

# The Best of ST FORMAT



- Two optional disks
- 11 introductory guides
- Hundreds of ST Answers
- Indexes to everything in *STF*
- Scores of techie terms explained

**FOR YOUR ST**

**1ST**  
**AND**  
**FOREMOST**  
**ST FORMAT**







# **The Best of ST FORMAT**

**Packed with hundreds of tips and  
jargon-busting guides for beginners**



With thanks to Steve Fardy for designing this book,  
Chris Lloyd for compiling the disks and writing about them  
and Clive Parker for his contributions to ST Answers.  
Acknowledgements of the greatest kind are also due to Helen Hayward  
who helped enormously without whinging (too much).

Also many thanks to Goodman's International for supplying the  
Public Domain and Shareware software

Future Publishing Ltd  
30 Monmouth Street, Bath, Avon BA1 2BW

First published in the UK by Future Publishing Ltd 1992

*The Best of ST FORMAT* comes to you from the publishers of  
*ST FORMAT*, Britain's best-selling ST magazine.  
Each month it is packed with reviews, news, guides, features, hints and tips  
for ST owners of all levels. Issues are accompanied by disks  
crammed full of excellent software.  
*ST FORMAT* is on sale on the second Thursday of every month.

ISBN: 1 872666 24 8

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They may be freely distributed, but you cannot incorporate the code into your own programs,  
nor can you modify the code in any way.

This includes removing any copyright messages contained in the programs.



# **The Best of ST FORMAT**

**Packed with hundreds of  
tips and jargon-busting guides  
for beginners**

**Compiled by Paula Richards**



**A Future Publishing Production**

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# INTRODUCTION

**W**hy did you buy an ST? Did you choose it so that you spend your evenings blasting the hell out of telephone boxes and aliens, then flattening some mountainous land for the benefit of your people when you indulge in a bit of playing god and later on, towards midnight, move on to playing tennis, racing cars and flying war planes? Or did you buy it so that you could learn to program these sorts of games in the comfort of your own home, experimenting with weirder and more outrageous concepts away from the constrictions that teachers and formal lessons impose on you?

Or perhaps you wanted to get on and write that best-selling novel in your spare time, found that you enjoyed using your ST so much that you quickly diversified into keeping check of your accounts, then created so many different files that you found you needed to invest in a database to keep track of them all...

## Get the most from your ST

Whatever your motivations for choosing an ST, whatever level of machine you own and whatever gear you've bestowed upon it, the chances are that you haven't exploited its every capability. And that's a real waste, you know, because there are literally dozens of ways in which you can be creative with your ST, in which you can use your ST to make it work for you, in which you can have fun with your ST. And it's not until you've tried them and decided that perhaps testing out a 3D computer aided design package isn't going to lead you towards eternal fulfilment that you should toss the software aside and move on

to something else a little less taxing. It's not until you've tried to push your ST to its limits that you're going to know whether you have a potentially life-long obsession or just a dead duck on your hands.

## Try it out!

Trying, testing, starting new things is what this book is all about. It aims to introduce you to aspects of your ST that you'd forgotten it had, it aims to give you inspiration to start something different without being overawed, but at the same time to give you something to aim for. If you're convinced you're a wizard with a paint package, for instance, turn to the chapter on graphics – you could be animating your creations before you know it – and that can't be bad. On the other hand, if you've always thought you might like to talk to people on the other side of the world with the same ST interests as you, get into the world of comms; talk and discourse. Of course, you might not strike up an instant rapport, but at least you've tried, you can see what your ST has the potential to do, it gives you a feeling of power.

As well as these serious uses, the ST is an excellent machine for playing games on – there are 4,096 colours to choose from on an STE – and you can expand that to an incredible 16 million shades with an expansion card. There are loads of fantastic games available for the ST – not to mention some pretty dire ones as well – enabling you to indulge in full-blooded murder or perhaps just a spot of railroad building. The choice is yours.

On top of all this, the ST is the ultimate music machine – most of the bands you see on *Top of the Pops* have used an ST at some stage of their production process. With the



introduction of the Falcon and its CD quality sound, the affinity between music and Atari computers can only improve.

### **Your questions answered**

*The Best of ST FORMAT* isn't only for beginners, however. There's a massive section of ST Answers with over 200 questions and answers that have never before been printed in *ST FORMAT*. As you'll know if you're a regular reader of *STF*, ST Answers ranges from incredibly specific queries from experts in their fields to general enquiries that uncover goldmines of information. So there's something for everyone here – whatever level of experience you consider you have, ST Answers can provide you with hundreds of invaluable hints and tips.

Finally, there's a reference section which includes a Buyer's Guide – everything we have reviewed that's still available is included here, so before you choose anything from a new hard drive to educational software, from

an astrology program to an emulator, check this out – you can't afford not to!

If you've ever lost that essential review of a bit of kit you've got the chance to buy – perhaps second hand – you can quickly and easily find where we first reviewed it, refer back to the original review and see what we thought of the product at the time.

### **Practicalities**

As you read *The Best of ST FORMAT* you'll notice lots of references to previous issues of *ST FORMAT*. If you don't have that specific copy and you want to refer to it for further information, have a look in the current issue for details of how to obtain back copies – a selection are always available. If you want to subscribe to *ST FORMAT*, Britain's best-selling ST magazine that sells in excess of 69,000 copies per month, you can also find details of that in the current issue.

# THE DISKS







# THE DISKS

If you opted to go for the disks that accompany this wondrous tome then you've got yourself two little crackers – they're both absolutely crammed with goodies. There's everything from serious applications and handy little utilities to make life that bit easier to the niftiest games going – the pick of Public Domain and Shareware software. What's all this about Public Domain and Shareware? It's a type of software distribution. See our section on page 77 for a full explanation. In brief, it enables good programs to reach as many people as possible – in this case, you.

## Reading the runes

Most of the programs on these disks contain detailed instructions in the form of text files. Each of these programs have the file extender .DOC – the file extender is the three letters after the full stop in the file name and it indicates what kind of file it is. You can read these

directly from the Desktop by double-clicking on them while you're in high or medium resolution. However, you have little control of the display and you can only move forwards through the document. Press the Spacebar to move forward by one page and <Return> to move forward by one line. Press <Q> when you've seen enough.

Alternatively you can use *Quickview*, a very useful utility created just for the purpose of browsing through document files – it's on Disk One. *Quickview* offers all sorts of fancy features – run QVIEW.PRG and use the file-selector to pick a document to read. Press <Help> for a list of the program's functions and <Esc> to get to the main menu. Reading text files is now a piece of cake. One word of warning though, *Quickview* doesn't like text files that are created with *ST Writer Elite*, so use *ST Writer* itself to read those. Reading documentation is often a bind but it's the only way to make sure you are making the most of a program and not missing out on the juicier functions.

## WHAT'S IN STORE FOR YOU ON THE DISKS

### DISK ONE

**Accompanist** – a powerful 16-track sequencer.

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**Art ST** – a paint program with a wide range of functions.

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**Pack Ice** – a brilliant compression and decompression program.

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### DISK TWO

**Fastcopy 3** – enables you to choose the format for your disks.

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**GEM Calc** – a spreadsheet which can handle up to 100 cells.

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**Llomatron** – a *FORMAT* Gold winning alien blaster – it won't be long before you're addicted.

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**Maccel** – speeds up your mouse pointer so fast you can't keep up with it!

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**Quickdisk** – an incredibly useful RAMdisk.

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**ST Writer Elite** – a powerful and easy-to-use word processor.

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**Trendy Handy Randy Bendy Mandy** – your own speedy-drawing Mandelbrot set creator.

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**Zapcard** – a digital card file so you can catalogue your collection of snails or whatever else is disorganised in your life.

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# Disk One

## Accompanist

**BY: HENRY COSH**

**FOLDER: MIDI**

**RESOLUTION: MEDIUM OR HIGH**

**FILES: SEQUENCE.PRG, SEQUENCE.RSC,  
MANUAL.DOC, TUTORIAL.DOC, LATEST.DOC**

**READ: MANUAL.DOC, TUTORIAL.DOC,  
LATEST.DOC**

**GET STARTED WITH: SEQUENCE.PRG**

If you've ever wondered what those two little ports on the side of your ST were for and not done anything about finding out, then you've been in not-very-blissful ignorance about one of your ST's major strengths – its ability to control musical instruments using MIDI – Musical Instrument Digital Interface. This is a standardised method of data transfer that enables your ST to take control of any MIDI-compatible instrument. Anything you play on your ST can be recorded, edited and then played back again. You need the right software though, and that's where *Accompanist* – a powerful fully featured 16-

track sequencer – comes in.

Once you've recorded your musical efforts or loaded in someone else's, you can easily change any aspect of them. They can be filtered, transposed and quantized as well as manipulated in a similar way to text files in a word processor. Sections can be cut and pasted and whole songs can be rearranged. Even if you hit a bum note there's no problem – all you have to do is edit the note on-screen.

Once you've learned to master the art of sequencing, you'll understand why it has caused such a revolution in the world of music production. No modern studio is complete without a sequencer chugging away – and it's more than likely to be on an ST as well.

*Accompanist* can handle the standard MIDI file formats so you can take your musical creations and load them into any other sequencer which can load the standard format – and any half-way decent sequencer can do this. You need an instrument with MIDI capability and some time to get to grips with MIDI. There is a hefty manual and tutorial on disk so you can lay down some tracks – the music studio in your bedroom isn't as far away as you think.

## BACK ME UP FIRST

*Before you start, make sure nothing untoward can befall your disks. Write-protect them by moving the black tab in the corner so you can see through the hole. Nothing can now be written to or deleted from the disk, then make copies of both disks. Get two spare disks and use Back-up from Disk One. Run BACK\_UP.PRG, pressing <1> to copy the disk. Remember that the source disk is the disk you want to make the copy of and the destination disk is the new copy disk.*

## Back-up

**BY: BRIAN TILLEY**

**FOLDER: BACK\_UP**

**RESOLUTION: ALL RESOLUTIONS**

**FILES: BACK\_UP.TOS**

**GET STARTED WITH:  
BACK\_UP.TOS**

Making a quick copy of a disk can be a pain sometimes – all that dragging folders across from one drive to another. *Back-up* turns the process into a simple matter of pressing a couple of keys, and it can back up most standard formatted disks.

If you have two disk drives, you can copy one disk to the other and, if you're packing a full MByte, then you can do the

whole thing with one disk swap. Always remember to write-protect the source disk just in case of any mishap. It won't copy most commercial games disks, however, since they have clever copy-protection routines to prevent you from doing so. Unless the manual states that you can make a back up of any disk, it's illegal. Although disks are generally reliable, it is always wise to have a copy of your precious data. If you haven't already made copies of the disks that came with this book, do it now.

To see if you can copy other disks, load *Back-up*, press <2>, then, when prompted, insert the disk you want to copy. *Back-up* then tells you if it can do the job.



## Art ST

**BY: ROBERT BIRMINGHAM**

**FOLDER: ART**

**RESOLUTION: ALL RESOLUTIONS**

**FILES: ART.PRG**

**GET STARTED WITH: ART.PRG**

With a machine like the ST you can produce some seriously good pictures. With 512 colours on an ST or 4,096 on an STE and a detailed display, the only limit is your imagination. To get anywhere, though, you need a paint package. *Art ST* is a good introduction to the world

of pixel painting. It runs in all three resolutions and has the full complement of basic tools including multiple work screens and definable fill patterns. Unfortunately there's no document file to explain it all, but it's simple and, with a spot of experimenting, you'll have no trouble putting together masterpieces. When you first load the program you can see a row of boxes along the left edge of the screen. Click on these to activate the various functions. The blank area to the right is your work screen. What about the bit covered by the icons? Pressing the right button shows you the whole screen or you can scroll across it with the Scroll icon by using the arrows each side of it. Check out the box below for details.

## A MULTITUDE OF FUNCTIONS ARE YOURS IN ART ST

**CLRSCR** - clears the current drawing.

**COLOUR SELECTION** - below the main group of icons is the current palette - there are 16 colours in low resolution, four in medium and just black and white in high. Just click on the desired colour to select it for drawing operations.

Below these colours are three numbers - the red, green and blue colour values. To change a colour, just click on the numbers. The colour on the far right is your background colour.

**COPY AND PASTE** - copy remembers an area of screen selected with the mouse. Paste puts the remembered section back on to the screen.

**DELETE** - up pops the fileselector for you to delete a file - use with caution because once it's gone, that's it.

**DRAW** - a simple single pixel (dot) drawing tool. Select this and have a scribble on the main screen.

**EDIT** - enables you to edit the fill patterns and lines.

**FILL** - floods an area with the current colour. It stops when it hits a boundary.

**FRAME** - *Art ST* enables you to use multiple screens - as many as memory allows. Each one is a separate "canvas."

**LINE** - click once to set the start point and again to set the finish point.

**MAGNIFY** - use the mouse to select an area of screen, then choose the magnification. The magnified section is pasted back down again with the mouse.

**MODES** - picks the drawing mode and fills pattern types. In replace mode all new drawings cover the old, in transparent mode the background colour is transparent.

**PIXEL** - gives you a magnified view of the screen on the bottom right. Move the mouse around to select the area you want to work on and click the mouse. Here you can edit all your pixels in as much detail as you like.

**QUIT** - sends you back to the ST's Desktop.

**SAVE AND LOAD** - enables you to load in fill patterns and pictures in various formats.

*Degas* pictures can be in all resolutions whereas *Neochrome* pics are in low resolution. These are the two most popular formats and you can load these into any other decent art program.

**SCROLL** - moves the drawing area so you can reach the area under the icons.

**SLIDE** - you can use pictures to form a slideshow using *Art ST's* multiple work screens.

**SQUARE AND CIRCLE** - click once on the screen, then move about to draw your shape.

**TEXT** - adds text to your picture, so just click here and type away. Position the text with the mouse and click to paste it on to the screen.

**TEXT, LINE AND FILL PATTERN SELECTORS** - using the arrows on either side you can select the various types that the text, line and fill functions use.

**UNDO** - if you mess something up, this undoes your last action.





## Cybernetix

**BY: PAUL ANDREWS AND RODNEY SMITH**  
**FOLDER: CYBER**  
**RESOLUTION: LOW RESOLUTION ONLY**  
**FILES: CYBER.TOS**  
**GET STARTED WITH: CYBER.TOS**

**One of the reasons you invested** in a machine like the ST was to play games. No matter what other serious things you use it for – sequencing, word processing or whatever – every now and again you'll fancy a quick blast.

*Cybernetix* is a blast and a half. The action is fast and furious as your spaceship takes on wave after wave of aliens. It's joystick controlled and the aim is to get as far as you can by destroying everything on each level. There are a number of meteoroids which, when they're shot, release a blue crystal – you should pick this up for bonus points. If an enemy grabber gets two of more of these and you zap him, a power-up is left behind. Pick up this little icon with your ship to increase your ship's abilities. But beware – if you take too long clearing a level, more ships appear including the deadly assassin which zooms about at a frightening speed shooting at you.

To give you a fighting chance you've got smart bombs which zap everything on-screen – hit the Spacebar to make one of these go off. At the top of the screen is your scanner showing the positions of all the ships on the level – the assassins appear in red here, so watch out for them. You need quick reactions and an itchy trigger finger to get on the high score table, but you'll have a jolly good time doing it.

## Fastbase

**BY: ANDREW BROWN**  
**FOLDER: FASTBASE**  
**RESOLUTION: ALL RESOLUTIONS**  
**FILES: FASTBASE.TOS**  
**READ: SEE BELOW**  
**GET STARTED WITH: SEE BELOW**

**You won't be around STs long** before you come across databases – they are one of the cornerstones of serious applications. Databases store and sort information like huge intelligent filing cabinets – data is stored in records, rather like cards in a cardfile. Records can be sorted in any order, printed, searched through and edited.

*Fastbase* is a slick fully-featured database that runs in all resolutions and has a beautifully programmed interface. Multiple databases can be held in memory,

and you can even include graphics in records. The program also supports a sophisticated query function. It is Shareware so this version is limited to 20 fields and databases of a limited size. The chances, are however, that you don't need anything any bigger – why don't you try it and see?

To fit *Fastbase* and all its example file and documentation on the disk, it has been archived. This is a method of compacting data, but it does mean that, before you can use it, it needs to be de-archived. To do this, copy across the file FASTBASE.TOS to a freshly formatted disk and double-click on it to run it. It automatically creates all the files on your new disk – you can see a running commentary on-screen. When it's finished you have a disk crammed with files, including examples in all resolutions. You can delete the FASTBASE.TOS file to give you more room on the disk if you like.

