple cartoon porker, so why not send us your original pictures created with *Pablo*? I'll bully Nick into putting the best entries on the Cover Disk, and we'll rummage through the STF goody bag for what is laughingly called a prize for the entry we like best. Bung a disk in a jiffy bag and send it to My Pig's Better Than Yours, ST FORMAT, Future Publishing, 30 Monmouth St, Bath, Avon BA1 2BW.

This image uses shades of a few basic colours to striking effect. The entire image is composed of variations on purples and greens, with greys used to anti-alias the stark black lines. This is one I sent into ST FORMAT about four years ago – it was never printed (sob!).

This month, Simon Forrester turns his attention to the *ST FORMAT* special offer game, that Psygnosis puzzler *Lemmings*.

Gamesbusters

Astute readers will have noticed that over recent months we've been doing our best to give you some classic ST games at classic prices, such as the excellent *Lemmings* offer in *ST FORMAT* 70 (see page 76 if you missed it). It would hardly be fair to unleash such a fast, furious, taxing puzzler on the world without providing a little bit of help to those already caught in the *Lemmings* trap, though. Here, then, is a list containing every level code you'll ever need, plus some tips to make sure you can survive the difficult levels you'll probably skip straight to.

● As soon as the level starts, pause the lemmings and view the whole level. Work out where the wretched creatures will go if you leave them alone.
● It's possible to turn blockers back to walkers if you get a lemming to dig under the ground he's standing on. This helps if you don't want to have to blow the sweeties up at the end of each level, reducing the number of lemmings you save.
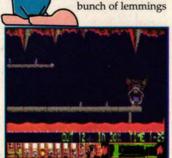
FUN

2	KJJLDLCCCN
3	NJLDLCADCY
4	HNLHCIOECW
5	LDLCAJNFCK
6	DCLCAJNFCK
7	HCAONNLHCX
8	CINNLDLICI
9	CEKHMDLJCO
10	IKHMDLCKCT
11	OHODHCELCS
12	KMDLCINMCL
13	MDLCAKLNCS
14	DLCIJNMOCM
15	LCAOLMDPCY
16	CMOLMDLQCV
17	CEJHLFLBDX
18	KKILFHCCDM
19	NJNNHCADDR
20	JLFLCKNEDW
21	NNHCAKOFDV
22	FLCMKLLGDJ
23	CENLLFHDV
24	CMNMLFLIDP
25	CCJJMFLJDQ
26	IJJMFLCKDX
27	NJMFLCCLDW
28	HMFHCIOMDY
29	MNHCAKNNDL
30	FLCOKLMODU

● If you run out of blockers, dig a pit to trap the lemmings in. Build ramps out of it when you want them to carry on again.
• Lemmings have to die one by one, remember. If you can't avoid a trap, compact a bunch of lemmings

Without that recently-dug shaft, how did they get in there in the first place? It's just the sort of thing they do.

Unless you can send a digger back after them, they're doomed to be annihilated

together and send them in. While some are dying, the others will cross to safety.
● Lemmings can't fall too far. If you're building ramps, build another one parallel to the first so that if any of the furry gits overtakes the ramp-builder, it'll drop

TRICKY

1	HCGOLONPDX
2	CMOLMGLQDJ
3	CMOLMGLQDJ
4	IKHLDMCCEN
5	OHNLIBADEP
6	IDLMCIOEEU
7	LDMCCJNFEP
8	EMCIJMLGEW
9	MCEOLLDHEW
10	CMNLLEMIEP
11	CEKKOLIJEK
12	IKHMEMCKEX
13	OJOLICCLEN
14	HMDMCIOMEM
15	MDMCGJMNEL
16	LMBIJOOOEJ
17	KCCOMMLPEU
18	CKNLMDMQEV
19	CCKHNNKBFR
20	IJJLGMCCFS
21	OHLFMCADFN
22	ILFMCKOEFJ
23	LFMCEJMFFT
24	GICKKOLGFK
25	MCGNMLFHFL
26	BKOMNFIIFO
27	CAJJMGMJFS
28	MNHCAKNNDL
29	OHMFMCALFW
30	HMGMCMOMFU

on to the ramp below and walk back to safety. This is achieved by building your first ramp at the edge of a platform, and the second a little bit further in.
● Don't use a blocker unless you absolutely have to. Your

TAME

2	IHRVDJCCAR
3	LRTDNCADAQ
4	PTDNCIMEAI
5	TDNCAHVFAS
6	DNCIHTTGAJ
7	JCALVVLHAO
8	CILTTDNIAP
9	CAHRUDNJAD
10	IHRUDNCKAM
11	MPUDNCALIA
12	RUDNCILMAS
13	UDNCAHVNAL
14	LJCIIVWOAL
15	NCAMTUDPAQ
16	CIMTUDNQAJ
17	CAHRTFNBBN
18	IHRTFNCCBG
19	LRTFNCADBD
20	RTFNCILEBM

If you get peckish while playing, the molten lava is the best way to fry lemmings. It's also the best way to lose.

CRAZY

1	TFNCAHTFBD
2	FNCIHTTGBM
3	NCALVTFHBL
4	CILTTFNIBS
5	CAHRUFNJBG
6	IHRUFNCKBP
7	LRUFNCALBM
8	RUFNCILMBF
9	UFNCAHTNBM
10	FNCIHVUOBM
11	NCAMTUFIBD
12	BIMTUNNQBD
13	CEHRVLKBCH
14	MIRVLKCCCR
15	MRVLKCADCK
16	RVLKCILECS
17	TDOCAHVFCF
18	DOCIITTGCN
19	KCAMVVLHCS
20	CILVVLKICK

Blimey – giant lemmings roaming around the screen. That's what having a fairly good zoom lens does for you.

The lemmings arrive by parachute, proving they really don't care about things like broken bones.

followers will turn around in their own time with the help of a wall, and leaving them to do so will buy you some extra time.
● The other reason why you shouldn't use blockers is that unless you can send a digger back after them, they're doomed to be annihilated when you've saved their friends.
● As soon as the level starts, reduce the lemming production rate to its minimum level, buying you that valuable extra time.
● Cast aside that joystick – always play using a mouse.
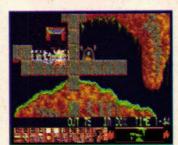● The lock function is a life-saver, but you have to know exactly when to use it. If you need to con-

TAXING

1	MFMCGKLNFO
2	GMCOKLMOFY
3	MCANMMFPFO
4	CINOMGMQFK
5	GEKKNMJBGJ
6	KJILDLGCGU
7	NHNLJGCDGY
8	IDLGMOENGN
9	LDLGCJOFGV
10	ENGIJNLGGO
11	LGANOLDHGJ
12	GKNOLDLIGU
13	GAJIMMHJGX
14	OKHMDNGKGT
15	OIMELGALGK
16	HMDLGKOMGT
17	MELGCKLNGN
18	DLGIJOMOGV
19	LGENMMDPGU
20	GKNNOLHQGS
21	GGKHNNHBHY
22	KJJLFNGCHK
23	NJLGNGADHW
24	KNOHGOOEHL
25	LFNNGCJNFH
26	GNGIJLLGHP
27	HFANLLFHHU
28	FINNLFHIHN
29	FAJHMFHJHP
30	IJHMFMFKHG

vert a long line of lemmings, hold the mouse button down in their paths and keep it there.