Run FASTBASE.PRG to enter the best manipulation program this side of an expensive commercial release. Getting going is easy, just click on Load from the file menu and select an example that matches the resolution you're in and open a window. There's a meaty manual called MANUAL.TXT with all the details.

## The Financier

**BY: KEVIN MUNROE**  
**FOLDER: FINANCE**  
**RESOLUTION: HIGH AND MEDIUM RESOLUTION**  
**FILES: FINANCE.DEF, FINANCE.PRG, FINANCE.RSC, READ\_ME.DOC, INSTRUCT.DOC AND FOLDER OF EXAMPLES**  
**READ: READ\_ME.DOC, INSTRUCT.DOC**  
**GET STARTED WITH: FINANCE.PRG**

**Totting up the money situation** at the end of a month can be a confusing and frustrating time – you are never quite sure how much you've really got left – probably because you haven't got anything left at all. The *Financier* should help to sort things out a bit – it's a fully-featured home accounting package that can keep track of the myriad of ins and outs.

Accounts can be customised, so you can add descriptions of each transaction. Statements can be printed out using a definable template and you can also search through all the data so you can zoom to any entry. You can even plot graphs to show the full horror of your financial state.

The *Financier* uses the familiar GEM interface. Select Load from the file menu and look at one of the example files. All the financial transactions appear in the main window – credits, debits and the balance. Full instructions are in the text file INSTRUCT.DOC.



## Gallery

**BY: STEPHEN JONES**  
**RESOLUTION: LOW RESOLUTION ONLY**  
**FOLDER: GALLERY**  
**FILES: GALLERY.PRG, GALLERY.DOC**  
**READ: GALLERY.DOC**  
**GET STARTED WITH: GALLERY.PRG**

There are plenty of slideshow programs about to show off your pictures, but *Gallery* has bells and whistles. It can handle *Neochrome*, *Degas Elite* and *Spectrum 512* pictures, has an editable introduction screen with a scrolling message and tunes to accompany everything. It even uses pictures packed using *Pack Ice*. To get started, copy across GALLERY.PRG to a blank disk along with all your pictures, then run the program. The function keys select the music and the numeric keys select the speed of the slideshow. Press <Esc> when you've seen enough.

To make the show run automatically when you boot with the disk in the drive, copy the GALLERY.PRG into an AUTO folder. To create your own scrolling message you need a word processor like *ST Writer Elite* that can save documents in pure ASCII – that is, without any frills and control codes. Use the Save As ASCII function under the file menu. Write your scroll line text and save it as SCROLL.TXT on your slideshow disk. To change the title page, do a similar trick but end the lines with a </> and remember that you have 23 lines each a maximum of 40 characters long. Save this file as TEXT.TXT. Make sure both of your new text files are on the root directory of the disk – that is, not inside any folders. The customised show is now ready to roll. Full details are in the GALLERY.DOC file.

## Pack Ice

**BY: AXE**  
**RESOLUTION: MEDIUM OR HIGH**  
**FOLDER: PACK\_ICE**  
**FILES: ICE\_2\_4.PRG**  
**GET STARTED WITH: PACK\_ICE.PRG**

**Don't you wish your files were smaller?** That's impossible though, you can't shorten them without losing data, can you? Actually, you can with a smart compacting utility which squashes the data without losing anything at all. It examines the file and uses a mathematical algorithm to pack the data and adds a small section of code at the beginning which unpacks it to its original form when the program is run.

*Pack Ice* is a brilliant example of these programs – often compacting files to half their size. You can fit more on a disk and large programs load faster. There are

plenty of file compactors about, but this is the best. It's reliable, efficient and quick, and you don't have to suffer messages or flashing colours while programs are decompacted. Run ICE\_2\_4.PRG and select the type of file you want to squash – data or executable – that is, a runnable program. You can compact any runnable program but, if you pack a data file, the program using that file has to be specially written able to handle *Pack Ice* stuff. The *Gallery* program on this disk can do this.

## Quickview

**BY: DAREK MIHOCA AND IGGNAC KOLENKO**  
**FOLDER: QVIEW**  
**RESOLUTION: ALL RESOLUTIONS**  
**FILES: QVIEW.PRG, QUICKVIEW.DOC**  
**READ: QUICKVIEW.DOC**  
**GET STARTED WITH: QVIEW.PRG**

**This indispensable little utility** is a boon when it comes to reading document files that accompany programs, enabling you to browse backwards and forwards through the document as you want. Just run the program QVIEW.PRG and select the text file you want to read. The cursor arrows move through the document. Pressing <Help> gives you a list of the commands and <Esc> whips you to the main menu. Click on Load and View to select another file to read. If you've got a printer you can send the files there for hardcopy. Handy indeed.

## Selector

**FOLDER: SELECTOR**  
**RESOLUTION: ALL RESOLUTIONS**  
**FILES: SELECTOR.PRG**  
**GET STARTED WITH: SEE BELOW**

**Desk Accessories are handy little programs** your ST loads in when it's first switched on. The problem is it only loads six of these from the boot disk – the disk in the drive when you first boot up – and there's no way to choose which Accessories are loaded. You soon have a collection of boot disks with different combinations of Accessories. *Selector* gets round all that by giving you a chance to pick which Accessories from any disk are to be loaded. You need to put *Selector* into an AUTO folder since your ST looks for a folder called AUTO when you switch on and runs any program there first. Put your Desk Accessories on one disk, create an AUTO folder and pop *Selector* into it. Now boot with this disk and you see a list of Accessories you can choose from. Use the cursor keys to move through the list highlighting the ones you want to load, using <Return> to change their status. Press the Spacebar when it's as you want – then only the Accessories you want are loaded – handy stuff.



## Mountains

**BY:** MATT McIRVIN  
**FOLDER:** MOUNTAIN  
**RESOLUTION:** LOW  
**RESOLUTION ONLY**  
**FILES:** MOUNTAIN.PRG,  
MOUNTAIN.RSC, MOUN-  
TAIN.TXT, PLAYBACK.PRG  
**READ:** MOUNTAIN.TXR  
**GET STARTED WITH:** MOUN-  
TAIN.PRG

*Mountains* is a fascinating and powerful program that uses the principle of fractal mathematics to create amazingly realistic mountain scenery. The program uses some very clever maths to somehow produce natural-looking pictures. The whole thing is fully menu-driven with a host of options. The mountains can be raised, lowered, smoothed, valleys flooded and a realistic cloudy sky added. The final scene can be saved as a *Degas* picture – you can even create animations.

The first step is to generate the basic data. Select the Random Seed option from the Make menu, then set the fractal dimension. This ranges from two to three. The nearer three it is, the more chaotic the results. Real mountains have a fractal dimension of about 2.15. Now select Pin Front Edge from the Make menu – this stops a cross-section appearing at the front of the picture. Now select Make but go and have a cup of tea while that happens – your ST has to create thousands of numbers. You now have your basic data to work with. When the Make is complete, select Quick from the Show menu and a picture is sketchily displayed on-screen. If you don't think it'll look too good, try another number.

When you have a basic shape

you're happy with, go to the Palette menu and choose something like Alps, Cloudy. Now select Fancy from the Show menu and watch. The landscape is drawn in full colour which takes a couple of minutes. When it's finished you may find that, although the mountains look great, the sky isn't too special. Before you can change that save the terrain to disk so you don't have to do all that again. Choose Save Terrain from File and name it.

Now you can experiment with clouds. Use Cloud from the Show menu to remap your existing landscape into a misty shape. When it's finished, think how it'll look behind your mountains. Choose a different Random Seed if you don't like it, then another Make and Cloud again. When you've got something you like, use Save Picture from the File menu and save it to disk. Now to blend them together...

Use Load Terrain in the File menu to retrieve your landscape. Check your clouds are still in the display buffer by selecting Look from the Show menu. If they aren't, use Load Picture to get them back. Then redraw the landscape in front of your clouds by selecting Fancy Background from the Show menu. Your mountain probably has spiky tops – and this looks even worse with the clouds. To fix this, you need Smooth in the Mod menu, which reduces some of the differences between neighbouring points. When that's done, save it. Now load up the Cloud picture again and select Fancy Background to see what you've got. With any luck it's more realistic, but there might be another problem –

black shapes in the foreground.

Select Water from the Show menu and you can then decide on the water level – choose a height between 32767 and -32767. To raise the level, choose a positive number – 1,000 is a good place to start experimenting. Redraw the picture using Fancy Background to see the changes and raise the water in steps of 1,000 to remove all the cut-offs. Then, just reload the Cloud picture and do yet another Fancy Background with the water level set up. You're getting there, but perhaps the coloured zones look a tad unrealistic.

To give them a bit of perspective, click on Zone Tilt from the Show menu. This makes the widths of the coloured bands narrower on the mountains close to the horizon, so all the zones converge as they get further away from your viewpoint. You need to reload the Clouds picture and do yet another Fancy Background on top of them. Chances are it'll still be too regular though...

Select Zone Wander from the Show menu. This makes the coloured bands look more natural by varying their height randomly within set limits, preventing the stark, horizontal lines which give away the fact that the picture was generated on an ST. As before, reload the clouds and do another Fancy Background. If you want to experiment more, try changing the Zone Altitudes to raise the snow line, or tilting the view angle by raising the Horizon line. You can vary the angle of sunlight and change the palette to give different effects. Have fun – it's probably your only chance to make mountains!



# Disk Two

## Fastcopy 3

**BY: MARTIN BACKSCHAT**  
**FOLDER: FASTCOPY**  
**RESOLUTION: MEDIUM OR HIGH**  
**FILES: FCOPY\_3.PRG, F\_COPY3.DOC**  
**READ: FCOPY\_3.DOC**  
**GET STARTED WITH: FCOPY\_3.PRG**

It won't have been long after you got your ST before you started formatting and copying disks. You can format disks from the standard ST Desktop, but you can't select what type of format you want. You can use *Backup* to copy disks – it's convenient and easy – but *Fastcopy* can handle more configurations and has all sorts of tricks to speed things up, including the ability to only copy as much of the disk as is used rather than the whole thing. It can also do what's called a "soft format," which only erases everything on a disk rather than actually reformatting the whole thing – very useful if the disk has already been formatted at some stage and you just want to delete everything on it.

Another neat trick is its ability to run as a Desk Accessory. Just rename the last three characters of the program's name from PRG to ACC. If it's on the disk in your ST's drive when you turn on, it'll automatically be loaded and ready for you to use from the Desktop menu. The document FCOPY\_3.DOC has a brief introduction to its features.

## GEM Calc

**BY: GREGOR ENGLMAYER**  
**FOLDER: GEMCALC**  
**RESOLUTION: MEDIUM OR HIGH**  
**FILES: GEMCALCE.DOC, GCALC 520**  
**READ: GEMCALCE.DOC**  
**GET STARTED WITH: GCALC 520**

Spreadsheets are, along with databases and word processors, one of the big three serious applications. They make number-crunching sessions a doddle. Very simply, a spreadsheet is a series of boxes called cells. Into each cell you can enter text, numbers or formulae. The formulae are the clever bits – they can refer to the contents of other cells. For example, you could have a column of prices and have the two cells at the bottom

holding the formulae to calculate the total of the prices and the VAT. The total cell would take its input from the column of prices and the VAT one the total cell. Changing any of the prices in the column automatically alters both numbers. Whole series of data can be entered and calculations made, then a few elements changed without lengthy recalculations.

On the disk is the 512MByte version of the excellent *GEM Calc* which can handle up to 100 cells. All the important functions can be accessed from the menu bar along the top of the screen. In the main area is your grid of cells. The program can handle an impressive array of maths including logarithms and a full range of trigonometric formulae, as well as the more obvious addition and subtraction functions. On the disk is a lengthy and comprehensive manual called GEMCALCE.DOC. Once you've mastered it, the spreadsheet is a valuable and powerful tool.

## Llamatron

**BY: JEFF MINTER**  
**FOLDER: LLAMA512**  
**RESOLUTION: LOW ONLY**  
**FILES: TRON\_512.PRG, READ\_ME.DOC**  
**READ: READ\_ME.DOC**  
**GET STARTED WITH: TRON\_512.PRG**

Serious stuff is all very well, but there's nothing like relaxing with a good mindless alien-blasting session. And there's no better alien-blaster than *Llamatron*. It's colourful, wacky and enormously addictive. In fact, it's one of the highest scoring games ever in *ST FORMAT*, earning a massive 95%.

The game is basically very simple – you just have to shoot everything that can be shot and collect everything else. *Llamatron*'s guaranteed to have your finger glued to your joystick and your eyes fixed to the screen in a manic stare as you frantically blast at waves of aliens. You control a little llama which constantly spits bullets and you are attacked by all manner of weird and wonderful creatures from menacing telephone boxes to wayward fire hydrants. To help you, there's plenty of power-ups including hot bullets, three-way fire and smart bombs.

You can have two players or you can opt to have a droid to help you out and take some of the heat. On the





disk is the 512KByte version, so run TRON\_512.PRГ and get zapping. Press <Fire> to get past the title screens and move the joystick to select your options. Holding down the fire button locks the angle of your furry beasties' fire, so you can run away from something while you're firing at it – handy feat, that. Full details are in the text file READ\_ME.DOC. Prepare to become addicted and join the growing band of players who just can't leave the llama alone.

## Maccel

**BY: KEN BADERTSCHER**

**FOLDER: MACCEL**

**RESOLUTION: ALL RESOLUTIONS**

**FILES: MACCEL3.PRГ, MACCEL3.DOC**

**READ: MACCEL3.DOC**

**GET STARTED WITH: MACCEL3.PRГ**

The standard Atari mouse is a powerful tool but can be a little sluggish at times. *Maccel* gives your rodent a speed boost, making the mouse pointer whiz across the screen. The settings can be saved, so *Maccel* is set up as you want it every time you run it. Not only does it make your mouse jet-propelled, but it has a screen saver built-in – this blanks the screen after a period of inactivity, saving you from any "burn-in" caused by having the same image displayed for a long time.

To configure *Maccel*, run it from the Desktop as normal and select your options – the speed of the mouse and the length of time before the screen is blanked – then click on Install. The new settings are saved, and next time you run the program it'll be set up as you like it. If you place *Maccel* in the AUTO folder of your boot disk, it's run automatically when you turn on your ST so you can never be without your new faster beastie. Full details are in the MACCEL3.DOC.

## Quickdisk

**BY: LINK THOMLIN**

**FOLDER: QRAM**

**RESOLUTION: ALL RESOLUTIONS**

**FILES: RAMDISK.ACC, RAMDISK.RSC, RAMDISK.DOC**

**READ: RAMDISK.DOC**

**GET STARTED WITH: SEE BELOW**

*Quickdisk* is a RAMdisk – just about the most incredibly useful program you can have lurking in your diskbox. It reserves an area of memory your ST uses as if it were an extra disk drive. You can write and read files from it

just like any other drive. The difference is that it's fast – blindingly fast – because everything is already in memory rather than having to be read from the relatively slow disk drive. There are zillions of RAMdisk programs about, but *Quickdisk* is one of the fastest and easiest to use.

It's a Desk Accessory, and uses the file extension ACC rather than PRГ or TOS. This is a special type of program that is loaded into memory when your ST is first switched on and is always available from the the Desk menu. To use it, you need to copy the files RAMDISK.ACC and RAMDISK.RSC to the root directory of a disk – that is, not inside any folders – and switch on your ST with that disk in the drive. *Quickdisk* is automatically loaded and appears in the Desk menu. Select it and you can set the size of your RAMdisk. Keep it small because memory assigned to the RAMdisk is not available for programs.

Click on Install and it tells you it's installed as drive M. You won't have a drive M on your Desktop so you'll need to install one. Click on drive A so the colour inverts and select Install Disk Drive from the Options menu. Change the drive identifier to M and click on Install. Now you can use drive M just like an ordinary drive. Bit of a grind to do this every time, so do a Save Desktop – this saves your icons so that when you boot-up next time, drive M is ready for use.

Copying stuff from disk to disk now becomes heaps easier. Just copy everything to your RAMdisk, swap disks and copy it to your new one – all in one disk swap. Programs or data files held in the RAMdisk load at lightning speed.

## ST Writer Elite

**BY: ATARI CORP**

**FOLDER: STWRITER**

**RESOLUTION: ALL RESOLUTIONS**

**FILES: STWRITER.PRГ, CONFIG.TOS AND EIGHT TXT FILES**

**READ: SEE BELOW**

**GET STARTED WITH: STWRITER.PRГ**

If you want to write on you ST, you need a good word processor. Armed with this you can edit your text to your heart's content without ever reaching for the Tippiex. Text can be cut, deleted or copied from anywhere in the text to anywhere else. You can search through text looking for words and replace them with others – all automatically. Once your piece is all sorted out, you can save it to disk for future use or print it out.

*ST Writer Elite* is just the ticket – powerful and easy to use. It runs in all resolutions, but the higher the better. Run STWRITER.PRГ and you are presented with the



main menu – from here you can access the main functions from the drop-down menus or by using the keyboard shortcuts indicated in red.

First thing to do is have a good read of the comprehensive manual. Press <L> for Load and up comes the fileselector, click on the DOCS folder to open it, select the STWMAN.TXT and click on OK. This loads in the manual. Now press <E> for Edit and use the up and down arrow keys to move through the document – if you hold down <Shift> while you do so, it moves one page at a time. You can see characters in red on the screen – these are control codes that affect the format text such as end of paragraphs, blank lines and such like. At the bottom of the screen is the ruler showing the tab points, free memory and the current line and column point of the cursor.

Once you've edited your text, press <Esc> to return to the main menu. To preview a printed document, press <P> and select the screen as the destination. You now get an exact representation of the final results. At the beginning of a text file is the print formatting block that sets up things like the margins, paragraph indents and text justification. A default set of these commands is created for you when you start a new document. You can change these at any point in a document. Before you can print out a document you need a printer driver installed. *ST Writer* looks for a file called XYZZ.DAT that contains all the correct codes for your printer. The program CONFIG.TOS creates one of these for you by taking the values from the file CONFIG.TXT – just edit this file and run CONFIG again to change the values.

*ST Writer Elite* has a wealth of features to get to grips with and will probably be the only word processor you'll ever need – so get typing that novel you always wanted to write.

## Trendy Handy Randy Hendy Bendy Mandy

**BY: M A HENDERSON**

**FOLDER: MANDY**

**RESOLUTION: LOW ONLY**

**FILES: HENDYMAN.PRГ, HENDYMAN.DEF,  
READ\_ME.DOC AND EXAMPLES FOLDER**

**READ: READ\_ME.DOC**

**GET STARTED WITH: HENDYMAN.PRГ**

**This marvellous program with a mouthful** of a name draws Mandelbrot sets – and draws them very fast indeed. A Mandelbrot is a visual representation of a mathematical equation first put together by a French mathematician called Benoit Mandelbrot. It uses things called complex numbers. These are equations using

imaginary numbers and a constant. An imaginary number, as the name suggests, is one that doesn't exist – such as the square root of -1. The complex numbers are fed into a recursive equation and mapped out. The results either tend towards a constant or zoom off towards infinity. Numbers that tend towards a constant lie within the Mandelbrot set and are coloured black. The colour of the other numbers is calculated from the number of iterations it takes to tend towards infinity.

The whole thing is fascinating, highly theoretical and rather hard to grasp, but it does produce stunning images. You can zoom in on these images to your heart's content, since it is mathematically-based. There are lots of Mandelbrot generators about, but *Hendy Mandy* is one of the fastest and easiest to use.

Double-click on HENDYMAN.PRГ and enter the incredibly strange world of swirling images. After a couple of title screens, the basic Mandelbrot set is drawn, ready for you to delve into. To zoom into the set, place the gunsight over an interesting area and press and hold the left mouse button down to draw your new screen – when you let go the clever coding gets into gear and draws the new area. To reach the control panel, just click with the right mouse button. From here you can adjust the program parameters and load and save. If you want the pictures to be full screen size, select Aspect and click on Full Screen.

As you zoom in, the picture becomes less detailed – you need to crank up the mathematical accuracy from the Depth menu, try upping it by 30 or so to increase detail. *Hendy Mandy* can load and save two types of files. Those with the extension PAR are records that hold details of the position of the picture, the NEO files are the pictures themselves. Try loading in some of the PAR files inside the folder called EXAMPLES to see what can be done. Step into the mysterious and intriguing mathematical swirls of the Mandelbrot. Full details on the program are in the text file READ\_ME.DOC.

## Zapcard

**BY: ANDRZEJ WROТNIAK**

**FOLDER: ZAP**

**RESOLUTION: MEDIUM OR HIGH RESOLUTION**

**FILES: ZAP\_CARD.DOC, ZAP\_CARD.PRГ AND  
ZAP\_CARD FOLDER**

**READ: ZAP\_CARD.DOC**

**GET STARTED WITH: ZAP\_CARD.PRГ**

0

**Zapcard is a digital version of a card file.** It stores data that can be edited and searched through, so it's ideal for cataloguing things such as record collections. When you first run it, *Zapcard* asks for a password – if you enter one, then the files you create can only be



accessed by using the same password next time you run *Zapcard*. If you don't enter any password, there is no protection on the data and you can always get at it – useful for keeping the odd secret or two.

Next up pops a fileselector to load in a card file, these end in the letters CFI. There are two example files to take a look at. If you want to start afresh, then type in the name of your new file. You are now ready to enter your stuff or start using an existing file. Each card consists of three header lines, ten text lines and six keyword indicators. The text in the header lines determines how the database can be sorted and you can give them titles. For example, a database on a book collection may have header lines titled Author, Publisher and Subject. The keywords are extra data that can be used to search a database – useful for cross referencing. Use the cursor up and down buttons to browse through the cards. Pressing <Help> brings up a brief description of the functions, while the text file ZAP\_CARD.DOC holds full instructions.

*Zapcard* gets fussy if it's inside a folder and says there is a missing resource file. No problem – just copy the contents of the ZAP folder including the ZAP\_CARD folder inside it to the root directory of another disk – that is, not inside any folders. Everything should now be tickety-boo.



# ESSENTIALS





# THIS IS JUST THE BEGINNING...

**T**his is where it all begins – if you've got a new ST you can learn the real basic stuff about getting around your ST: getting started, the Desktop and how to get around it using the mouse or keyboard and then there's all you need to know about files, folders, disk copying and menu options.

## Switching on

You've plugged in and switched on. The ST's power light is on, its drive light flickers... but there's still nothing on your monitor or TV. You worry that it's a duff machine...

Don't give up just yet! Leave the ST in this state for long enough and you're greeted with the Desktop, a green background with several tiny pictures on it and a few odd words at the top. On a black and white TV or Atari's high resolution mono monitor (SM144) you get the same display, except in black and white.

Why the delay? When the ST is switched on or reset,

## WHAT'S ALL THIS ON MY DESKTOP?

There are elements of the Desktop that are always present when you switch on your ST and get to the Desktop – though the icons may not be in the same place: some programs rearrange them, and you can drag them to new locations

- The *menu bar* gives you access to drop-down menus – one for each heading (Desk, File, View, Options).

- The filing cabinet-like drawers, labelled FLOPPY DISK, represent *disk drives*. OK, you've only got one drive and the Desktop shows two. Where is the mysterious drive B? Fear not! Unless you actually have a second floppy drive attached, everything you try to do on the drive B icon simply results in drive A springing to life.

- The *arrow* shows your position on the Desktop. Move the mouse and the pointer also moves.

- The *trash can* is a lot more obvious than the filing cabinet. To delete unwanted items from your disks, drag them here.

it looks for a disk in the internal floppy drive. If you don't put a disk in the drive immediately after switching on, the machine takes around 20 seconds to realise it's missing a disk and ought to get on with something. Try it. Switch your ST on and don't place anything in the drive. Of course, you don't want to do this all the time – it takes far too long to get to the Desktop this way. What you need is a Boot disk.

## Booting up

Insert a disk into the ST when you switch on or reset and you may get one of five different results, depending on the data on the disk.

- A formatted disk containing no files causes the Desktop display to appear very quickly indeed.

- Inserting a non-formatted disk at the start causes the ST's Desktop to take over 20 seconds to appear, the ST also complains that data on the disk is damaged.

- Insert a disk containing an AUTO folder and the ST automatically runs or starts the program contained in the folder. Depending on what this program is, you may be returned to the Desktop once it's done its business.

- If the disk you insert contains something called a DESKTOP.INF file, unusual things might happen – like windows appearing on the Desktop, pictures or icons showing up in odd places, and the whole Desktop appearing to be a different size.

- Most games run automatically when you insert them and reset your ST. Generally, games have a special code located on the boot sector of the disk – the part the ST checks straightaway – which informs the ST of the whereabouts of the game on disk, and they use this shortcut to hide what makes them tick from prying eyes.

## TOS and GEM

Well, you've got to the Desktop. What next? Technically, the screen you're now looking at is called the GEM Desktop. GEM stands for Graphics Environment Manager, which is part of the ST's operating system. The operating system (TOS) is the brain of the ST, controlling all the machine's functions. GEM is the part of the operating system you get to see and interact with. Graphically, the GEM Desktop is designed to resemble an office with filing cabinet drawers, a work surface and rubbish bin. For a further explanation see the box on the left.



### Mouse tales

Your mouse is the easiest way to communicate with your ST. It attaches itself via its tail to the ST's mouse/joystick port.

Move the mouse on a hard flat surface and you can position the pointer anywhere on the Desktop. Touch the menu bar with the pointer and a menu drops down. That's why they're called drop-down menus. To get rid of a menu, move the pointer onto an empty piece of Desktop and press the left mouse button once, then release it. This action is called clicking. Clicking on an icon selects it.

Ensure there's a formatted disk in the drive and try this: move the pointer over floppy icon A and press the left mouse button twice in quick succession. This is called double-clicking. You must do this quickly, or the floppy drive A icon remains highlighted and nothing else happens. If you do things properly, a window displaying the contents of your disk appears.

Reset the ST. There is another important mouse operation for you to try. Move the pointer till it's roughly in the centre of the screen. Press the left mouse button and hold it down. Move the mouse so the pointer moves to the right and down. A rubber band like box appears. This is useful for making multiple selections.

Try this: move the pointer so it lies just above the floppy drive A icon, then press and hold the left mouse button. Move the pointer straight down so the rubber band covers both floppy drive icons either wholly or partly. Let the mouse button go and both drives are selected.

### Files and folders

There are three kinds of icon you're likely to see in a window on your ST. These are the folder icon, the program file icon and the data file icon.

Folders are part of your ST's filing system. They provide you with a way of keeping related files together – or even non-related ones, if you want. They can hold program files, data files and even other folders – up to a limit of eight levels of folders within folders. Double-clicking on a folder opens a window just for it, so you can view the items contained within.

The icon that looks like a miniature Desktop is the program file icon; it represents an application (program) that you can run by double-clicking on it. These are usually applications like word processors, graphics packages, and so on.

The icon that looks like a stack of paper with one corner folded over is the data file icon. Data files contain information used by applications – for instance, a letter produced with a word processor, a program created with a programming language, a picture drawn with an art package. You normally have to run the appropriate application to get at these files; double-click straight on a data file and if you have installed the application it runs with the document automatically opened. In most instances, though, you just get the alert message:

You can only print or display this document.  
Please click on appropriate button to do so.

Click on "Cancel" or press <Return> to return to the

## OPEN A WINDOW AND REACH IN

The action takes place inside windows which sit on the Desktop displaying the contents of a disk or folder. Double-click on a drive icon and, if there's a formatted disk in the drive, you see a window on-screen. Four windows may be displayed at once, holding directories of disks and folders, though only one window can be active. You can select, delete or copy the contents of such a window – you make it active by clicking on it.

**CLOSE ICON:** er, closes the window, dunnit.

**DISK IDENTIFIER:** names the drive and directory you're looking at.

**MOVE BAR:** like icons, windows can be moved anywhere on the Desktop – but you can drag a window only by this small area at the top.

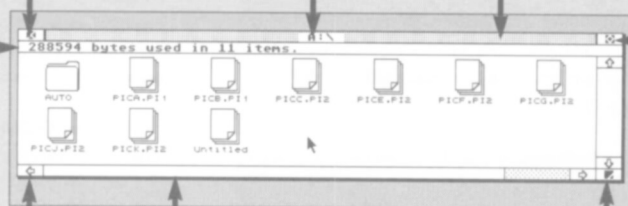
**STATUS OR INFORMATION LINE:** shows how much disk space is used and how many items are stored on disk.

**SCROLL ARROW:** makes the hidden contents of the disk visible.

**SCROLL BAR:** works much like the scroll arrow but can be dragged to the required position faster. Scroll bars are only present if a window is active and not its full size.

**SIZE ICON:** click and hold the left mouse button here and drag the mouse down to lengthen the window, up to shorten it, right to widen it, left to narrow it. Release the button to set the new size.

**FULL ICON:** expands the window to full screen size. Click here again and it returns to its previous size.





Desktop. Click on "Show" to display the document on-screen. Any readable text is displayed, and when the screen fills with text you see the prompt MORE. Pressing <Return> displays another line; hitting the Spacebar displays the next screenful of text. Once the whole file has been displayed a message proclaiming END OF FILE appears. At any time during the display press Q or <Control>C to return to the Desktop.

Select "Print" to send the document to a printer. (Make sure you have one connected!) You can stop printing by pressing Q or <Control>C.

Not all data files contain readable text. You may see spurious characters and numbers, hear the occasional beep and witness strange screen flashing. Don't worry, you can't damage your ST; simply exit from the "Show" option to return everything to normal.

### Renaming a file or folder

This is a simple operation. First highlight the file or folder you want to rename. Then go to the "File" drop-down menu and click on "Show Info." Check that the "Read/Write" button is highlighted and press <Backspace> or <Esc> to delete the existing file name. Type in a new name of up to eight characters, then click on OK or press <Return>. If everything is OK, the new file or folder name appears in the disk directory.

File and folder names can contain either letters or numbers, but some symbols are not allowed – your ST simply doesn't recognise some characters if you try to enter an illegal name, and it also tells you if you try to give a file a name that is already present on the disk or try to modify a file with a read-only status.

A file name can also have an extension – an optional three-character label, added after a full stop, which specifies what kind of file it is. You can tell that a file called "EXAMPLE.PRG" is a program, for instance, and "WORD.TXT" is a text file produced by a word processor. Have a look at ST Answers on page 88 to see what some of the most common extensions mean.

### WHAT'S ON THE MENUS?

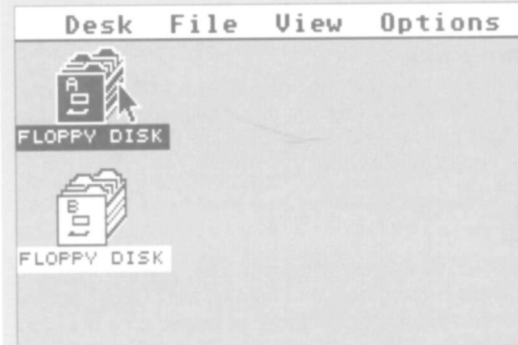
#### A feast of functions

Just about every operation you've performed so far from the Desktop can also be done via the menu bar at the top of the screen. But that's just the beginning: the menu bar gives you access to countless useful functions. Some options are self-explanatory, and this brief guide reveals the secrets of the others.

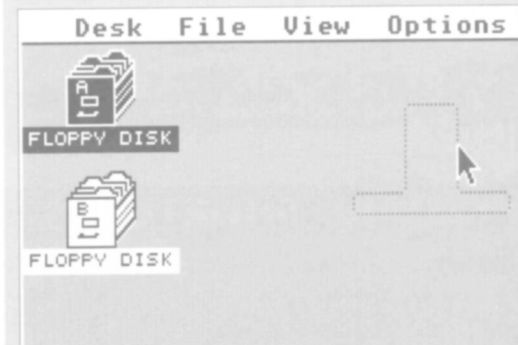
Moving the mouse pointer over a menu heading makes a menu drop down. In each menu, options in black are active; you can access these by clicking once on them. Options in light grey are inactive; these can't be accessed until certain conditions are met. Some menu options have ticks by them meaning they are active and have some influence on what happens on the Desktop.

## DRAGGING

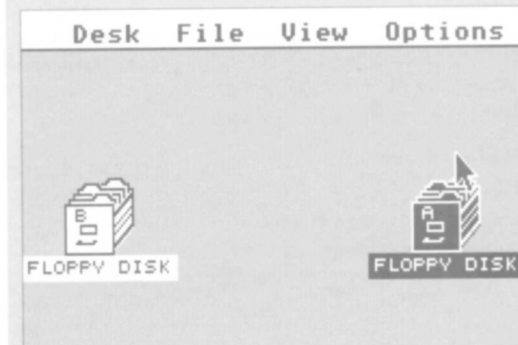
No, dragging isn't anything to do with getting your ST into the next room: it's simply a way of moving an icon or file to another location on the Desktop. This is useful for instance when you want to open a window on-screen but still have access to that particular icon. Or you can just reposition icons to taste. So long as you can click on it, the location of an icon doesn't affect its operation in any way.