As you can see, each level looks vastly different to the previous one – *Lemmings* is a detailed game.

If all else fails, you can watch some wonderful explosions as you nuke lemming flesh clear across the screen.

Tips are all very well, but if you really want to see the whole game, you'll need a set of *Lemmings* codes (as found in the green boxes), giving you access to absolutely every level. Level 1, of course, doesn't need a code, as you'll get dropped straight into it when you start the game.

Of course, some of you won't be content with the 120 levels the game has to offer. When you've used these codes to see every single teaser *Lemmings* can throw at you, you'll pull a copy

MAYHEM...

1	NJMNLFELHX
2	HMFJFINMHQ
3	MFHFAJLNHX
4	FHFIJLMOHQ
5	HFANLMFPHN
6	FINLMFHQHW
7	FAJHLDIBIW
8	IJHDIFICIP
9	NHLDIFADIN
10	HLDIFINEIV
11	LDIFAJLFIO
12	DIFIJLLGIX
13	MGCNNLEHIO
14	FINLLDIIIN
15	FAJHMDIJIP
16	IJHMEMGKIO
17	NHMDIFALIV
18	HMDIFINMIO
19	MDIFAJLNIX
20	DIFIJLMOIQ
21	IFANLMDPIN
22	FINLMDIQIW
23	FAJHLFIBJJ
24	IJHLFIFCJS
25	NHLFIFADJP
26	HLFIPINEJY
27	LFIFAJLFJR
28	FIFIJLLGJK
29	IFANLLFHKX
30	FINLLFIIJQ

of *Oh No, Not More Lemmings* out of a drawer and demand yet more codes for that... in which case check out the blue boxes. **stf**

The earlier levels get you used to the various abilities of the plucky rodents.

WILD

1	BEIRULOJCS
2	MIRWLKCKCK
3	LPUDOCALCK
4	PUDOCIMMCE
5	UDOCAHVNCO
6	LKCMHVWOCR
7	OCALVUDPCE
8	CILVUDOQCN
9	CAHRTFOBDQ
10	IHRTFOCCDJ
11	MPTNKCEDDN
12	RTFOCILEDP
13	VNKCAHVFDO
14	NKCMHVVGDL
15	KCEMVVNHDJ
16	CILTVNKIDL
17	CAHRUFOJDJ
18	IHRUFOCKDS
19	MRUNKCALDE
20	RWNKCILMDO

This isn't how I remember *Rainbow Islands* – there weren't as many deaths when Bub and Bob were in control.

WICKED

1	UFOCAHTNDP
2	NKCIHTUODM
3	OCALVUFPDH
4	CILVUFOQDQ
5	GAIRTLJBEH
6	IHRTDNGCEL
7	LRTDJGADEE
8	RVLJGILEEH
9	TDJFAHTFED
10	DJFIHTTGEM
11	JFALTTDHEJ
12	FILTTDJIES
13	FAHPUDJJEE
14	IHPUDJFKEN
15	LPUDJFALEK
16	PUDJFILMED
17	UDJFAHTNEM
18	DJFIHTUOEF
19	JFALTUDPES
20	FILTUDJQEL

The two-player mode – we can't give you any cheats, but it's just as much fun.

The crystal formations of this cavern are stunning, but you're going to need a pick-axe to get out.

Reader ADS

SALES

STE 12MByte, Data Pulse 540MByte printer, 2xSM124 monitors, Notator 3.21, Logic 2, Cubase Score 2, Pagestream 2.2, Protext 5.4, NeoDesk 4, external drive, HD internal drive and much more. Call Alex on 01225 428544 eves only. Offers please.

Flight sims and adventure games, for sale or swap, good price. Tel 01782 212566.

Epson EX800 printer with single-bin cut-sheet feader £100, Epson LX86 printer for £75. Tel 0181 572 5444, Peter.

Yamaha PSS 790 MIDI keyboard, 100 voices, on-board drums complete with Sequencer One and software, plus manual, £120, no offers. Tel 01905 351200.

Atari 520STE, 4MByte, Citizen Swift 24-pin colour printer, Bishopsgate 12inch colour monitor, mouse, 2 joysticks, games, packages, £330. Buyer collects. 0181 969 3349.

Sell or swap, Videomaster, Atari Portfolio and Psion-LZ organiser (Psion excluding manuals) for best ST hardware offer, preferably hard drive or fax/modem or £100. Also PD to swap. Tel Drew on 01592 631215.

1st Word Plus £25 ono, Elite £80 ono, Microprose Soccer £2.50, 3D Pool £2. Tel 01473 683082.

Civilization 1MByte £15, Transarctica 1MByte £10, Killing Game Show £5, AV8B, Harrier Assault 1MByte £10 (all inc P&P). Complete originals. Tel 01942 45683 Mark (day).

325 disks of various PD. Includes fully-typed on-disk lists. Best offer around £200 accepted. Tel Anthony on 01929 551846 after 6pm.

Atari STE computer monitor leads, complete music sequencing and editing setup £250, Atari master sample cartridge £10. Philips monitor £70 ono. 486DX25 £50 H&H bass combo PARAEQ £100 ono. Tel 01884 257487.

Mint condition Atari mags, 48 editions ST World with binders, also ST User and ST Review with coverdisks – offers? Excellent ST Accounts package still boxed/manuals – offers please. Tel 0973 212292.

Atari 1040 STE new 120MByte hard drive Philips colour monitor Citizen 120D+ printer Joystick mouse 40 games + manuals including Elite ll Thunderhawk and Civilisation £500 ono. Tel 01909 473695.

Simpsons, Rainbow Collection, Hollywood Collection, Elvira 2, Terminator 2, Lotus 2,3, Leander, Powerdrift – all £10 each, boxed as new. 1988 President Elect £5 boxed – write, all offers considered. Lloyd Hannis, 15 Darwin Close, Walgrove, Coventry CV2 2BZ.

Falcon 030, 4MByte, TOS 4.04, 65MByte internal hard drive, Videomaster colour digitiser and RGB splitter. Software etc. As new only £525. Tel 01268 561066.

Spectre 128 Mac Emulator plus boot disks £50. Modern Atari System Software book £12. Kattice CV 5.5 manuals only £20. Tel 0116 2913192 after 6pm.