**1** Select the icon you wish to move by pressing and holding down the left mouse button when the pointer is over it. The icon changes to a reverse image to confirm that it has been selected.



**2** Still holding down the mouse button, move the mouse in the desired direction. A ghost outline of the selected object accompanies the pointer on its travels around the screen.



**3** Still holding down the mouse button, move the mouse in the desired direction. A ghost outline of the selected object accompanies the pointer on its travels around the screen.



**DESK**

The "Desk" menu contains any Desk Accessories you have loaded. These are programs you don't need to double-click on. When your ST boots up, it looks for files ending in .ACC on the root directory – that is, not in any folders – and then loads a maximum of six of them into a special section of memory. You can then use these by selecting them from the "Desk" menu like any other option, even while you're running another program. A list of available Desk Accessories appears in the "Desk" menu after the "Desktop Info" option.

**Desktop info**

So you want to know the who, what and when of your GEM Desktop? Clicking on this option displays a few copyright notices and dates. Click on the OK button to return you to the Desktop.

**FILE****Open**

Rather than double-clicking on an icon, you can highlight it by single-clicking on it and then hit the "Open" option. This opens the highlighted disk or folder, runs the highlighted application, or shows or prints the contents of the highlighted data file. Stick to double-clicking – the "Open" option is a waste of time.

**Show info**

Highlight an icon – disk, file or folder – then select "Show Info" to view information about it.

**New folder**

To create a new folder, first open a directory window and select this option. A dialog box appears, asking you for the new name. Type in a name of no more than eight alphanumeric characters plus an optional three character extension. Then click on OK or press <Return> and the folder appears in the directory.

**Close/close window**

Like the "Open" option, these two duplicate what you can do by clicking anyway. Both close the currently active window, though "Close Window" goes a step further and removes a window completely even if you're inside a folder.

**Format**

Disks aren't exactly like blank tapes: different computers do different things with them to store information on them, so they must be formatted for the ST before it can use them. Disks can be formatted as either single- or double-sided. Only very old STFMs have single-sided drives, so unless you want to use your disks in one of those, stick to double-sided. A single-sided disk can store around 360K of data, while a double-sided disk can store roughly twice that.

To format a disk, insert a disk into the drive, select or highlight the disk icon corresponding to the drive in which the disk sits and select the "Format" option. This option isn't available unless a drive is highlighted. A dialog box reminding you that formatting erases all data on the disk pops up. Click on OK to continue. You get the

## KEYBOARD SHORTCUTS

***Sure the mouse is fun, but sometimes it's faster to use the keyboard – and it saves you moving your pointer all over the screen. There's a keyboard alternative for most mouse movements. If more than one key is needed, you must hold down all the keys named***

■ <Alternate> plus arrow or cursor key – moves the mouse

pointer in the direction of the arrow.

■ <Alternate><Shift> plus arrow or cursor key – moves the pointer in the direction of the arrow in very fine pixel increments.

■ <Alternate><Insert> – the same as a left mouse button click.

■ <Alternate><Clr/Home> – the same as a right mouse button click.

■ <Alternate><Help> – sends the image on-screen to your printer. If no printer is connected the ST "hangs up" for around 20 seconds.

■ <Control><Alternate><Delete> – resets the ST. Has the same effect as hitting the Reset button at the back of the machine.

■ <Control><Alternate><right

<Shift><Delete> – cold resets the ST. The same as switching on the ST for the first time.

■ <Esc> – when a window is opened, updates the contents of the window. Useful, for instance, when you swap a disk and wish to quickly see the contents of the disk in an already open window.

■ Q or <Control>C – if you're viewing a data file on-screen, returns you to the Desktop.

■ <Return> or <Enter> – rather than clicking on the "OK" message in a dialog or alert box, press either of these keys. In general the item in an alert box highlighted with a bold border is the one put into effect when you press <Return>.



option of giving your disk a name, but you never really need this so you needn't bother. Highlight either single or double-sided and hit "Format." When formatting is complete, you're informed of the number of bytes available on disk. After this, all you have to do is click on "Exit."

**Warning:** You can format not only blank, brand new, never-before-used disks, but also used disks, and formatting erases any data previously saved on that disk. Make very sure you don't mind losing that data!

## VIEW

### Sort by name/date/size/type

Of these four options, only one can be active at a time. "Sort by Name" displays items alphabetically, with folders before files. "Sort by Date" lists files chronologically,

with the most recently created or revised item appearing first. "Sort by Size" shows items from the largest down. "Sort by Type" lists files alphabetically by their file name extenders.

## OPTIONS

### Install disk drive

GEM normally displays two disk icons on the Desktop. Each icon has a disk identifier (A or B) and the label FLOPPY DISK. You can change the labels and add or remove disk icons from here – but you must leave one.

### Install application

Double-click on a data file and you usually get a screenful of gibberish. "Install Application" enables you to set the application to load automatically whenever you open

# FILE AND DISK COPYING

*Because the ST is so versatile, there are many ways of copying files and disks. Here are some of the best – or perhaps you know another method you prefer. These are just suggestions*

### Copying a file from one folder to another

1. Get two windows of the disk contents on-screen. Both should show exactly the same thing. Try not to get any overlap (this only results in confusion later).
2. Double-click on the folder containing the file you wish to copy. Do this in one window only.
3. Highlight the file you wish to copy and drag it to the folder you wish to copy it to.
4. Click on OK when the alert box appears asking confirmation that you wish to copy the file. After copying you can enter the folder to check that the operation has indeed taken place.

### Disk copying

1. You should always back up important disks. First write-pro-

tect the disk (move the little tab so you can see through the hole), then check its format – single or double-sided – by highlighting the disk and clicking on "Disk Info" in the "File" menu. Add "Bytes Used" to "Bytes Available;" double-sided disks total 720,000 Bytes, single-sided half that.

2. Then insert the destination disk (the one you wish to copy to), highlight the drive A icon and select "Format" again from the "File" menu. Ensure the disk you are copying to doesn't contain anything important. Select single- or double-sided format, the same as the source disk (the one you are copying from).

3. Remove the formatted disk from the drive, insert the disk you wish to copy from and drag the drive A icon onto the drive B icon.

4. You are asked to insert disk B into drive A and disk A into drive A several times. Swap the disks when requested, but take care not to confuse the source disk (disk A) with the destination disk (disk B). Play safe and keep the source disk write-protected at all times.

### Copying multiple files to another disk

1. Insert the disk you wish to

copy files from and open a window so you can see its contents.

2. Highlight the files you wish to copy. You can select more than one at a time: hold the <Shift> key down and single-click on the first file icon; release the mouse button but keep the <Shift> key down; with the <Shift> key still down, click on another file and both files are selected. Keep holding down the <Shift> key while making further selections.

3. After making your final selection, keep holding down the left mouse button. Drag all the files to the floppy drive B icon. Let go of the left mouse button when that icon is highlighted.

4. You are now asked to insert disk B into drive A. This means you should replace the disk currently in the drive with the one you wish to copy files to. Of course, if you've got two drives, simply insert the disk you wish to copy files to in drive B. Then just press OK to continue.

5. The more files you wish to copy, the more times you have to swap disks. Keep going, but take care not to confuse disk A (the disk containing the files you wish to copy) with disk B (the disk you wish to copy the files to).



the data file, so you can double-click on a document produced with your word processor, for instance, and have the ST automatically run the word processing program and then load the document ready for you to edit.

First highlight the application you wish to install. This must be a file with the extension .APP, .PRG, .TOS, or .TTP. Then click on "Install Application."

The name of the application you selected appears in the "Application Name" line. In the line below, type the kind of file that application normally produces – DOC or TXT, for instance, for your word processing program. Then highlight an application type: "GEM" if the application ends in .APP or .PRG, "TOS" if it ends in .TOS and "TOS-Takes-Parameters" if it ends in .TTP.

### Set preferences

From here you can choose whether or not to display certain alert boxes and determine the screen resolution.

Your ST has three resolutions, or detail levels of screen display, measured in pixels (little squares on screen): low (320 x 200), medium (640 x 200), and high (640 x 400). Low and medium resolution can be viewed on a TV or colour monitors. High resolution can be viewed on monochrome monitors, and if you haven't got the appropriate monitor attached the mode buttons appear in light text, signifying that they can't be selected.

It is best to leave "Confirm Deletes" and "Confirm Copies" here with the "Yes" button highlighted. This means you're warned when you're about to copy or

delete a file or folder – a useful safety-net just in case you ever accidentally select the wrong command.

### Save desktop

Any modifications you make to the Desktop can be saved to disk so that every time you switch on or reset the machine you return to the Desktop as you left it. All the following are saved: window size and position, icon positions, the way files are displayed and sorted, installed applications, screen resolution. Select this option and the information is saved to disk in a file called DESKTOP.INF.

### Print screen

Has exactly the same effect as pressing the key combination <Alternate><Help>: the contents of the screen are dumped to printer, exactly as you see them. No printer, no dump.

### Blitter

You can select or de-select the special graphics processing chip (the "blitter") that speeds up text and graphics. Keep the blitter on unless you encounter problems with certain applications.

■ Have a look at the Jargon Busters section on page 135 if you're unsure about any of the terms used here.

## RUNNING IN AUTO

Making a program run automatically when you reset your ST or switch on for the first time is easy! The program's name should end in ".PRG"; it must be contained inside an AUTO folder on the "root directory" of your boot disk – that is, the AUTO folder must not be inside another folder; and you must reset your ST or switch it on with that disk in the drive. There are two ways of setting this up. First, you can create a New Folder, using the "File" menu from the

Desktop, name it AUTO and copy your selected program into it. Or you can first highlight the program and then go to "Install Application" in the "Options" menu, click on the "Auto" box in the window that pops up and then select "Install" to save this change to disk. Now when you reset your ST, your program loads and runs automatically without bothering to show the Desktop first.



# WITH WORDS AND MEANINGS

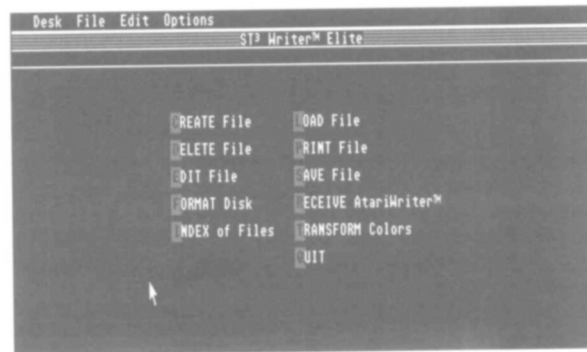
**W**ord processing is about as much like typewriting as typewriting is like chiselling letters in stone. With a typewriter, each letter you type is laid directly on the paper. Make a mistake and it's out with the Tippex (stonemasons don't even get Tippex). With a word processor, what you type is displayed on the screen. If you've misspelt a word or just want to change what you've written, it's simply a question of deleting the error and typing in the correction. This is the fundamental difference between word processing and typing, but there are plenty of other advantages to word processing.

You don't have to spend a fortune equipping your ST for word processing – there are word processors in the Public Domain which you can get for £1.50 to £3.00. If you've got the disks that came with this book, dig out the word processor and follow the walkthrough below – otherwise turn to the Public Domain Library directory on page 83 and get hold of one. Of course, you could always go the whole way immediately and invest in a commercial word processor – check out the Buyer's Guide on page 147 before you splash out, though.

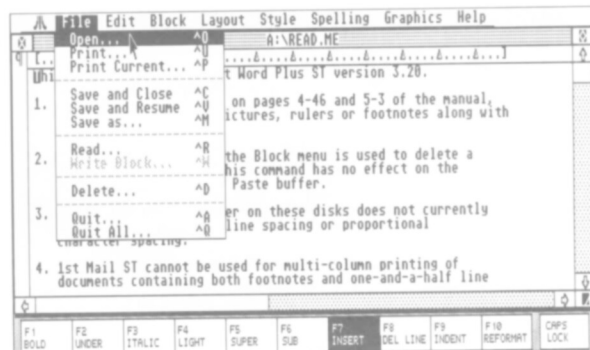
Type into a word processor and you can forget about using <Return> at the end of every line. All word processors have a feature, called word-wrap, which automati-

## HOW TO EXPLOIT YOUR WORD PROCESSOR

**1** When you first start a word processor, you need to load an existing file or create a new one. *ST Writer Elite* is a little unusual in having a full-screen main menu for this. Most functions are also available through the GEM pull-down menus at the top of the screen. The Create function sets up a new, empty file, while Delete pulls an existing one to the trash can. Edit switches to *ST Writer*'s editing mode and Format formats disks. Index displays a directory, Load, Print and Save are self-explanatory, Receive *AtariWriter* loads in and converts an *AtariWriter* – an old 8-bit word processor – text file, Transform Colours switches the background from black to white and Quit, well... quits.



**2** Most word processors use complicated-looking menu bars to control their functions. These aren't as daunting as they first appear, though. Take the File menu from *1st Word Plus* as an example. The only options you need to learn to start with are Open, which you use to load an existing file or create a new one, the three Save options, which save the current file and close the window, save it and resume editing or save it under a different name, and Print, which sends the document to the printer. Later, you can extend your range with Read to insert a file into the current one and Write Block to save a highlighted block of text.





cally transfers any half-completed words at the end of a line down to the next. Some word processors, like *Protext 5*, can also hyphenate words at the ends of lines, which gives a smoother right edge.

### What to look out for

A few of the things you would expect any self-respecting word processor to do are:

**Justify text** – this simply means lining up the text against left-hand, right-hand or both margins (called “fully justified”). Word processors fully justify by adding spaces between words to pad lines out.

**Search and replace** – your thesis on “The Life Cycle of the Dentoxile Reticulated Trilobite” needs all references to said Trilobite changed to “Grey Woodlouse.” The Search and Replace function does this automatically, either in one pass or stopping for you to confirm each replacement. The utility should also take care of whether the letters are in upper or lower case in both target and replacement.

**Cut and paste** – as the name implies, this feature enables you to cut (delete) or copy any highlighted area of text, from a word up to whole pages, to another place

in the document. Highlighting can usually be done with a mouse, though earlier versions of *Protext* relied on marking the start and end of the block with special characters.

**Check spelling** – however good you are with the English language, spelling mistakes almost invariably occur. They may be simple typing errors or they may be words about which you have a mental block. A spell checker goes through your text and highlights any words not in its word list. Most then offer a list of possible corrections for you to pick. Bear in mind that spell checkers can't pick up misused words spelt correctly. For example, “the big brown bare” passes a spell checker without raising an eyebrow. Also check you can add specialist words of your own to a “user” dictionary. It's a real pain to have to tell a checker to ignore “ST” every time it comes across it.

**Include graphics** – it's often very useful to include logos, scanned photos or clip-art in your documents. Some word processors, like *1st Word Plus* and *Write On* can import bitmapped graphics and include them as part of a document.

**Mail merge** – if you want to send a notice to all mem-

```

PROTEXT Document PROTEXT.SYM SK Justify Off Wd-Wrap Key F4 to View
Page 1 Line 33 Col 8 Mks [ ] Insert
-----R
The book will be divided into two distinct sections, tutorial and
reference. The tutorial section will be entirely application based,
using a series of typical document types to illustrate the use of
commands and functions within Protext. Thus, for instance, a simple
report can be used to show basic editing, a newsletter to show
columnar layouts, a mail shot to demonstrate the mail-merge facilities
of the program and an advertising flyer to highlight printer control
and DTP. The creation of each type of document will be carried as a
series of 'walk-throughs', using part or complete screen dumps to show
stages of work.

The reference section will detail each command and key
sequence with examples and part screen dumps. Tables of commands and
codes will be included, together with sample templates for specific
document types and macros for some commonly used functions.

The sample text files, templates and macros will also be
available on a separate disk in any of the common Protext formats (PC,
ST, Amiga, PCW and CPC).

Outline
Chapter 1: Fundamentals. Word processor v typewriter - command driven
v menu driven - best of both. Importance of backups, of master disks
and of work disks. Loading Protext - command line - switching to and

```

```

File: README.DOC
VERSION 4.1 (Changes since 3.6)
-For users of the MEGA TOS (1.2) and the buggy disk-loaded version of TOS
1.4 (1988), previous versions required you to move the mouse pointer outside
of the menu area at the top of the edit screen when pressing the [ESC] key
to return to the menu screen. This was done to correct for a GEM bug which
drops menus on the mouse, leaving holes in the menu like swiss cheese. No
problem with the original version of soft-load TOS, 1.0, and 1.4
(1989). Now, the mouse automatically drops out of the area (does NOT work in
combination with Atari's MACCEL2.PRGE).
-Improvements to the form input (from disk file) have been made, and bugs
that caused screwy things on wrapping an insert word occurring at the end of
a line have been squashed.
-Support for Moniterm monitor. 160 columns by 57 lines, or 160 by 93 lines
in hi-res flip-flop.
-ver. 3.6 had a bug in the floppy format routine which appeared on TOS
versions previous to TOS 1.2 (Mega TOS), and caused a fatal crash. Fixed in

```

**3** If you need to move, copy or delete a section of the text in your document, you can mark it for “cut and paste.” In most programs, including *Protext*, you can use the mouse to highlight the text block. With *Protext*, though, you can also highlight it by placing “block markers” (the square brackets) at the start and end of the block. To move, copy or delete in *Protext* you use special key sequences or select options from the program's pull-down menus. With other word processors, the pull-down menu is the more common method.

**4** The power of word processors to change one word or phrase for another is shown in even the most humble program, like *ST Writer Elite*. When you select the function using <F7>, a single line query comes up at the bottom of the screen, asking for the target of the search. Type that in, press <Esc>, and type in the replacement word or phrase. The program then goes through the text, stopping at each match to check that you want the replacement made. Most other word processors enable you to pick whether search and replace phrases are in upper or lower case and choose to perform the whole thing without checks.





bers of your ST users club, most word processors enable you to pull in each name and address from a list in one file and insert them in copies of the notice in another.

### What's the difference between...?

There's an increasingly fine line now between word processors and desktop publishing (DTP) packages. DTP programs enable you to create pages for professional work, such as advertising designs, magazines and brochures. The facility What You See Is What You Get (WYSIWYG) can be very useful if your documents are complex since documents look on-screen exactly as they will on paper. However, it is by no means essential in a word processor.

Programs like *ST Writer Elite* and *Protext* concentrate on text handling pure and simple. While they can produce different type styles on paper and use a printer's internal fonts, they don't claim to be "document processors," a term often used to describe programs such as *Calligrapher* and *WordFlair*. These programs incorporate many of the features of true desktop publishing packages, giving close control of typography and layout. Word processors like *Write On* and the ageing *1st Word*

*Plus* lie somewhere between these two approaches.

DTP-style facilities in word processors doesn't mean they are any worthier. *Protext* is a good deal faster at what it does than just about any other ST word processor. It can produce a well laid-out document quickly and effectively and, as a word processor, it's probably all you're likely to need. If you want the DTP-style extras, though, you should look at programs that make good use of the ST's GEM environment and work with graphics text, which is much more versatile.

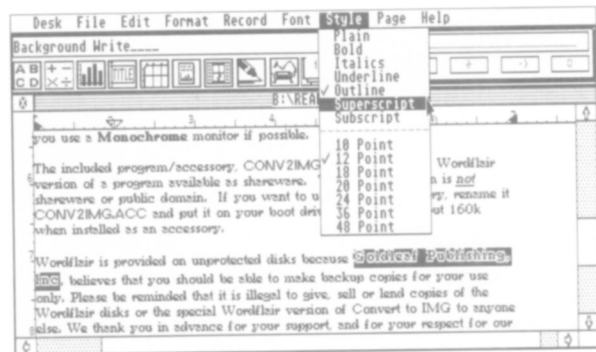
### Type styles

You don't have to be satisfied with bog-standard, mono-spaced text like the old Remington turned out. Your ST can go several times better with bold, italics, underline, superscript and subscript. Most printers can print this selection of styles and some can use a variety of fonts, too. Super and sub-scripts are useful for scientific work, but can also be put to good use if you want a particularly small font for labels or the small print on time-share contracts.

Not all word processors use the normal GEM technique of highlighting to apply styles. In *Protext*, for

- 5** Depending on the printer you use with your ST, you should be able to choose from a wide range of styles and fonts.

Whether you can see them before you print, though, is a different question. If you use one of the graphic word processors like *1st Word Plus* or as here, *WordFlair*, you should be able to see both changes of style, like bold, italics, underlined and outlined text, and changes of font, with the file names in this document in Swiss font. Simply highlighting text and picking from menu options is all you should need to do to create these effects.



- 6** When you've written your letter, report, or Stephen King beating novel, it's best to check the spelling. Some word processors, like *1st Word Plus*, offer to do this for you. They're generally much quicker and more

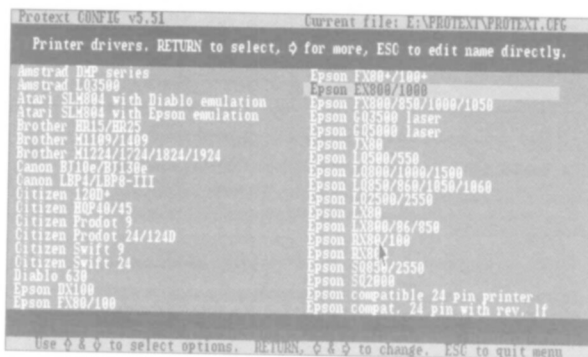




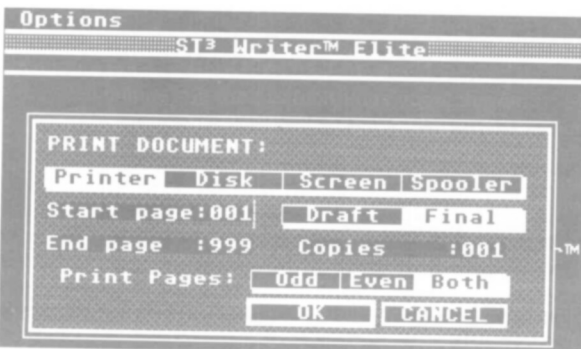
example, you type special key sequences before and after the section whose style you want to change.

### Printer drivers

All printers use a system of codes to start new pages, change type styles – even to go to the start of the next line. Unfortunately, they don't all use the same codes for the same functions. You need a convertor – known as a printer driver – to take the output from your word processor and produce the required effects on a particular printer. The codes adopted by the best selling printers in each class have become standard. Other manufacturers have then used the same codes for the sake of compatibility. Most word processors come with printer drivers for the common types of printer: dot-matrix, inkjet and laser.



**7** Before printing your first document, you need to have selected a printer. Most word processors offer an Epson dot-matrix printer driver by default, but many also offer drivers for the Atari lasers, Hewlett Packard's LaserJet and the popular Canon BJ series of inkjets. To switch between printers, you often have to generate a new driver from a separate utility program, which the main word processor then picks up and uses when it's run. Protex 5, however, enables you to load in a new driver at any time from the printer menu.



**8** When you finally come to print your document, the print menu offers a number of different settings. In ST Writer Elite, you can choose to send your text to the printer, a named disk file, the screen (for preview) or to a third party print spooler which releases your ST for further work. Other options enable you to print only part of the complete document, to choose draft or final print quality, to print more than one copy and to print only left or right-hand pages – or all of them together.



# BUSINESS AS USUAL

**B**usiness software applications are extremely useful, there's no doubt about that. Just because they might not excite you as much as DTP or music packages, say, it doesn't mean you should dismiss them as boring and not worth a second look. They are all there to make your life easier – and so give you more time to get stuck into being creative. Business applications are also, as their name suggests, widely used by many enterprises – if you really get into using them, your attractiveness to an employer is sure to increase.

You can use databases for holding information in discrete chunks called records – you might set up a record for each name in your address book or perhaps for indexing all the Public Domain software STF has ever reviewed, sorting it by rating, subject or PD library. Spreadsheets can be used for many purposes, but one of the simplest is forecasting. If you set out all your expenditure for the next six months, a spreadsheet could help you assess by how much your disposable income is going to fall when BT's rates rise – or even fall, the way things look as if they're going – by 15% later in the year. Accounts programs computerise the kind of books you

## HOW TO BECOME MORE PRODUCTIVE

- 1 Before you can start filling in the cards in your database, you have to design them. Most programs, even the PD ones like *DB Master 1*, include a record designer, either as a separate program or as part of the main database manager. The facilities within *DB Master* are extremely easy to use – click anywhere in the record area and a blank field pops up. You can type a name for the field and drag a handle at the right-hand end to size it. The left-hand handle is used to move the field. The number in each shows the field's length.

- 2 Once you've set up a record card and defined your database, you can start to use it either by browsing through from one record to another or printing them out. In most cases, though, you may want to look at only the records which fit in with the job you're doing. You might want to contact all the members of your ST user group in your address list who have a particular skill in assembly programming, for instance.

To do this, set up a "filter" which a program like *Prodata* can apply to the records to select just the ones you want. In this case, the filter is very simple.

Field	Type	Length	Name
Field 1	(S)	50	Surname
Field 2	(S)	50	First Name
Field 3	(S)	50	Address1
Field 4	(S)	50	Address2
Field 5	(S)	50	Address3
Field 6	(S)	50	Address4
Field 7	(S)	50	Post Code
Field 8	(S)	50	Telephone

Press f1 to select a field for expression, [^I] insert line, [^F3] del line



may keep for your personal finances, or for a club or company.

### Databases

Think of databases as being like the card indexes often used in stuck-for-cash local libraries to keep track of the books. Drawers containing cards for every book are filed in alphabetical order to make it easy for you to find specific books quickly.

A simple database can do the same thing and many bigger libraries now use such computer systems. The database displays information one screen at a time, with a single screen for each book. In database terms, each card is called a "record" and each piece of information on the card – for example the title, author, publisher or ISBN number of a book – is placed in a field.

Rather than employing a librarian to keep the records in order, the job is given to the ST, which is ideally suited to searching and sorting information arranged like this. In a manual index, you need to physically shuffle through the cards to find a book with a given title. With a database, you could ask your ST to find all books by I Asimov with "Foundation" in their titles and expect

a list of three on-screen within a couple of seconds.

A library traditionally keeps two indexes – one organised by book title and another sorted by author. These are each kept in separate sets of drawers, though the information on the cards in each would be the same. With a database, you can use an index to sort them by author one minute and switch to another index, so they're listed by title, for example, the next. You can also specify an order within an order, for example to list all titles alphabetically, or chronologically, or by ISBN number, within an alphabetical list of authors.

### Spreadsheets

Spreadsheets are the only applications which were invented for the micro. They are essentially sheets of electronic squared paper, like those used for drawing up profit and loss accounts and other financial documents. The key feature of the spreadsheet, though, is that each square – or "cell" – can be filled with text, numbers or the results of a calculation.

So, you could put the cost of a new memory upgrade in one cell, the VAT rate in another and a formula multiplying one by the other in a third. The total cost is then

```
PRODATA v1.20 (c) Arnor 1991 Printer (P) LASERJET Press F3 for menus
Open: ADDRFILE (8 F) Recs: 5 Sel: 5 Layout: 0 Index: 1 02:11:18

Creation of new sort index (number 2)
Enter description of index: Forename within Surname
Number of sort fields in index (default 1, maximum 4): 2
Allow duplicate entries in index field (Y/n)? Y
Sort field 1, field number (1-8): 1
Type (1=string, 2=numerical, 3=reverse numerical, 4=date, 5=reverse date): 1
Length of string used for index (default 15, maximum 60):
Sort field 2, field number (1-8): 2
Type (1=string, 2=numerical, 3=reverse numerical, 4=date, 5=reverse date): 1
Length of string used for index (default 15, maximum 45):

[Edit] [Find] [Go] [Add] [Copy] [Delete] [Print] [Export] [Index] [Layout]
SEL [C] Back [Q] Next [^G] First [^O] Last [S] Sel/uns [^S] Sel/All Out~>
```

Desk File Edit Report Record

Use One: A:\ADDRESS.ONE

Title Forename Surname

Address 1

Address 2

Town

County

FORM FIELDS FIND SORT

Choose field

1	Forename	Surname	Address 1	Address 2	Town	County	Post C	Telephone
1	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX

**3** Most modern databases don't physically move records around when you ask to sort them – to do so means a lot of unnecessary time-consuming disk accessing. What programs like *Prodata* do is set up an index based on the contents of one or more fields and sort that instead. The index is usually held in memory, so sorting can be very fast – there's nothing to stop you setting up several indexes based on different fields. In *Prodata*, you can define up to ten indexes, each of which may be based on up to four fields.

**4** The layout you design for your records doesn't have to be the only one you use, particularly when printing out information from your database. A report is a printout with a different layout which can be useful, for example, if you want a list of names and addresses printed one on each line. *DB Master 1* enables you to assemble the layout of a report by clicking in turn on each field you want included. You can also choose from a selection of different report styles and have the records sorted in up to three key fields. All this can be constructed with simple "point and click" actions.

calculated automatically. When the next change in VAT rate is made, just change the figure in the relevant cell and the total is updated immediately.

That's a simple example, but you can lay out just about any set of related figures on a spreadsheet and use it to answer "What if?" questions. You could, for instance, set up a budget sheet showing all the money going into your pocket and out of it in the next year. Change likely expenditure on electricity, telephone, mortgage and so on, and you can check if a two percent increase in the interest rate really would prevent you splashing out on that all-singing all-dancing desktop publishing package, a colour printer and the paper you wanted to start your own magazine.

As you might expect, a typical spreadsheet includes a wide range of mathematical, financial and statistical functions. If you want, it's quite easy to work out the standard deviation of a set of experimental results or the four-quadrant arctangent of a given number – although perhaps that's not one of your everyday requirements.

With many good spreadsheet programs, you can also construct graphs from the figures in your worksheet. These can be very helpful in explaining to those

delightful people at your credit card company why a shortfall in May's income has meant a smaller repayment on your credit account this month.

### Accounts programs

If you're writing to your credit card company on the strength of a spreadsheet printout, why don't you do your accounts on your ST, too? There are several packages available which can handle your cheque book transactions, credit accounts, direct debit payments, interest – in fact, all aspects of the accounts of an individual, club or small business. By laying out each transaction on the screen, you can get a clear, accurate picture of your financial position at any time.

If you or your business are registered for VAT, you can also use printouts from this system to support your quarterly and end-of-year returns. It's also useful to be able to quickly calculate rates of return on investments and interest payments on loans. Several of the home accounts packages, like *Home Accounts 2* from Digita International (£54.95 + 0395 270273), have specialised built-in calculators for just this kind of transaction.

**5** To create a worksheet, you set out the various numbers and headings much as you do on paper. In this home budget example in Sheet 2, each column of figures represents a month's income and expenditure. The various categories of expenditure are detailed in the first column and the figures are filled in either as regular or as fluctuating payments. When a payment is repeated from month to month, you can get the program to copy the same amount across a specified range of cells, as is the case with the mortgage and community charge figures.

Desk File Sheet Row/Col Cells Graph Help							
BUDGET							
Ready B14: (F2) + SUM(B2..B13)							
	A	B	C	D	E	F	G
		JAN	FEB	MAR	APR	MAY	JUN
1	Mortgage	640.00	640.00	640.00	640.00	640.00	640.00
2	Community Charge	21.00	21.00	21.00	21.00	21.00	21.00
3	Water Rates				163.45		
4	Electricity		215.00			187.00	
5	Gas		79.00			55.00	
6	Telephone	187.00			193.00		
7	Access/Visa	34.00	37.20	35.15	24.10	42.19	40.5
8	House Cards	17.00	17.00	17.00	27.50	27.50	27.5
9	Clothes	50.00	50.00	50.00	50.00	50.00	50.0
10	Food	300.00	300.00	300.00	300.00	300.00	300.0
11	Petrol	45.00	45.00	45.00	45.00	45.00	45.0
12	Car Expenses	10.00	15.00	165.00	10.00	10.00	17.0
13	TOTAL EXPENSES	1419.20	1273.15	1474.05	1377.69	1141.0	
14	Salary	1350.00	1350.00	1350.00	1350.00	1350.00	1350.0
15	BALANCE	46.00	-69.20	76.85	-124.05	-27.69	208.9

**6** A formula in a worksheet refers to numbers held in the cells of the sheet. Each cell has horizontal and vertical coordinates, starting with cell A1 in the top left corner of the sheet. A worksheet formula refers to these cell coordinates in the same way an algebraic formula refers to unknowns x, y or z. One of the most useful features of a spreadsheet like *LDW Power* is its ability to copy the formula applying to one cell, and make it apply to others. In doing so, it can refer to cells in exact positions within the sheet or to cells in positions relative to the cells you're copying.