520 STFM upgraded to 1 MByte with software £85. ST magazines Format, Review/User (98 mags total) all with cover disks £30 ono. Buyer collects. Ask for Keith Basildon, tel 01268 472325.

For sale: Atari ST 1040 as spares (non working) C/W disk drive keyboard £35 including postage. Phone Dave 0181 466 0857.

Atari 520 STFM DS DD new keyboard mouse and software

£85. Tel Dave 0181 466 0857.

520 STE 2MByte boxed as new with some software including 1st word plus £150 ono. Tel Phil after 4pm, 01247 878400.

Atari STFM assorted game/business software, colour monitor, star/cio printer, magazines, all good condition £100 ono. Tel 01753 524924, ask for Alan.

Free clip-art to all who send up to 20 disks with PD. To Smurf, 2 Avon Croft, Ossett, Wakefield, WF5 8QX. No bad disks please.

Atari STE 1MByte plus Replay 16 sampling cartridge, selection of software, all necessary cables, still boxed. £250 ono (neg). Tel 01224 625616 (ask for flat 98).

MEGA STE 2MByte 85MByte H/D, SM144 High Res and Phillips colour monitors, B Drive, scanner, joystick, Neodesk, DTP and WP games. Tel 01698 817444, Orpington. £350.

ST FORMAT, ST User, ST Review magazines, 200 cover disks £50. Tel 01689 817444. Orpington.

For sale! 100 3.5inch high density disks £45 inclusive of P&P, labels. Tel Matthew 01926 534 432.

For sale! 100 5.25inch high density disks £18 inclusive of P&P, labels, without disk sleeves. Tel Matthew on 0181 524 4326.

For sale! Spectrum Emulator for the Atari ST. Write to Matthew, 19 Garfield Road, North Chingford, London E4 7DG.

For sale! ST Xformer IT for the Atari. Tel Matthew on 0181 524 4326.

ST Review mags: issue 16 others, 2 no disks, rest with disks, 16, 19, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 – £2.50 each. Issue 2: £1.50 (no disks). + 20p P&P. S&F, 51–59, £2.50 each with disks. First come, first served basis. Lloyd Hannis, 15 Darwin Close, Walgrove, Coventry CV2 2BE.

ST FORMAT, back issues 25 to 58, including two binders and all cover disks. Fifty 3.5 DS/DD Diskettes new with labels. All for only £30. Tell Steve on 0181 997 9979.

New joysticks, never used, boxed. Saitek Megagrip ll, Grants Gamepad. Brand new software – Sensible Soccer Frontier (Elite ll). All for only £35. Tel 0181 997 9979.

Atari 520 2.5MByte RAM 30MByte hard drive, twin floppies, high res monitor various software. Tel 01395 268872. £220.00.

Falcon 030, 4MByte, TOS 4.04, 65MByte internal hard drive, Videomaster colour digitiser and RGB splitter. Software etc. As new only £525. Tel 01268 561066.

210MByte external SCSI hard drive, metal cased, with power supply through port etc. Made by Gastiener £190 as new condition. Tel 02668 561066.

Books for sale – Atarist machine language £8, Sim City Robot inside and out £8, Sim City Robot Monsters £5. Tel 0121 328 8259 (Birmingham).

Calamus V 1.09 DTP package, including tutorial, fonts editor, BJ-10 Driver, many extra fonts, manual and guide £40 ono Tel 01243 373382.

Atari Mega 4 internal 200MByte hard drive 4MByte RAM, mono monitor band in a box, KCS50 sequencer program, plus lots of other software £500 ono. Tel Robb 0623 514777 (Notts).

Atari 520STFM 1MByte upgrade, joystick, mouse, assorted disks. Excellent condition £80 or swap for anything

interesting. Will deliver in Glasgow Call Gerry 0141 557 1989 after 6pm.

Falcon Speed unused. £70 ono Mega STE hard drive kit £40. High Speed Pascal £60 also wanted Mega ST keyboard. Tel 0181 888 7183.

Atari 520 STFM (1MByte RAM) Discovery Pack. Colour telly (tarnished case) printer, games, PD software, mags, mouse, joystick. £375. Excellent condition. Tel 01923 835775.

Mercenary 3, Trivial Pursuit, Infestation, Volfied, Bloodwych, War in the Gulf, K Spread 2 – all £5 plus P&P. Bat £15, Jimmy Whites Snooker, Steinburg Pro 2411, £10 plus P&P. Tel 01684 564798.

ST FORMAT mags including cover disks issues 6–72, £2 each; Protar 50DC HD, £150; Microtext kit, £75; CM8833 II monitor, £120; Replay 8, £30; Tel Andy 01582 458430.

Evesham Micros ext 720K drive – £35 plus P&P. Tel Chris 01452 863137.

4MByte STE £160, 170MByte hard drive £160, Philips monitor £50, second floppy £20; £350 the lot, must sell. Tel 01953 606957.

Cheap, original games for sale. Phone for full liist of over 40 top games. Tel 0151 6069587.

Four 256K SIMMS for £20 or £5 each. Epson LQ–100 for £150 mint condition. Tel 01752 778041.

ST games F-19 Stealth Fighter boxed complete £12. Sim City, Robot Monsters, Final Flight, etc. £5 each. Also many cover disks. Phone and leave message for list. Can post disks. Tel 0171 7903174.

World Class Rugby. Prices range from £10 to £15. Write to Nigel Horton, 183 Baldwins Lane, Hall Green, Birmingham B28 or tel 0121-608 4910 after 4pm.

Atari Falcon 030, 4MByte RAM, 65MByte hard drive, maths co-processer, fitted in a Falcon tower, hardly used – £45. Tel Stuart on 01295 710680 (Oxon).

Atari SM144 high res monitor, good condition £65 ono. Multiface Cart. for ST/STFM (not STE) £10. Wanted: Calamus v1.09 or higher, and also fonts and Clipart. Please tel with details 01325 468411.

Atari Hi Resolution monitor for sale. £95 ono. Tel 01797 230529.

Games for Sale: Cruise for a Corpse, Brat Midnight Resistance, Compilations, 2 Hot 2 Handle, TNT, Fists of Fury. Also NeoDesk 3 and ED Hack. Many more of all types. Also some ST accessories. Tel for enquiries 01382 827958.

Printer, Star LC-10, boxed all extras inc dust cover, spare ribbon, leads and manual, as new £40. Tel Chris 01225 310015 evenings.

Civilization for £20, brand new and unopened. Tel (after 4pm) 0121 6084910.

Sequencer One Plus music software, including the Hit Kit and video, £35 ono. Tel Steve 015242 21351.

Hard Drive, System Solutions Mini 5, 40MByte, including DMA/SCSI translator. plus including Datalite 2 compression program giving 70MByte total memory; £100. Tel Brian 01865 739 999.

520 STE 1MByte, manuals, box, all leads (excellent condition), real-time clock cartridge, Mastersound 2 and Quartet, games, PD. All for £100. Tel Mark on 01735 555777 ext 2248.

Jaguar for Sale: Cybermorph, Doom and Alien vs Predator, worth over £250, sell for £190 ono. Bargain, must not be missed, write to me now: Lloyd Hannis, 15 Darwin Close, Walgrove, Coventry CV2 2BZ.

SCART cable for STE composite to RGB (suit TVs or 8833MKI), £8 inc postage. Games – JWWS, Battle Command, F29, Power Drift, Soccer Stars, all £5. Tel after 8pm 01803 211289.

Clarity 16 Vrs 2 for Falcon £50. 4TFX four track direct to disk recorder for Falcon £80. Tel Tim on 01474 703304.

New Atari advertising disk, full of ST items. SAE plus 3.5inch disk to: 2 Avon Croft, Ossett, Wakefield WF5 8QX for copy of issue one, free.

Atari 1040 ST, 4MByte RAM, colour monitor, mouse, joystick, loads of software, manuals, magazines. £270 ono. Tel Phil on 01223 213743.

STE 1040, good condition, will sell for £100–£150, has box and programs, Also some games (Kings Quest 4, Indiana Jones and the Fate of Atlantis). Tel 0181 5047064.

Lynx ll with Lemmings and nine other great games – PacLand, Viking, Guild, Hydra etc. Also PSU unit and carrier case – £60 ono. Tel Dave Knight 0121 6932477.

1040 STE including Family Curric Pack, mouse, joystick, Philips 8833 Mk 2 colour monitor, all cables/leads plus Chess Champion. £350 ono, excellent condition. Tel 01384 633948.

Atari ST games for sale: Zool £5, Deliverance £5, Double Dragon lll £2, Toki £2, Dynasty Wars £3. Dream Team/Bart Simpson/Terminator 2/WWF Wrestle Mania – £8. Tel after 4pm 01423 863838.

2080 STE £140, 520 STFM (360K) £75, Casio CZ101 Midisynth £95, Kickoff 2 £6, Oriental Games £6, Hard Drivin 2 £5, Flight of the Intruder £12, 68000 reference manual £10. Tel 01935 25974.

Atari STFM 1MByte memory, 29 original games and serious software, two joysticks £150. Tel 01772 723804.

Jaguar, boxed with Alien vs Predator, Theme Park, Wolfenstein and Cybermorf. £250 no offers. Tel 0181 2874947.

Atari mouse and mat, VGC, £5. Also keyboard stand, 3-tier, double-braced, steel, vest £93, £75 ono. Rack, 18U, castors, steel, vest £93, £75 ono. Both as new. Tel 0171 5826830.

Falcon 4MByte, SVGA monitor, scanner, speakers, joystick, mouse, DevPac 3, DevPac DSP, Truepaint, books, mags etc. £600, might split. Tel 01925 631198.

Yamaha PSS-780 multi-tembral midi keyboard. Drum pads with PCM sounds. 100 voices, 100 rhythms. Complete with mains adaptor and two 5m midi cables £160. Tel 01326 564069 after 4pm.

Atari 1040 STFM, mouse, manuals, assorted PD and cover disks, STOS and more, £95. Many original games. Also Timeworks 2, Calligrapher Lite, 1st Word+. Can bundle the

lot. Details and offers tel 01326 564069 after 4pm.

Games: Sensible Soccer, Robin Hood, Final Fight, Magic Land Dizzy, Treasure Island Dizzy, Lemmings 2. All boxed originals. Offers tel 01326 564069.

Software: Timeworks Publisher 2 , £20. Calligrapher Lite £15. 1st Word Plus £10. Tel after 4pm 01326 564069.

Ideal first computer – 1MByte Atari STFM, plus Star LC10 printer, all boxed. Software, ribbons and paper included, £195. Tel 01842 761125 (Norfolk).

Falcon 4MByte, 65MByte HDD plus Multitos, Speedo, Ishar, Ishar 2, plus 150+ disks, speakers, headphones – 32MHz accelerater fitted, £500 – Offers considered. Tel 01904 637466.

ST games: Dang (DS disk drive), Smash TV (DS), Midnight Resistance and Final Fight, all with box and value (Except Dang, no manual). Tel 01734 693311.

Atari ST games: Movie Premier, Sky Strike, ST, Wars, Toobin Respray, Treasure Island Dizzy, Rick Dangerous, Zany Golf, Moonwalker. All boxed with instructions, £2 each plus postage. Tel 01268 681291.

Urgent Sale! Atari 1040 STE, VGC. Includes much boxed software, £160. For full details contact: Mr Paul Found, 44 Park House Green, Harrogate, North Yorkshire HG1 3HW. Buyer collects.

Falcon 4MByte, 310MByte hard disk, 15inch SVGA colour monitor, inc £400+ of software and music progs, D2D etc. £1,200 ino free 520 STFM plus 1MByte RAM. Tel 01689 831849.

Electric guitar, inc amp, strap, tuition book and high quality tuner. Brand new, never been used. Unwanted present. Write to: Nick Downing, 23 Bushley Close, Woodrow North, Redditch B98 7TU.

Atari ST computer, printer, other hardware, and software. For list send SAE to Simon Beal, 2 Chapel Cottages, High Street, East Runton, Cromer, Norfolk NR27 9NZ.

Falcon 030 4/64MByte, scanner (NAKSHA). Videomaster RGB, stacks of original boxed software, over £1,500 in all. Will sell for £850 ono. Tel Pete 01492 547187.

4MByte STE, scanner, external floppy, stereo master cartridge, mono monitor, Calamus 1.09, software £370. Jaguar 2 controls. Doom, Dino Dudes, Video Lead £250. Tel 01623 641644.

Replacement DS/SS internal ST disk drive £15. Replacement ST power supply £20. Rock 'n' Roll Clams game £8. Mansell Racing game £5. Tel 01772 423623, after 6pm, ask for Glyn.

Software for sale: Imagecopy 3.5 CD £15, Home Accounts 2. £12. Tel 01268 561066.

Videomaster colour Digitiser for Atari Falcon 030, with RGB splitter box, software, manuals, only £40. Tel 01268 561066.

ST FORMAT, ST Review, ST User and ST Action, all complete with cover disks. Tel Simon 01685 371246. £2 each or sell the lot at a good reduction.

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GFA Basic 3.6 int/compiler £30. Convector Pro £25. Music Studio £10. Thats Write 2 £15. Stereo Master £20. Timeworks 2 £15. Tel Paul 01703 617711, after 6pm.

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Originals: Robinsons Requiem Turbo Outrun, Roadrunner and Ultimate Ripper Catridge V 1.2 to swap for a modem or printer. Robert, 10 Ings Close, South Kirkby, Pontefract, W Yorks WF9 3SE.