Worksheet Range Copy-Move File Print Graph Data Macro Quit					
ESC	POINT	OK	CALC	SCRL	END
NOTE HELP					
B1: (C2) (W13) +B10*B8					
Enter range to copy TO: B11					
DEALER-A					
	A	B	C	D	E
1	A Sample LDW Spreadsheet				
2					
3					
4					
5					
6					
7	Product 1st	Product 2nd	Product 3rd	Product 4th	
8	Unit Price	\$3.45	\$4.95	\$13.95	\$6.95
9	Unit Sales	560	771	1984	2379
10	Dollar Sales	\$1,932.00	\$3,816.45	\$26,568.00	\$16,534.85
11	Unit Cost	\$2.73	\$3.85	\$9.92	\$5.11
12	Cost of Goods Sold	\$1,526.40	\$2,351.55	\$18,887.68	\$12,156.69
13	Gross Margin	\$405.20	\$1,464.90	\$7,673.12	\$4,377.36





■ Public Domain programs such as *DB Master* and *Sheet 2* are available from any good PD library – see the directory on page 83. Check out the Buyer's Guide on page 147 for details of the other commercial programs

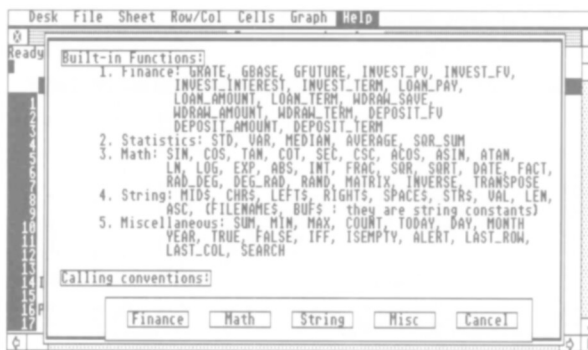
### A word of warning

You've probably heard of the Data Protection Act – it protects people from having their name and personal details being stored on a computer somewhere ready to be called up and held against them should the occasion arise. Well, if you intend to hold personal information on a database – that is, more than simply names, addresses and telephone numbers – it affects you.

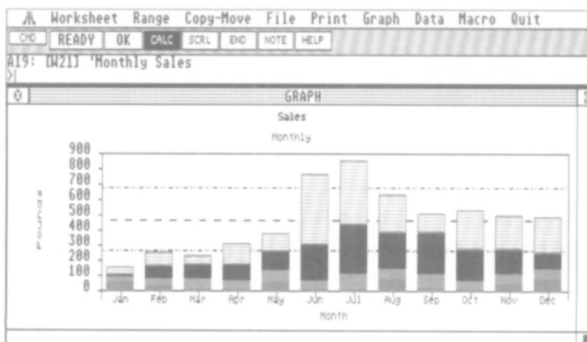
To ensure that you're not in contravention of this Act, you have two choices. If the number of people is small – as in the case of a club, for instance – you can write to each person and obtain express permission to hold relevant facts on your ST. If you don't do this you must contact the Data Protection Registrar and register your use of a computer to store data – forms are available at Post Offices. If you do neither of these things, you are in contravention of the Data Protection Act and are

liable to prosecution – which sounds pretty heavy.

In fact, there are several exemptions to the Act which may apply to a personal database or one for a club. For example, if you're only listing names and addresses and no other information, or if your club is unincorporated, you're exempt from registration.



**7** Most general purpose spreadsheets have built-in functions for mathematical, financial and statistical work. *Sheet 2* lists over 60 separate functions, as well as nine that are specific to text manipulation. It also has a complete programming language which can be used to manipulate figures within a sheet. This language looks very like BASIC, and programs written in it are loaded and saved as part of the worksheets to which they refer. Functions can be combined in any formula and applied to a single cell or across a range. When used with the arithmetic operators, they give huge scope for calculation.



**8** As well as being able to draw conclusions from the figures a spreadsheet can calculate, you can draw graphs. Nearly all spreadsheets can produce graphics constructed from figures within a worksheet. By defining the rows or columns of cells you want to take figures from, *LDW Power* can draw a range of different graphics, from line and point graphs to bar and pie charts. Here a set of sales figures is shown as a stacked bar chart and clearly illustrates what has sold the most over the last year – yes, it was the piccalilli-flavoured tortilla chip. Just goes to show there's no accounting for taste.



# IT'S CLEVER, BUT IS IT ART?

**S**ooner or later, the chances are you're going to want to use your ST for drawing, either to create an incredibly colourful masterpiece or just for a bit of a doodle. Everybody knows that the ST is a powerful graphics tool, but turning that power to your advantage doesn't seem easy at first. For a start, the ST's three resolution graphic modes – low, medium and high resolution – offer widely varying capabilities, and choosing the best one for your intended image can be important.

There are loads of different things to take into account when you're using your ST for artistic purposes rather than doodling on bits of paper – file styles, resolutions and the fact that you mix light rather than paint to name but a few. This chapter explains how to cope with these differences, points you in the right direction to start creating your own masterpieces and takes it all one step further with a spot of animation and raytracing. It certainly is clever, but whether it's art is up to you to decide.

## File styles

The most popular picture file format on the ST is the *Degas* format, which is derived from Electronic Arts' art package *Degas Elite*. Its popularity largely stems from the fact that it was one of the earliest art programs available for the ST and has the advantage of being able to run in all three ST resolutions.

*Degas* files are easily recognised by the last three letters of the filename, after the dot. The first of these letters is always a P, and the next letter is either an I (denoting an uncompressed *Degas* image) or a C (denoting an image which has been squeezed down to occupy less space on disk). The final character is either 1, 2 or 3, depending on the resolution of the *Degas* image. 1 denotes a low res screen, 2 is medium res and 3 is high res. Therefore, typical *Degas* filenames could be either MYSCREEN.PI1 – a low res, uncompressed screen, or MYSCREEN.PC3 – a compressed high res screen.

There are other packages which produce their own file formats – *Neochrome* from Goodman Enterprises produces .NEO files, *DeluxePaint* from Electronic Arts creates .IFF files and *Canvas* produces a variety of formats (.CPT, .CNV and .FUL). However, all these art pack-

ages can load and save *Degas* low resolution files, too.

## Images and imagination

With an art package, you can really start to push your ST to its limits. Art packages form the basis for almost all image-related tricks you might see in games or demo programs. There are many effects that you can experiment with once you've created a basic image. The simplest is colour-cycling, which can be used to animate simple images. The trick here is to draw separate images in different colours on the same screen, and then change the colour information in each of the palette registers. The data in each palette register is passed to the next register in an endless loop. Thus 16 images can be created on one screen, and then made to look as if they are moving.

Another simple animation effect can be produced by just moving an image across the screen. This trick, called scrolling, can give the illusion of movement, though it lacks finesse since objects look as if they are merely sliding across the screen. A better technique is the one used by games programmers – flip-frame animation. This involves the creation of several images on different screens. The images are displayed one after another in quick succession. If the images are scrolled at the same time, the illusion really seems to work. Objects can be made to walk, or change shape as they move, and providing the delay between frames is short, impressive cartoon-style animation can be created, even in a simple programming language like BASIC. There's a whole lot more about animation in the following pages.

■ *DeluxePaint* is available from Electronic Arts at £59.99 ± 0753 549442.

■ *Neochrome* can be obtained from Goodman Enterprises at £5.95 ± 0782 335650.

## Creating colours

Your ST's screen colours are created from three basic components – red, green and blue light – which are mixed together in varying proportions. You probably remember from school that paint-mixing is subtractive – that is, the more colours you add, the darker the end result becomes – and it depends on three primary colours – red, yellow and blue. Conversely, light-mixing – which is what you're doing on an ST when you create



colours – is additive and uses green instead of yellow. In this instance, the more colours you add, the lighter the final colour gets until it becomes white instead of black.

On your ST you control the amount of each red, green and blue primary by increasing or decreasing each one's brightness level. On the older ST there are eight possible brightness levels for each primary, numbered zero to seven. The now standard STE increases this to 16 possible brightness levels from zero to 15. A zero level effectively switches the respective primary off, while a seven or a 15 indicates maximum brightness, which explains why black is stored as 0,0,0 on both machines, white is 7,7,7 or 15,15,15, and pure red is 7,0,0 or 15,0,0, for example. From this, it's fairly simple to work out that there are  $8 \times 8 \times 8$  – that's 512 – possible colour combinations on an ST and  $16 \times 16 \times 16$  – a massive 4,096 – on an

STE. You can experiment with colour creation even if you don't have your own art package. All STs and STEs are supplied with a Control Panel Accessory called CONTROL.ACC which you can use to alter the colours of your Desktop. Restart or boot your ST with the Control Panel disk in the drive and then select Control Panel from the Desk menu in the top left corner of the Desktop.

The Control Panel has three vertical sliders on the left which you can use to alter the brightness levels of each of the primary colours. You select the colour palette register you want to change by clicking on one of the 16 blocks of colour at the bottom of the panel.

Similarly, art packages use the same type of sliders to control colour changing. As with the Control Panel, there is usually a numeric display which shows the actual brightness levels stored in the palette registers.

## WHAT RESOLUTION?

### The lowdown on low res

The most commonly used mode for artwork is low resolution – colloquially known as low res. In this mode, the ST's screen is stored in memory as a large grid, 320 dots across by 200 dots vertically. Each dot is one picture element – known as a pixel. In low res mode 64,000 pixels make up the entire screen.

Your ST's video chip – which handles the passing of screen data to the monitor or TV – uses 16 internal locations called palette registers to hold the brightness information for each colour. This enables you to have up to 16 different colours on-screen at once, regardless of whether you have an ST or an STE. Each pixel on-screen contains the number of one of these 16 palette registers causing the pixel to be displayed in the corresponding colour. Thus, when you change the colour stored in a palette register, all pixels which point to that register change to the new colour.

### Medium but not rare

The ST's medium resolution mode is very similar to the low res mode, but there are a few small

differences. The medium resolution display is larger in the horizontal direction, with 640 pixels to each line. Each pixel is physically thinner than those in low resolution enabling you to create much smoother lines. The vertical size is the same at 200 pixels.

To store the more detailed horizontal lines, your ST requires double the amount of memory, but it gets around this by reducing the number of colours that are available in medium resolution. Instead of the 16 active palette registers that are available in low resolution, there are only four available in medium res. Consequently, the space required for each pixel is halved, enabling the medium resolution screen to fit into exactly the same memory space as the low res version – 32K.

### Higher and higher

The most detailed graphic mode on your ST is the high res mode, which you can only access with a special high resolution monochrome monitor. The trouble with high resolution monitors is that they can't display medium or low res pictures, so to access all three modes on your ST you need a

colour monitor – or TV – and a high res monitor as well.

High res, like medium res, uses 640 pixels on each horizontal line, but it also uses 400 pixels vertically, enabling you to create even smoother lines. This would again double the memory needed to store a screen picture, and the ST uses the same trick to reduce the space. Instead of four or 16 colours, high res mode has only two possible colours – black and white. Because you only need one bit to select either colour for a particular pixel, the memory requirements are effectively halved again. Thus, all ST screens, regardless of resolution, fit into the same space – 32KBytes.

But understanding the layout of the ST's screen won't help you create great graphics – you need some way of accessing the screen space to draw your images. This is best done using a program called an art package. There are many different art packages to choose from, but they're not all equally good. The most common problem with art packages is the format of the files they create when you save your image – see "File Styles" on page 37.



## ANIMATING YOUR MASTERPIECES

Animation is one of the most visually impressive art forms ever – not surprisingly it's a commonly held belief that to produce a decent animation on an ST you have to be something of a whizzkid. But that's not true! You can make your ST perform sensational graphic masterpieces without knowing the first thing about programming.

Although there's plenty of software about that rotates images smoothly, the best and fastest animation involves repeating a series of slightly different pictures – known as frames. Showing these frames in succession demands little of the ST's processor time, so games like *Dragon's Lair 2* and *Prince of Persia* manage to combine sophisticated animation with some sort of gameplay.

The rate at which these frames are shown and the degree of change from one to the next is what deter-

mines the quality of your animated strip. If you wanted to show a character running, for example, a sequence of ten frames is inevitably going to be smoother than the same movement that uses only five. However, if you're using only small characters or sprites, five frames is more than enough to work with – in *Prince of Persia*, only four frames were used to portray the character running.

With larger sprites all the motions are emphasised: if your sprite is a human half the size of the screen (100 pixels) and you try to show him drinking from a glass in just five frames, your animation is going to be jerky because lifting a glass and drinking from it demands some large swings in the character's arm movements. However, if the sprite is just a tenth of the screen (20 pixels), these movements cover a much smaller area and

## HOW YOU CAN START TO PUT YOUR GRAPHICAL MASTERPIECES TOGETHER

There are three main ways in which you can create your ST pictures, but the most important first step is to decide what colours you want to use in your palette – you only have 16 colours to play with and changing them when you're halfway through your illustration is a real hassle you don't want.

First you should work out the main colours and then pick the shades you want to use. Remember that you can add the illusion of more colours by using stippling – that is, a chequerboard pattern of two colours which gives the impression of a third shade. You can also soften the edges between contrasting colours with an intermediate shade. You must also remember where the light is to come from in the picture since this affects the colour, shading and highlights.

Those three main methods then.

### Doodles

First there's creating pictures from sets of loose doodles – you don't really need to have a precise vision of the finished picture in your mind, it can evolve from the

shapes and colours you're playing with. Using STs is excellent for this sort of random expression since they're ideal for abstract work – you can distort and merge images in weird and wonderful ways, then give them wacky colour schemes to produce interesting and perhaps slightly strange images.

### Simple shapes

Second, to create a sort of cartoon scene, you could build up a picture in the way that professional animators do, from simple shapes or masses of colour. Since cartoon characters don't actually reflect light or have defined areas of shade, they are ideal for this. You need to keep your palette bright and bold to make the most of this method. With this type of subject you can construct the individual pieces of the picture separately – for example, the background and the characters – then cut and paste them all together.

### Aiming for perfection

Finally, to recreate a detailed image you can use the grid method by comparing distances

between objects, thus ensuring you reproduce each line in the same place as in the original. First you have to trace the original onto a piece of tracing paper, then place another piece of paper underneath it with a grid of 15mm x 15mm on it.

Set the palette background colours to 14, 14, 14 (7, 7, 7) foreground to 00, 00, 00 (0, 0, 0) and the first colour to a shade of light blue, say 00, 10, 12 (0, 4, 6). Select the blue colour then click on the Grid tool – found in many programs including *Canvas* which we gave away on Cover Disks 30 and 34. A grid set to 23 x 21 is almost the correct scale for a 15mm x 15mm picture. Still in the Grid tool, move to the work screen and click in the top left corner.

Now move to the bottom right corner and click again to fix the grid. Select K-Line with the colour black. Then, using the picture as a guide, draw in your construction lines. Use the zoom function for all the complicated bits, and change the palette once you've created the outline into something recognisable that you can work from – and even adapt.



## ANIMATION THROUGH THE AGES

Animation, video monitor display and cinema all depend on the same basic phenomenon. It's called persistence of vision and you've experienced it yourself in real life if you've ever been dazzled by a bright light at night, or if you've seen an after-image of something you've looked away from. The light receptors in the human retina take a tiny fraction of a second to recover after firing, so they can't send an updated message to the optic nerve more than about 20 times a second. The result is that an image on the retina lingers for something between one-twentieth and one-tenth of a second, depending on how intense the image originally was – or even longer in the case of those night-time headlights.

Persistence of vision means that if you present the eye with a new, slightly different image before the first one has completely disappeared, the brain blends or overlaps the separate images and perceives the illusion of continuous movement from one to the next. This is exactly what happens in the cinema, where the familiar strip of separate frames is projected at about 24 frames a second – though, in fact, you get the illusion of movement at much lower speeds – up until the 1930s, films ran at about 16 frames a second.

In animated films, each frame is a shot of a separate picture or "cel." In the early days of animation, the animator would have to draw every single frame in full, background and all, but various shortcuts rapidly evolved. The first step was to animate only the moving figures against a fixed background which showed through the unpainted part of the celluloid. In the animation studios of the 1940s, the animator drew only the key phases of every movement and a host of assistants – called in-betweeners – filled in the steps along the way. Cosgrove Hall studios still use this set-up to produce *Danger Mouse*, *Count Duckula* and their other hit shows.