Swap Reach for the Sky, Premier Manager 2, Hunter, Utopia and New Worlds, Populuous 2, and others for Sim City and Steinberg Pro 24 lll or any good sequencer. Tel Ron on 01442 393822.

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A 4MByte Falcon wanted in exchange for my 520 STFM and 1MByte STE. To Rob, 10 Ings Close, South Kirkby, Pontefract, W Yorks WF9 3SE.

Swap PD for free. Send disk and SSAE to David Martin Jr, 27 Riverdale Anahilt, Co Down, Northern Ireland BT25 6DH.

WANTED

Lola, Skemersdale. Please send your address to Bill, 15 Edinburgh Place, Arnley, Leeds S12 3RQ.

Help. Are there any Battlemech/Space Marine (not Crusade) type games for the ST? Commercial/PD? Also wanted Metal Masters. Tel 0115 9400768.

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ST FORMAT Back Issues

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JUNE 1995
Disk: *HiSoft C Interpreter, Alien Thing*
Inside: Upgrading your ST, High-speed comms **Reviewed:** *Outside, NVDI 3.0, ExtenDOS Pro, Ping 2000, Tessera*
Tutorials: *C, Pablo Paint, STOS*

ISSUE 70

MAY 1995
Disk: *Team demo, Pablo Paint, 525 2.02*
Inside: DTP guide, plus disk utilities for fine-tuning your ST **Reviewed:** *MaxiS hard drive, PAK 68/3, Prima HD/CD*
Tutorials: *Pablo Paint, World Wide Web*

ISSUE 69

APRIL 1995
Disk: *Obsession* table, *Chequebook* and *Hang About* **Inside:** The Survival Guide, plus Mix It Up – music special **Reviewed:** *Ease, Calamus* updates, *Hollywood Hustler* **Tutorials:** *AtariNOS, APEX media*

ISSUE 68

MARCH 1995
Disk: *Magic Storybook* and *BBS Directory*
Inside: A World of Information – Net sites and how to set up your own BBS; *MagiC* vs *Geneva*; *KAOSDesk, Twist 2, ST Disk Cat, AtariNOS* tutorials; *APEX media*...

ISSUE 67

FEBRUARY 1995
Disk: *Smash Hit* and *KAOSDesk 2.1*
Inside: Pure Genius – explore your ST's powers; *Twist* and *Superbase Pro* head to head; ProTOS show **Reviewed:** *Obsession, Quill 2, Imagecopy Colour 3.5*

ISSUE 66

JANUARY 1995
Disk: *Stardust, Endurance, Route Finder* and more **Inside:** All you need to know about animation; ST First Aid course; programming tutorials **Reviewed:** *Zero-5, Metamorphosis*...

ISSUE 65

DECEMBER 1994
Disk: *Grafix, Jetpac, Arcade Classics* and many more **Inside:** Plug your ST into the Internet; word processors head to head; *GFA* and *Personal Pascal* tutorials **Reviewed:** *Twist 2, ScreenEye*...

ISSUE 64

NOVEMBER 1994
Double Disk special: *Personal Pascal, Starball, Grafiek* and much, much more **Inside:** The future of the ST; full PD library round-up **Reviewed:** *HERO, NeoDesk 4, Munch, Robinson's Requiem*

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Feedback

A double dose of reader interaction this month, as Karen tears open the envelope and announces the winners and losers in our recent reader survey.

Beauty and the boot

Might I suggest that you run a series of articles on setting up boot disks? For example, most people would recognise the importance of having different boot disks for graphics, DTP, WP and MIDI, with specific desk accessories and auto folders for each application.

I would also suggest that many of your readers are using their Ataris for making music. Perhaps you could put aside a section of the Cover Disk each month for ten samples. This wouldn't be a screamingly large chunk of data, and would build into an invaluable sound library for your musician readers.

On a lighter note (G# perhaps), was it an entirely good idea to start printing the authors pictures atop their articles? Without wishing to impugn their undoubted mastery of their subjects, it does tend to lend the articles an ambience not unlike that experienced while scanning the photos pinned up outside your local police station.
A Basire, Walthamstow

stf: Rumour has it that Nick Ross has offered Frank Charlton and Andy Curtis a series of special cameo appearances in the Crimewatch *reconstruction videos next year.*

On a more serious note, the boot disk series is an excellent idea and you can look forward to reading the first part in next month's issue. However, to reserve a special section on the Cover Disk just for samples wouldn't be fair on non-musicians. If you check issues 58 to 62, though, you'll find masses of samples, and there's every chance that we'll do another similar musical giveaway in the future, so keep reading.

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Frank Charlton and Andy Curtis: axe murderers from hell. The truly talented can be hard to find... just ask the folks at Scotland Yard!

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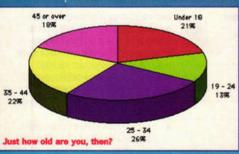
A moving story

Please, is there anyone out there who can help me? I am most definitely at a loss.

Not so long ago I moved house. This is not particularly odd, lots of people do. But as it was a new thing for me, I didn't realise what a pig of a job it is.

To cut a long story short, it seems that I have packed stuff, unpacked stuff, and lost half of the things I could've sworn that I packed away safely.

To cut a long story even shorter, I need a new set of instructions for *Obsession*. If you could tell me what my chances of getting a new set are, I'd be truly grateful.

Now, I know what this sounds like, but I'm not a software pirate. There's not much else I can say in my defence, although I did

That's you, that is

Back in issue 69 we asked you a lot of questions about you, your Atari and *ST FORMAT*. I'm pleased to say that we have received an avalanche of mail over the last couple of months – a big thank you to all those people who filled the questionnaire in. The survey has officially ended now and the results are in.
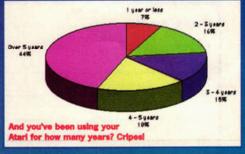
We should point out that on some questions the results don't add up to exactly 100 per cent. This is due to a combination of factors: sometimes more than one answer was appropriate, and some of the forms weren't completely filled in (you know who you are!).

The first thing that struck us, as we started compiling the questionnaires, was how the age of our readers had increased – 67 per cent of you are now over the age of 25, as opposed to 54 per cent last year. However, we do wonder why 19 to 24 year olds consistently abandon the ST, only to return to it in their late 20s. Perhaps the overwhelming number of PCs at university sites accounts for the temporary drop?

As you might expect, the increasing age of the *ST FORMAT* readership has resulted in a drop in the number of readers in full-time education (just 27 per cent of you, compared to last year's 38 per cent). Strangely, though, while the proportion of you who are unemployed has dropped slightly, there hasn't been a similar growth in the numbers of people in full-time employment. However, the part-time figure has rocketed from 1.5

to 11 per cent (we'll leave you to speculate on that figure).

On the machine front, the figures for STFM and STE ownership haven't changed much over the last year. The Enhanced model is still proving the most popular, with 59 per cent ownership, as opposed to the STFM's 49.8 per cent. That's not to say there haven't been hardware acquisitions over the last twelve months – Falcon ownership has gone from 7 to 13 percent, and Atari's latest baby, the Jaguar, has done even

1 year or less 7%
2 – 3 years 16%
Over 5 years 44%
3 – 4 years 15%
4 – 5 years 10%

And you've been using your Atari for how many years? Cripes!

45 or over 18%
Under 18 21%
35 – 44 22%
19 – 24 13%
25 – 34 26%

Just how old are you, then?

£39,000 GIVEAWAY

Today is Monday 8 May and I have just received my copy of *ST FORMAT 71*. Picking it up, I turned to page 11 and saw the software giveaway: 2,000 copies of *Helter Skelter*, all for just 50p in stamps. "Great," I thought. I popped my stamps in an envelope and was just about to post it when I saw the closing date – 8 May!

I, along with many others I suspect, feel cheated at not even having the chance of obtaining *Helter Skelter*. Come on, get your act together. I mean, a closing date of 8 May in a June edition!

I think someone at *ST FORMAT* wants a slap with a wet kipper –

and I can supply that kipper.
R Layfield, North Allerton

stf: I don't know, one itsy-bitsy little mistake and I have to leave the country for two weeks while the hubbub dies down! Still, two weeks in Greece has helped me to see my crimes in a new light.

Seriously, though, I'm really sorry for the confusion. I got the closing date wrong. What a clot! Fortunately, Audiogenic has agreed to a new closing date of Monday 10 July, which gives you a whole month to send away for your copy of Helter Skelter. And the team has well and truly kippered me!

Are you absolutely sure that's a kipper, Nick?

buy the game from you and I still have the receipt if that helps.
Mark Horsburgh, Luton

stf: Personally, I subscribe to the view that there's a black hole tucked away in the back of every removal van. Still, you're in luck, Mark. Unique Developments has offered to replace the instructions if you send them your receipt. The address is: Unique Development Sweden, PO Box 6118, 60006 Norrkoping, Sweden.

Aussie rip-off
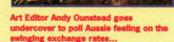
Are you aware that here in South Australia one's arm is twisted to the tune of A$11.25 (UK price at time of writing £3.95),

whereas *Talking Classics* retails at A$8.95 (UK price £3.99). Why is there such a difference?

One reason may be that *Talking Classics* publishes the Australian price on the cover. Why don't you do that?
Fred Chattaway, South Australia

Art Editor Andy Ounstead goes undercover to poll Aussie feeling on the swinging exchange rates…

stf: Our Australian distributors make their own arrangements once ST FORMAT leaves the UK. They pay shipping and distribution costs and handle any returns, so it is up to them to set the local selling price. We've looked into printing an Australian cover price, but the timelag involved means prices often change due to exchange rate swings.

The situation is not finalised, however, and the men in suits say that there will be a meeting with the Aussie connection later this month.

In the meantime, I suggest you take out a subscription. At the time of writing the Australian dollar stands at A$2.16 to the £1. So, if you took out a subscription, it would only cost you A$118.69 for 12 months (A$9.81 per issue). And of course, if you subscribe you get an extra disk too…

Colourful idea

Being a self-employed desktop publisher, I found your article on DTP in issue 70 very interesting. I've had a hand scanner for the STE for a while, but recently found a colour flatbed scanner in PC World. It cost just a little more than the colour hand scanner for the Falcon.

However, when one uses the expression, "Will it work on an Atari Falcon?" in the presence of the sales staff of such an organisation, their faces go blank and they look at you as though you've just arrived from the disease-ridden planet Zog.

It would be very useful, therefore, to see an article on colour flatbed scanners and colour

laser writers, as I am getting enquiries for colour work now.
Peter Francis, Old Oxted

stf: No problem, Peter. As it happens, we're currently looking into the possibilities of just such a feature – expect something on colour scanners and printers in the coming months.

From the frontier

After reading the letter from Dave Hollis on my behalf in issue 70, I received a reply from Mr Braben's firm, Frontier Developments Limited. The letter was from Mr Braben's financial director, a Ms Manda Scott. She expressed her own opinions on the subject, not Mr Braben's. The release of *Encounters* on the ST is, in her words, "unlikely, but not impossible." So the only way to get it released is to write to the following address:

David Braben
c/o Frontier Developments
Saxon Farm
Longmeadow
Lode
Cambridge CB5 9HA

Or send a fax to 01223 812780. All the letters will be read by David Braben himself or a representative. So go on, write now and ensure that *Frontier, First Encounters* is released on the ST.
M G Gray, POG, Wigan

stf: Having read the press coverage about the bugs in the PC version, you have to question the validity of an ST

better, picking up nearly 13 per cent to end on a respectable 14 per cent.

And if your dreams are fulfilled, next year's figures will be even higher. Nearly 16 per cent of you were contemplating buying either a Jag or a Falcon. The upcoming Atari-compatibles haven't caused

… and these are the machines you'd like to buy this year.

These are the machines you own…

much excitement so far, though, with only 6.5 per cent expressing a serious interest in the new technology.
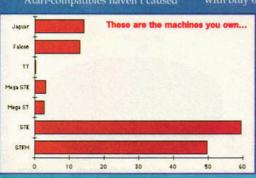
The best news of all though is that only 15 per cent are thinking of defecting to a new platform, which should guarantee the ST huge support over the coming year. After the recent drops in the Atari user base, it seems the rate of

decline is bottoming out.

Another interesting result was the evidence of major memory upgrades. Only a measly 6 per cent of you are still struggling with 512K of RAM, while nearly 68 per cent of you have at least one machine with 2MByte or more.

Hard drives are also increasingly popular. Last year only 21

Many of you intend to upgrade your hardware this year

■ Own
■ Intend to buy

percent of STF readers owned a hard drive, while this year that figure has more than doubled to an impressive 50 per cent. What's more, a further 24 percent of you are still thinking of buying a hard drive (check out our feature next month). No doubt the dramatic price cuts during last year prompted many upgrades, but that

The bugs found in the PC version of *Encounters* aren't exactly encouraging news for those of us waiting in the port-over queue.

version. There is certainly an argument for sticking with developers who care about and understand the platform they're writing for.

PD blues

Please can you tell me who is responsible for the adverts involving PD libraries, as I'm a bit annoyed about the response I have had after writing to some of those advertised in your mag. I wrote to five PD libraries, but only got a response from two (well done ASCIILUM PD and LAPD).

I know not all PD libraries are the same, but it doesn't encourage us to support them as a whole when so many can't even be bothered to answer letters or send out requested software.
KF Hughes, Bristol

stf: It is important that we all continue to buy products and use the services out there, without which the ST scene would ultimately stagnate and die. However, that does not mean we should tolerate poor service. My advice is to find a PD library you're happy with and stick with it.