Some animators resorted to a rotoscope – a kind of enlarger which enables you to trace films of real people frame by frame. Oddly, this sort of animation looks slightly bizarre. For the TV cartoons of the 1960s, various systems of part animation were developed where the basic figure itself wasn't re-drawn from frame to frame and only parts of the body were animated – though this often resulted in very unconvincing movement. These days there are only 12 separate drawings for each second of film and each of these is held or shot twice. This keeps the workload (almost) manageable – but Cosgrove Hall still need to be able to produce about 1,500 frames for one minute of animation.

Video monitors and TV screens work on the same principle with an electron gun redrawing the image on a phosphor-coated screen at a rate of about 25 frames a second. However, the memory of even the most powerful micro would soon become as exhausted as our traditional animator by having to draw a completely separate picture each time, so computer animation usually relies on many of the traditional shortcuts. For instance, if only relatively small parts of the screen change from picture to picture – say a couple of figures moving against a static background – then the background and the sprites for each step of the movement can be stored separately in memory. Using such techniques, your ST can produce animation as fast as the best TV cartoons – 25 frames every second.

can easily be represented in five frames. So, when you're planning your own animations, the first key element to watch is the size of the characters you want to animate.

### **You don't have to be able to draw**

Any animation sequence makes demands on your drawing talent, but even if your human beings are totally unrecognisable as life in any form, you can still get by. Just bouncing a ball around the screen is a good way to play with animation and all you need to be able to draw is a coloured circle. Tire of that and you can play with shading. Don't be over ambitious – after all, you don't want to be put off when your people look like triffids and your triffids look like rather attractive sunflowers. If you're still despairing when you look at your efforts, you could use the Grid method described in the box on page 39 – it might seem a bit of a hassle, but you're going to be happier showing your admiring friends and family, not to mention the guy at the head of that rather well-known animation company, a recognisable creature that they can relate to. Balls are not what you want if you're trying to impress.

For most people, creating humans on-screen is a nightmare. Animating them isn't exactly a cinch, either – there are just so many parts of them that move at once. When you walk, it isn't just your legs that move, but also your arms, torso, and your head – of course, it helps if you put some clothes on your characters to stop all the extra bits waving about. On the other hand, all you have to do to make a bee fly across the screen is to show its wings flapping up and down – sounds like a better place to start.

### **Back to reality**

Back to people though – after all, you want to have something to aim





for, don't you? Designing realistic human elements can be an involved job if you want to get it right. The French-based programming team Broderbund were responsible for creating the highly effective human animation in *Prince of Persia*. Project manager Dominique Biehler explained that, to get the animation right, they digitised someone running and then worked from stills selected at equal intervals from the entire sequence. The sprites were drawn in *Cyber Paint* and then imported into Broderbund's own animation program, *APaint*. This program displays the sprites in sequence to show how effective the motion appears. It's important to make sure that each of the sprites has progressed by roughly the same amount.

Other graphic artists work out the movement of their heroes on paper first. This has the advantage that you can start out with a specific number of frames and devise your sequence to fit. For a five step sequence, you can draw the start frame in the first box, work out the middle of the sequence and draw that into the middle box, then fill in the last bit of the sequence in the final box before adding the middle frames.

Remember that the fewer frames you use, the longer each one has to remain on-screen. In some sequences it's desirable to show one sprite on-screen for longer than others. For example, when you're leaping, you don't move very much until you land, so one sprite is enough for all the time that your character is in the air.

Of course, once you've got the basic figures drawn you can start to tinker with them to perfect your animation – and don't forget that you also need colourful backgrounds and other clever effects to create a *really* clever animation.

### Meanwhile, backstage...

One of the most fundamental stages to an animation sequence is a scene which doesn't move at all – with a lively and colourful background you can bring your whole sequence to life. But backgrounds are much more than an excuse for getting colour into your frames. When you design a background you must remember how your characters are going to move across the top. Put a platform across the whole screen and you can make them run onto it and stand in the middle performing every acrobatic act you can think of. Add some exciting colour and a couple of raised platforms they can leap onto and your sequence suddenly looks vastly more impressive.

### Get it into perspective

Many backgrounds have a tendency to look very flat and dull. To give them more excitement, introduce perspective into your picture. Even if you only manage to incorporate the view of some hills through a window, it's enough to give your animation more depth. When you're

adding perspective to your pictures, however, watch how this affects your character. It's all very well to put a pathway back into the picture and trailing off across the hills, but you might regret it when you try to make your character follow the path *Yellow Brick Road* style. Instead of repeating your running sprites, you need to devise a completely new set of sprites showing your character diminishing with each step until he disappears altogether.

Also beware of running your sprites behind objects. He might look incredible if he dashes headlong down a gloomy corridor, disappearing behind intermittent stone columns, but you have to be aware of your limitations. Imagine if you were trying to create such animation using the traditional method. You would paint the background on to one sheet, the sprite onto a separate sheet of acetate and the stone columns on the third. You would then put the first sheet down, lay the second on top of it and the third on top of that to represent the sprite standing behind the stone column. When you try to achieve the same kind of effect on your ST, you need to follow roughly the same steps. The background minus the stone columns should be drawn and the character sprite laid over the top of this. If you then want to introduce a stone column, this should also be treated as a separate sprite and overlaid across the remainder of the picture.

Another way to add sophistication to your image is to use smaller animations. In *Prince of Persia*, an atmosphere setting candle is located on the back wall. Here two frames of animation are cycled over and over again which are enough to give the impression of the candle flickering. There's a host of other scene setters you could add to your picture – a spinning fan, a steaming cup of coffee, a swinging pendulum on a clock or just smoke pouring off a fire. The possibilities are endless and the improvements can be staggering.

■ Check out *Lure of the Temptress* for an excellently animated game – the backgrounds are brilliant and you can even see the characters' legs move inside their clothes as they walk.

### RAY, TRACE AND PEARLE

One of the things you'd think your ST would be good at is representing reality – after all, it can do all those complicated things, and surely if you just tap in the right bits of code – or something – it could create a perfect scene. Well, perhaps that's a bit simplistic, but there is a way to get close to reality and that's via a hideously complicated mathematical procedure called raytracing.

A raytracing scene consists of objects in an imaginary setting – OK, so perhaps this isn't as realistic as you were first led to believe – viewed by an observer and lit



by some form of light source. The raytracing algorithms trace the path of each light ray which hits an object back to the observer's viewpoint, and sets the colour of every pixel on-screen accordingly. The algorithms take into account the object's reflectivity, refractivity, surface colour and so on, as well as the colour and distance of the light source – and any ambient or atmospheric light that doesn't come directly from the light source.

### Interested?

Yes, it does sound complicated, but this process does produce rather good results – and yes, you do need a raytracing program. There are only three decent raytracing programs on the ST, and we've given them all away on the Cover Disks. *Quick Ray Tracer* and *Pearle* were with issue 33, but you can get them from the Public Domain if you haven't got that issue or used your disks for beer mats or something. (*Beer mats?* What sacrilege!) Then there's a commercial program, *GFA Raytrace* which was yours with issues 6 and 35. If you missed that, you can fork out £10 to GFA Data Media ☎ 0734 794941 to get hold of it. But assuming you have these programs, see how to make the best of them with our tips below.

### A different perspective

One of the golden rules of outdoor photography is to keep the sun at your back, but if you want more interesting raytraced pictures try experimenting with other positions. Put the main light off to one side of centre and offset the observer in the other. Lower the lamp to exaggerate shadows. A slight shift to the side with the horizontal view angle also adds interest to the checkered ground – the lines don't run in a straight line towards the observer. The closer the observer to the checkered ground, the more severe the perspective, at the loss of some detail. There are millions of factors to play with – the best way to learn is to start with simple shapes and fiddle with the relationships between the lights, the object and the viewing position. To speed things up you can opt to raytrace images at smaller size to get an idea of what's going on before you go for the full screen and long teabreak.

### Adding texture

The checkered ground looks good, but after you've seen a few dozen it starts to look hackneyed. *GFA Raytrace* can load in *Degas* or *Neochrome* low resolution pictures and use them as the ground or sky and even apply them to objects. It's best to use simple, well-defined pictures with a minimum of colours to avoid glitches when rendering. Maps that are a close-up of a texture should use small or medium ground size. Since ground maps are

laid side by side to produce a continuous surface you need to make sure everything lines up on the screen edges. Try cutting out the edge as a block and moving it across to the opposite side to check how it all matches up. The better the picture used for textures, the better the final raytracing.

### The full spectrum

The main disadvantage when you're trying to produce really polished images is the inability to pixel edit them, as you can in a standard art package. *GFA Raytrace* uses a complex file format that can use all 512 colours of the standard STFM's palette. This makes for brilliant, vibrant pictures but makes editing the piccies tricky. The solution is to use *Spectrum 512*, which also uses the full whack. It's £35.19 from Silica Systems ☎ 081 309 1111 and we gave it away with STF 38.

On Cover Disk 36 we brought you the program SUL2SPU.PRg, which can convert your raytraced masterpieces into *Spectrum 512* pictures. It's Shareware and if you register your copy you receive a version that enables you load your picture straight into *Spectrum* without hassle, since it doesn't use colour register 15. You can now edit to your heart's content. Remove any of those annoying glitches and add anything you like – mix raytraced and digitised images, whatever. One of the first things to try is the anti-alias and blur functions. These smoothe out transitions between colours by adding intermediate ones. Try working on small areas and keeping the anti-aliasing breadth setting small so as to avoid blurring out the detail. A little bit of retouching can greatly improve on the original "raw" raytraced image.

### Start me up

The file STARTSCR.SYS is a picture which is displayed when you first load up *GFA Raytrace*. If you fancy something different just rename one of your own creations and it gets loaded up instead.

### Colour me up

The bands of colour you often see on raytraced balls are known as the "Mach band effect" – a common problem with raytraced programs, most noticeable on dull items. If you avoid primary colours there are more colour transitions – try adding a touch of other colours to an object. The placement of lamps is also important: if the lamp is too far away or too close then you don't see all the transitions. Bright objects are a different matter – the bands are tightly packed around the edge of the sphere and less noticeable. The "Spot" function adds the bright spot highlighting objects. The "Smear" function can ease the bands of colour a little – it smudges everything. Try it.



# A THING OF BEAUTY IS A JOY FOREVER

**I**f you want people to actually read what you write, you need to present your words in an approachable and attractive way. If time is short, as it is for so many people these days, you have to grab their attention by little tricks such as boxouts, pictures, call-outs and so on. This is where desktop publishing comes in.

Desktop publishing (DTP) packages take document layout one step further than word processors. If you want to put together pages with fairly complex designs, perhaps in several columns with inset pictures, large headlines or text at odd angles, DTP programs can do the job. Equally at home with text and graphics, a DTP package is the ideal tool to produce flyers, newsletters, magazines – even whole books. This chapter explains the basics of DTP, takes you on a walk through the steps of creating a document and has a look at fanzines, one of the many uses to which you can put a DTP package.

The main difference between the word processor and the DTP program is the latter's concentration on the look of the page. Although several ST programs, like *Caligrapher* (£99 Working Title ☎ 0865 883233) and *Word-Flair* (£59.95 Hisoft ☎ 0525 718181), can perform some of the functions of each type of program, control of type and page layout is still tighter and more flexible in a true desktop publishing package.

As with a word processor, you don't have to pay the earth for desktop publishing. *Easy Text Plus* is available from zzSoft (☎ 0254 672965), for £20. Although a little more cumbersome to use than the commercial packages, *Easy Text Plus* can still produce very presentable pages.

The screen of a DTP program represents a blank page of paper from your document. If you were designing the page on paper, you would draw up the various boxes to hold text and graphics and perhaps add lines to separate some parts of the page from others. This is exactly what you do in desktop publishing.

Most programs, such as *Timeworks Publisher 2* (£129.25 Electric Distribution ☎ 0480 496666), work with a system of rectangular frames which you can place and

stretch on the page as you would with the Rectangle tool in an art program. The difference is that the frame need only be used as a box into which you place text or an image. Frames in DTP packages can be resized which causes text to reflow and graphics to be rescaled.

## Getting it together

So, how do you get text and graphics into these frames? There are two ways to add text, largely dependent on the amount you need to add. For small pieces, such as headlines and introductions, you can enter the text directly by typing it into a frame. Many DTP programs have built-in text editing functions. These are not normally as comprehensive as in a word processor, but can still be used to cut and paste text from one place to another. Some

## INCORPORATING YOUR ILLUSTRATIONS

There are three main ways of pulling pictures into your DTP pages. If your second name is Warhol, you can probably draw them yourself in a painting or drawing program. As long as the DTP supports the file format of your artwork, you should have no trouble transferring images across. Not all DTP packages support colour, though, so check this out if you want to print coloured images.

The second option is to scan pictures from magazines or books using a scanner, such as the Daatascan from Pandaal (£109.95 ☎ 0234 855666). Check for compatible file formats again and watch the copyright of the images you're scanning. If you resize scanned graphics, you can create Moiré fringes (ugly stripes) in your printouts – try and print them the same size you scanned them.

Finally, you can buy pre-drawn clip art from a number of PD libraries, see our directory on page 83. This normally avoids any copyright problems, but images do vary in quality and age!



packages, such as *Calamus SL* (£587.50 Halco ☎ 0734 441525), have a separate text editor which is much quicker to use than typing straight onto the page.

For longer passages of text, you're better off using your DTP program in conjunction with a word processor. Prepare the bulk of your text, called "body copy," in the word processor. Run the program, select a frame within the page and call up the text file by name – several word processor file formats are usually supported. If you use a supported word processor, effects like italic and bold text can be carried across within the imported file.

If the text you're importing is longer than a single page, you can link text frames on one page to those on another in a chain. If you then edit the text, it automatically reflows through the chain of frames.

Unlike most word processors, text in a DTP program shows on-screen in the font you've chosen for it. A Times font shows as Times, and Helvetica shows as Helvetica – this is known as WYSIWYG (What You See Is What You Get). Although the fonts look a little jagged because of the comparatively low resolution of the screen, WYSIWYG gives a much better idea of what the printed page is going to look like. You can also view a

page at several magnifications to get an idea of the overall layout before you print.

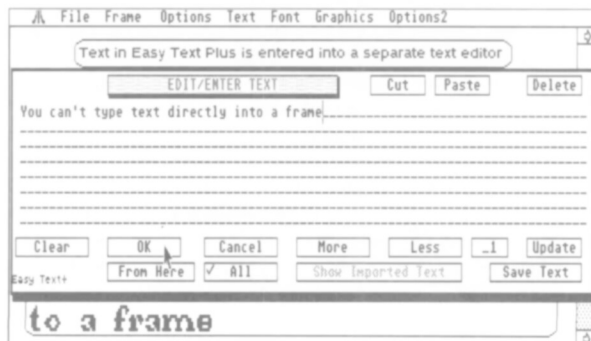
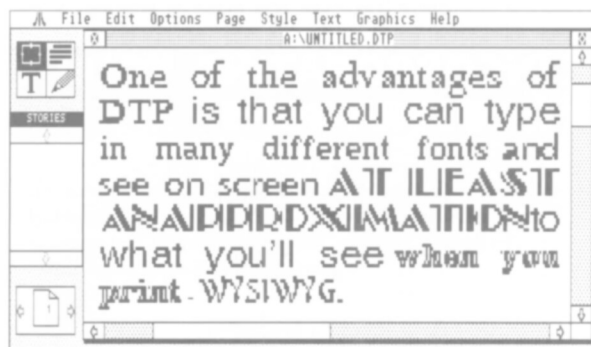
### Graphics

When it comes to graphics, most people opt to import images from other sources. The facilities for drawing in DTP programs are usually fairly primitive and are meant for little more than tinted boxes and dividing lines. Graphics are imported in much the same way as text. As long as the images you want are in a format supported by the DTP program, you can pull them straight into frames on the page. All four major packages – *Timeworks Publisher 2*, *Fleet Street Publisher 3* (£184 Silica ☎ 081 309 1111), *Calamus SL* and *PageStream 2* (£169 Silica) – support bitmapped and vector graphics formats. Bitmaps include files from *Degas*, *Neochrome* and *IMG*, while vectors are normally GEM metafiles.