If you have any problems with goods or services advertised in

ST FORMAT, *the person to contact is Sophie Collins at Future Publishing, 30 Monmouth Street, Bath, Avon BA1 2BW. You can phone her on* ☎ *01225 442244 extension 2262.*

Your letter should include as many details as possible, including an account of the problem, the names of the people to whom you have spoken, the dates of any correspondence, and if possible copies of that correspondence. In that way we can work on your behalf to resolve any problems. We can't always guarantee satisfaction, but we can usually advise you further about your rights and where you can go for further help.

New and improved

I'd just like to say how much I enjoyed *ST FORMAT* this month – you certainly have been busy. I also feel the latest issue has been the best read I've had from the magazine in over a year. There seemed to be plenty of help, plenty of news, the modem round-up was good and overall the reviews and contents were better than usual. Keep up the good work and congratulate the team for me.
Mark Smith, via e-mail

stf: Aww, shucks!

If you have a point to make, send your letters to the editor, Karen Levell, at: Feedback, *ST FORMAT*, Future Publishing, 30 Monmouth Street, Bath, Avon, BA1 2BW or e-mail them to: klevell@futurenet.co.uk. Letters may be edited for length and grammar.

doesn't account for your interest in modems and CD-ROM drives as well as the more predictable memory and TOS upgrades.

There were few surprises in store when it came to what you do with your beloved machine: playing games and word processing were the undisputed king and queen, while DTP just pipped programming and graphics work to take third place.
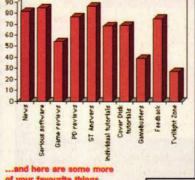
As for the sections within *ST FORMAT*, ST Answers, our

long-running agony pages, just beat the serious reviews into the best-loved spot, with 87 per cent of you stating an affection for Clive and crew. Rather less popular was the erstwhile Twilight Zone: 20 per cent of you disliked it, while 48 per cent were completely indifferent to its babbling. However, Pixel Painting fans needn't fret, because although Twilight Zone has gone your art work will be back next month in the Feedback pages.
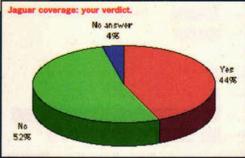
The other sections which took a bashing in the popularity stakes were the games-oriented ones: Gamebusters

...and here are some more of your favourite things.

and the game reviews. Whether this is because of the recent contraction of the games market, or whether it's something to do with our particular coverage is a bit of a mystery – perhaps you can write in and let us know.

But what of the Jaguar? Well, this one certainly won the vote for the most over-inked ticks – your strength of feeling on this topic came shining through in the determined marks made in both the Yes and No boxes. The final result came out at 44 per cent in favour and 53 per cent against (with 4 per cent abstaining). So, for the time being, there will be no Jag coverage in *ST FORMAT* – but who knows what might happen when we run the next survey? *stf*

Your favourite activities are word processing and games...

■ Mostly
■ Occasionally

Database
Accounts
Education
Comms
Programming
DTP
Graphics
Word processing
Music
Games

0 10 20 30 40 50 60 70

Jaguar coverage: your verdict.

No answer 4%
Yes 44%
No 52%

Hard Drives & CD-ROMs

PRIMA

85% May ST Format

PRIMA ST-COMBOS
260Mb Hard Drive and Dual Speed CD-ROM only £464.99
Call for other configurations

PRIMA CD-ROM

	STe	Falcon
Dual Speed	£299.99	£269.99
Quad Speed	£374.99	£344.99
ICD Link II SCSI Controller	£89.99	

includes CD-ROM Driver

This new range of hard drives can be purchased just as a hard drive or can have the capability to be combined with a built in CD-ROM drive or other SCSI devices. The ICD Link II controller can link up to 7 separate SCSI devices.

These drives are fully auto booting and auto parking. They have a very small footprint, fast access (approx 11ms) and are VERY QUIET.

The PRIMA range come with a built in disk cache as standard that can reduce disk accessing time by 50%. Standard warranty 1 year.

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PRIMA 340	£324.99	£269.99
PRIMA 540	£354.99	£299.99
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SupraFAXModem 288
Super fast V34! 28,800 bps + 14,400 Fax
PCF AWARDS
only £199.99
90% ST Format
An exceptional modem..connections were fast & rock-solid..the most trouble-free modem we tested 94% ST Format June 1995

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V.32 bis (14400 baud !)
Low cost version of the classic V32bis Fax modem. Features as below but class 1 fax only and LED display
only £91.99
93% GOLD

SupraFAXModem Plus
Get on line using this great value fast modem with auto dial & receive, 2400 baud Hayes comp, V22 BIS. Includes free modem comms s/w & cable!!
£86.99

SupraFAXModem V.32bis
This modem has full 14400 baud. Includes V.32bis, V.32, V.32bis, V.22, V.21, MNP2-5, V.42, V42bis, Class 1 & 2 commands, 9600/14400 Group 3 Fax. Includes free modem comms (not Fax)/s/w & cable
only £154.99

Supra modems are not BABT approved, however they perform as well & often out perform BABT approved modems. Supra Modems have a 5 year limited warranty

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Amazing price reduction on Courier Dual Standard V34 Fax
Now only £327.99
STRAIGHT FAX SOFTWARE only £72.99

Sportster 288 only £233.99
features V34, 28,800 BPS, BABT approved
If you thought V32bis was fast try V 34 (28,800 bps).
Sportster 2496 +Fax £104.99
Sportster 14400 Fax £157.99
Modem cable for Sportster and Courier £9.99
USR modems come with a 5 year warranty & are BABT Approved

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only £26.99
This is a powerful speaker system with built in stereo amplifier. It will plug into an Atari STE, Commodore Amiga or Acorn Archimedes. Complete with its own power supply the Zy-Fi system can also be powered by batteries

The Zy-Fi Pro Stereo System
only £57.99
Higher spec ification version of above

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Real time clock that plugs into cartridge port. Software for setting time & date. 2 year guarantee.

ROBOSHIFT MK-1
Automatic Mouse/joystick switcher now only!! £9.99

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The amazing new graphics tablet for the Atari. 86% rated in ST Format January issue!
NEW LOW PRICE!
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All our monitors are UK spec. All monitors come complete with connecting leads.

Atari 1435 Colour Monitor
We now have a limited supply of original Atari 1435 colour monitors, full 12 month warranty.
only £199.99 very similar to CM8833 MK2

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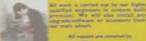
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Zydec 3.5" Drive only £59.99
1 meg external drive, high quality low noise drive. Inc PSU

Power 720B 3.5" Drive only £69.99
This 1 meg external drive comes with Virus checker, built in Blitz turbo and boot switch for drive B. Includes PSU

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This scanner comes with the latest version 2 software, for bright & sharp grey scale performance a flexible scanning image display & manipulation options. Options include Crop, embolden, resize & flip.

Alpha Scan Plus only £119.99
New version of this famous 400 DPI scanner. Includes Touch up and Merge-it software enabling you to alter & manipulate high resolution images. Needs 1 MB of RAM, runs in mono only. add £20.00 for OCR software

Migraph Colour burst Scanner only £399.99
This hand scanner is available only for the Falcon, includes 256k colours, 50 to 400 Dpi.

Software
BUSINESS

K-Spread 4	£79
K-Data	£44
K-Graph 3	£44

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Clarity 16 (Falcon only)	£84
Cubase Lite, 16 track, score printing capability	£85
Cubase V3, Midi record, score printing capability	£439
Cubase Audio Falcon	£729
Integrated digital audio midi with score printing capability	
Replay 16 Digitiser	£109
Stereo Master	£34

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Multi Tos	£44
Speedogdos	£34
ST Straight Fax 2.1	£72
ST Basic	£5

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Imagecopy 3.5 CD ver	£35
Flexi Dump II	£25
True Paint	£34
Video Master	£59
Video Master (falcon only)	£69

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All our printers come with ribbon or toner, paper & cables!!

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Compact Portable Printer, 30 page ASF in built.

NEW! Canon BJ200ex	£229.99

High quality mono output, up to 4 P/P/M. ASF in built.

NEW! Canon BJC70 Col.	£299.99

High quality Portable Colour Printer, 30 page ASF in built.

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High quality Colour, Super fast mono printer, 360x360 dpi

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Dedicated Col. printer, New enhanced version, virtual 720dpi
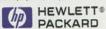
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simple (as easy as ABC) to use 24 pin printer. Comes as standard with 50 sheet auto sheet feeder. Tractor feed optional at £27.99

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The NEW Star Range of dot matrix printers are here, featuring a built in 55 sheet auto sheet feeder

Star LC909 pin mono	£102.99
Star LC100 9 pin colour	£117.99
Star LC24 024 pin mono	£117.99
Star LC240C 24 pin colour	£134.99

Tractor Feed for the new range only £15.99

Star SJ144 Colour	£229.99

Stunning affordable colour printer. 3 PPM, low running costs

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Canon BJ200/200ex mono cart.	£19.99
Canon BJ30 mono ink tank ,3 pack	£14.49
Canon BJC70 coi. ink tank,3 pack	£19.49
Canon BJC70 mono ink tank,3 pack	£12.49
Canon BJC4000 col. ink tank	£19.99
Canon BJC4000 mono ink tank	£8.99
Canon BJC600e col. ink tank	£8.99
Canon BJC600e mono ink tank	£6.99
HP520/540 D/life mono cart.	£24.99
HP550/560/660 col.cart.	£26.99
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save a fortune in running costs with your ink/bubble jet. Compatible with HP, Canon, Star, Citizen & many others.

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Star LC10/20/100 colour	£7.99
Star LC240C mono	£8.49
Star LC240C colour	£13.99
Star LC240 mono	£5.99
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Re-Ink Spray for mono ribbons	£11.99

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NTSC/PAL COMPATIBLE CALL FOR DETAILS.

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STFM Deluxe SIMMS modules

4Mb unpopulated	£24.99
4Mb populated to 512k	£34.99
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Marpet products come with a 12 month warranty.

Prima RAM expansion

512K STe	£9.99
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Falcon VGA adaptor	£9.99
Quality Mouse Mats	£3.99
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STFM/STE Power Supplies	£39.99
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2 Way	£12.99
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Price includes connecting cable

Monitor Switcher Box £17.99
switches between mono & colour monitors, such as SM144 & 8833 MK2

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As official dealers for Rombo, we are able to offer this excellent package at a great price. Vidi 12 ST replaces the famous Complete Colour Solution with a higher specification but a lower price!
£69.99
Contents include multimedia digitiser, software, manuals and phono cable

Main Features:

ATARI REPAIRS
We offer a FREE quotation on your Atari or any peripheral (monitors, printers etc). A delivery tariff of just £5.00 is charged for return delivery or alternatively you can visit our showroom. We can also arrange a courier pickup at an additional cost of £11.00.

All work is carried out by our highly qualified engineers in custom built premises. We will also install any upgrade for nature delivery or accessory from our own showroom.

All repairs are covered by a 90 day warranty.

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1 Mb 72 Pin SIMM	£39.99
2 Mb 72 Pin SIMM	£79.99
4 Mb 72 Pin SIMM	£130.99
8 Mb 72 Pin SIMM	£262.99
16 Mb 72 Pin SIMM	£399.99
1Mb 30 pin SIMM	£34.99
4 Mb 30 pin SIMM	£110.99
256 x 4 DRAM (DILs)	(each) £6.99
1 Mb x 4 ZIPS (1/2 Mb)	£32.99
256 x 4 ZIPS	(each) £5.99

Part Ex. available on your old memory, Call for pricing.

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60 Mb	£99.99	Hard Drive bracket	£15.00
80Mb	£109.99	IDE Cable	
130Mb	£139.99		

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FUJI MF2DD

QTY	Bulk DS/DD	Branded DS/DD
10	£3.49	£4.49
30	£9.99	£11.99
50	£15.99	£18.99
100	£29.99	£35.99
200	£52.99	£63.99
500	£118.99	£142.99
1000	£211.49	£253.99

All disks are guaranteed 100%. All branded disks come with labels.

MULTI COLOUR Disk labels

500	£6
1000	£9

10 Capacity Box	
50 Capacity Lockable Box	
100 Capacity Lockable Box	
*90 Capacity Banx Box	
*150 Capacity Posso Box	

*add £3.00 delivery if purchasing just one Posso or Banx box. Normal delivery when purchased with other product or when buying 2 or more.

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ST FORMAT

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6 STRIKING PROGRAMS

PLUS BACK UP AND THREE OTHER FILES

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Complete shareware game that's an addictive cross between *Pacman* and *Lemmings*. Runs on all STs (not TOS 2.06 or Falcon compatible).
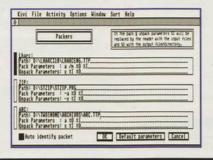
SPEED OF LIGHT

Latest version of this superb shareware image displayer and manipulator. Displays up to 256 colours on an ST!

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Great QWK-compatible offline reader that'll save you time and money when you're online to your favourite BBS. Runs on all Ataris.

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Find that missing document by searching directories or entire drives for files containing specific text strings.

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Pick which programs and accessories you want loaded when you boot up your ST with this handy utility.

Runs on all Ataris in any resolution, and is perfect for booting up different system setups for different purposes.

SUBSTATION

Kill everything that moves in an exclusive level from this new 3D blast-'em-down.

CD-ROM LIST

A glossary containing details of more than a 1,000 CD-ROM disks that are at least 75 per cent Atari compatible!

MUSIC DIRECTORY

An extract from this useful directory – a must for all musicians! Plus, a MIDI file for use with *The Score*.