### Typography

To make the best use of these programs, you need to learn something about typography, but a good way of easing the burden is to use paragraph tags. This is a system of shorthand offered by programs like *Timeworks 2*

## HOW TO GET YOUR DOCUMENTS NOTICED



**1** Fonts can be one of the most difficult things to get to grips with in desktop publishing. In their simplest form, bitmapped fonts – as used by *Timeworks Publisher* – are patterns of dots representing all the characters in the GEM character set. With this type of font, you have to keep copies of every typeface in all the sizes you need.

Outline fonts, used by *Calamus* and *Fleet Street Publisher*, are stored as outlines of the shapes of the character. The program scales the outlines mathematically to whatever size you specify. You only have to keep one copy of each outline on disk.

**2** Most programs use the idea of frames to control the positioning of text and graphics on the page. You stretch a frame where you want it on the page and then type in text or import it from a word processor file. All DTP programs but *Easy Text Plus* enable you to type text straight into a frame. This program, however, provides a separate text editor. This editor uses the GEM system font, which is a lot quicker than the bitmapped fonts used by GDOS. Using a separate editor isn't as quick and intuitive as typing on the page, though.



and *PageStream 2*. With tags, you can take a named font in a given size and style and set line spacing, indents and justification before encapsulating all the settings in a single name, such as "Headline." You can then apply them all in one operation by quoting just the tag name. Another great timesaver offered by most programs is the page template. Imagine you've just spent three hours designing the front page for the first issue of *Dangerous Pursuits Monthly* and that the lead article on Piranha juggling fits perfectly. You know you've got issue two to complete in three weeks and can't face the thought of designing it again from scratch. All you have to do is remove the text and graphics and save the layout as a template. You can then load it up again for issue two – the one about snorkelling at Sellafeld. There are other features that DTP packages can provide. *PageStream 2* and *Calamus SL*, for instance, can rotate text, which is useful for trendy captions up the sides of photographs and flashes saying "Special Offer." *Timeworks Publisher 2* can also wrap text around a graphic, rather than just around its frame.

To get you going in DTP, have a look at the guide below to see the potential of manipulating text and

graphics together. Also check out the Buyer's Guide on page 147 for more details of the programs.

## FANZINES

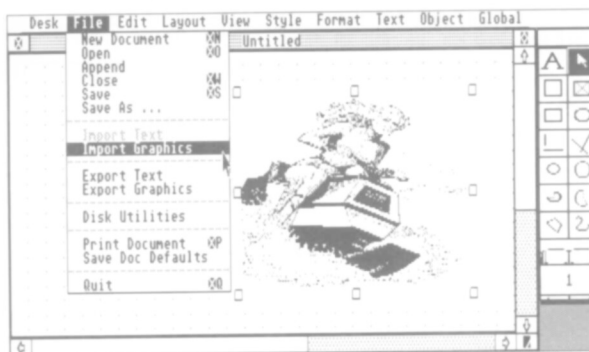
The ultimate use for DTP has to be magazines and fanzines. Not only do they test your design skills to the limit, but if you're bringing them out regularly they also demand that you keep churning out the information, giving you heaps of opportunities to get it right.

As testament to the abilities of an ST DTP setup, there are more than 30 fanzines put together on STs. Many of these aren't just a couple of photocopied black and white sheets either, but professional-quality magazines with the occasional glossy colour photograph, plenty of drawings and well-planned design.

MLC is a Madonna fanzine with a world-wide subscriber list. *Pagan News* is a bi-monthly publication with pagan features and articles, reaching 1,000 people. *Final Times* is a comical company newsletter making scandalous revelations about the staff every fortnight. *Hawk-eye* is a fanzine bringing American baseball to the

- 3** Pictures can be imported onto a page just as easily as text, as long as your program supports the file format of the graphic you're trying to import. *PageStream* can handle both bitmapped and vector formats.

The image of the jet-skiier shown here was imported from the Hall of Images clip-art library as a GEM .IMG file. *PageStream* automatically imports it at the same size and in the same proportions as the original clip. It provides handles, though, which you can use to resize the image as you need. You can also clip an image to display just a part of the whole picture.



- 4** All DTP programs can flow text around a rectangular frame, so that you can inset pictures into your documents. Some, such as *Timeworks Publisher 2*, can also wrap text around a graphic within the frame. The technique *Timeworks* uses is very versatile, though it's not automatic. You lay the text frame over the graphic and choose Define Border from the Repel Text dialog box. You can then stretch either the left- or right-hand side of the frame, point-to-point, into any shape you like. The text automatically reflows within the customised border. *Timeworks* can group frames temporarily, so you can move a wrapping like this from one place to another.





attention of a British audience. Wherever a minority interest isn't served by the popular media, up pops a fanzine to cater for it – and judging by how many we receive, a huge proportion of them are put together on an ST.

Surprisingly, you can even obtain some very professional results using little more than a word processor. *Hawkeye*, set up two years ago, is compiled by a one-man crew – Nicholas Drage. Nicholas uses an ordinary 520 STFM, a Star LC-10 multi-font printer and *ST Writer*, a PD word processor. Because the Star range of printers offers a vast array of fonts and type styles, they're ideal if you intend to stick with a word processor rather than a DTP package. The Star can even print double or triple sized characters, which makes it ideal for producing headlines.

A word processor might suffice for the occasional fanzine, but for professional touches such as drop caps or differently spaced lines of text you have no choice but to invest in a DTP package – only then can you really begin to experiment.

Design in fanzines is very important. Give yours its own identity by using the same font from issue to issue.

Instead of trying to make use of every font on offer from your DTP package, stick to just three or four – a main text font easily readable even at a small point size, a bold font for headlines and another font for additional information provided in the form of boxes.

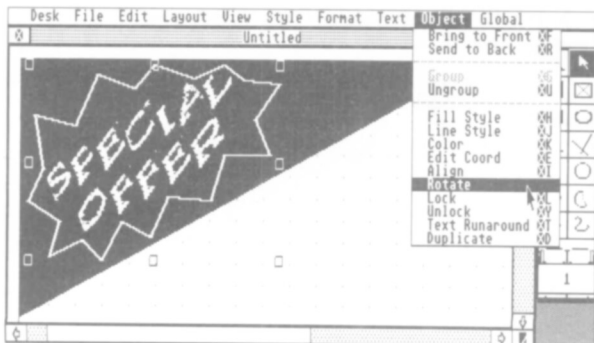
### This is what they actually do

Alan Burchett, a headteacher at Westlands High School in Kent, produces the school prospectus on an ST setup. He highlights the benefits of planning the look and format of your publication. "We decided on a folder with a window cut in the front so it could be used for a variety of purposes," explained Alan. "I decided to give each page inside the folder a school identity by placing the school's name at the top. To make readers aware of the content of each page I placed a caption in the filled box at the top, then used a combination of columns and full-width text to make the reading less daunting. I found a useful technique to add emphasis to some sections was to place them in a box, although the 'text runaround' facility took me some time to learn."

Fergal McGreevy from Wigan produced his school fanzine on an ST, and he took this idea of highlighting



**5** Rotation of text can be very useful for special effects and in tables and graphs. In *Calamus*, which uses its own set of scalable fonts, rotation is easy and text still looks very good on screen and when printed out. *Calamus* demands different frame types for each use – like text, bitmap graphics, vector graphics and rotated text. To create rotated text, select the rotated text frame icon – bottom right of the top group in the toolbox – stretch a frame and type in your text. You then select the special effects toolbox, type in an angle and apply it to the frame.



**6** Combining the use of rotated text with polygons and freehand drawing can produce some interesting effects. This corner flash for a flyer was produced in *PageStream*. The "Special Offer" text was typed as a text object and rotated explicitly by typing an angle into the rotation dialog box. The colour was then reversed and a black-filled triangle was placed over it and moved to the background. The star shape was drawn using the line tool with the line coloured white. The finished composite can be grouped together and manipulated as one object.



## BEWARE! IT'S NOT ALL ROSES, YOU KNOW

*When putting together a fanzine, you inevitably come across pitfalls you never considered*

1. You need to get established. Fanzines come and go and people need evidence in the form of printed output to be convinced that this is here to stay – this is especially true for any advertisers.

2. Get information from the sources you require – this usually means making many phone calls.

3. Be diplomatic. It's tempting to use the "power of the press" to slag people off – but not a good idea if there's any possibility they can be of use to you in the future.

4. You are the magazine. If people take umbrage at something in your magazine, they're likely to blame you personally if they get the chance. Be aware of how you come across to people – this affects how they view the mag you produce.

5. Keep the impetus going. If you get bored with your mag's progress, it's time to get some fresh inspiration. Make some changes or quit.

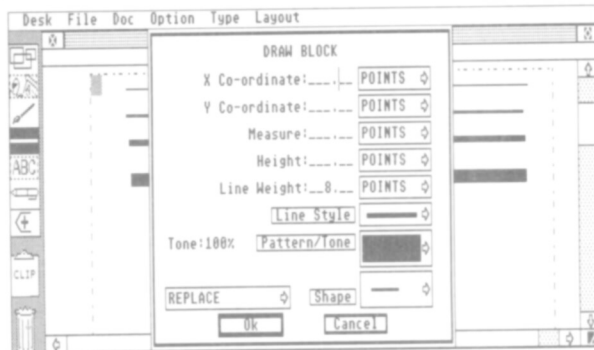
text a stage further, using borders, fills and lines to highlight items and relieve areas of white space.

### Clips of art

Another way to liven up a page is to use clip-art – Public

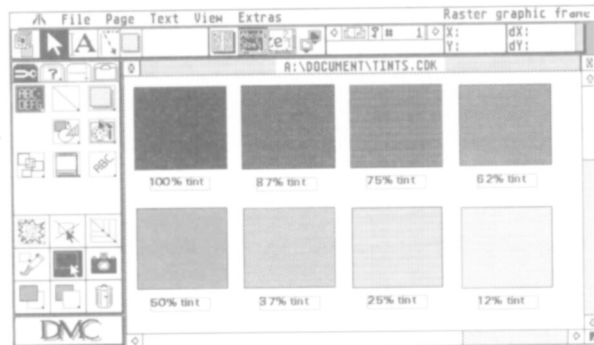
Domain drawings you can import into your document. Whatever you're writing about, you can get disks of clip-art to illustrate it – from cats, dogs and rabbits to religious illustrations to transport pics. See *STF's PD* directory on page 83 for details of where to get them.

**7** Lines, sometimes called "rules" in publishing, can be tightly controlled within most DTP packages. In *Fleet Street Publisher* you can define the width of a rule to a hundredth of a point – not that there's much use for that degree of accuracy, even with a laser printer. There are 72 points to an inch. As you can see from the "Draw Block" dialog box, you can also define the pattern and tint of the line, and the shape of its ends. This last feature is good if, for example, you need small arrowheads for a dimension line on a drawing.



**8** Calamus can reproduce tints in a wide range of grey scales. To produce a tinted area, you use a bitmap frame, known within the program as a raster area. The special effects toolbox for this type of frame offers a wide range of fill patterns and tint saturation in one per cent increments.

The resolution of even the mono ST screen isn't enough to display one per cent changes in tint, but you can easily show eight grey levels and you can print more than this. Tints can be used to make panels on the page stand out, and for effects like frame shadows.





Phil Hine, editor of *Pagan News*, uses clip-art throughout the magazine, but his goal is eventually to convert to scanned images. If you don't own a scanner, don't panic. David Newell, editor of the Kent St Mary's Parish Church news sheet, found one way round this problem: "A business associate of mine has a scanner linked to an IBM PC at his office. He has allowed me to use it to produce my own clip-art disk. The fact that the ST can read PC-formatted disks has helped enormously."

These publications prove you don't really need top-of-the-range DTP packages to get good results. *Pagan News* and *St Mary's News*, even if they have nothing else in common, are both put together using *Timeworks DTP*. Hawkeye is produced with *Easy Text Plus*, which costs a mere £20. If money isn't an object, however, why not go for the best? Mark Tennent produces a magazine entitled *Blotto* for his company. He uses *Calamus* to create the pages and *O-Line* (a drawing program ideal for DTP work, £176.25 from Halco ☎ 0734 441525) to add extra effects. Using a Daatascan scanner he scans pictures directly into *Calamus*. With this kind of setup or just the basics, your ST has the power, so why not try it yourself?



# MUSIC BEFORE ALL ELSE

**W**as it a Shakespeare character who once said "If music be the food of love, buy an Atari ST"? Well, no, but whoever it was certainly knew what he was talking about. The ST is universally recognised as the number one music computer, and is supported by the largest amount of music software ever written for a single machine.

Much of the music you hear from day to day is created with the help of an ST. What's more, thousands of beginners have found the ST an ideal partner for taking their first steps into music-making. The ST is such a powerful musical tool that you can create your own music even if you can't play an instrument – and who knows where that could lead you? The ST is a professional's machine – Madonna, Peter Gabriel, Bomb The Bass and Fleetwood Mac are just a tiny proportion of the household names who use it.

ST music comes in a variety of forms. Most serious music-making takes advantage of MIDI (the Musical Instrument Digital Interface). However, all MIDI applications require some kind of external MIDI-compatible hardware. There are plenty of other options, though.

## Music without MIDI

The ST's own built-in sound chip, although limited in sound quality, can easily be programmed from BASIC and is widely used by many types of software – educational music programs which use the sound chip are already in use in some schools. Sampling software and hardware enable you to record sounds directly into your ST and then organise them into music. Tracker software can turn your ST into a powerful sample sequencer, so you can create music using sounds available from PD libraries and elsewhere. Scorewriting packages enable you to produce publishing-quality printouts of your music.

All STs are fitted with an internal sound chip, also known as a PSG (Programmable Sound Generator). This creates the rather nasty bleeping sounds you sometimes hear through the internal speaker in your monitor – and the "tick" sound you sometimes hear when you press a key. It is also capable of playing tunes (like those in many games) and generating "noise" – useful for certain sound effects such as weedy gunshots and pathetic

explosions. The chip has three channels, so it cannot play more than three sounds at a time.

There's no doubt about it, the sound chip just isn't up to serious music – but, if you can live with its shortcomings, you can have some harmless fun. In BASIC, you can audition the sound chip instantly.

## Have fun

After loading BASIC, try typing in the following command:

```
SOUND 1,12,10,4,50
```

Press <Return> and you can hear a note. Hit <Return> again and it stops.

The five parameters in the **SOUND** command specify the channel, volume, note, octave and duration of the bleep. Channel is a number between one and three and volume can be anything from zero (totally inaudible) to 15 (loudest). The pitch of the note is decided by the note and octave parameters. Note is a number between one and 12 (the 12 notes in one octave, counting C as one), while octave is a number between one and eight (the sound chip has an eight-octave range). Duration is the length of time the note lasts for, measured in fiftieths of a second.

So, in the above example, the sound chip is instructed to play a note on channel one, at volume 12. The pitch is note 10 in octave 4, which happens to be middle A. The note lasts for one second.

Hang on, though – that note lasted longer than a second, didn't it? That's because the duration only specifies the length of time that elapses before another sound is allowed to happen on that channel. The sound turned itself off when you pressed <Return> because the key click sound took over at that point. When you use sound in BASIC programs, therefore, you should always remember to include a "dummy" sound instruction to turn the note off, unless another note is about to follow immediately on the same channel. To turn off a note on channel three, for example, use:

```
SOUND 3,0,0,0,0
```

Now try typing in this very simple BASIC sequencing



routine to get a feel for how the **SOUND** command works. (The **↓** symbol means don't hit <Return> yet – the line just wouldn't fit in our narrow columns.)

```
10 FOR i = 1 to 8
20 READ note, oct, dur
30 SOUND 1,12,note,oct,dur
40 NEXT i
50 DATA 1,4,24,8,3,8,7,3,8,8,3,8,9,3,24,8,↓
3,48,12,3,24,1,4,24
60 SOUND 1,0,0,0,0
```

By making modifications to the **DATA** statement, you can change the tune. But whatever you do, you're still dealing with the sound chip – it still sounds crap!

You can get more out of the sound chip by using BASIC's **WAVE** command. **WAVE** enables you to control other elements of the chip such as the noise generator. Don't expect massive improvements, though. There's a description of the **WAVE** command in your BASIC manual.

You can also control the chip more directly by programming it from BASIC using **POKE**. There is a special way of accessing the chip's 16 registers, and if you are sure that you want to do it, R A Penfold's *Musical Applications of the Atari ST* is an excellent guide. It's available from Computer Manuals ☎ 021 706 6000 at £5.95, ISBN: 0859 341917.

### Samplers

Sampled sound is a much more impressive aspect of ST music. Basically it's sound which has been passed through a device called an Analog to Digital Converter (ADC) to get it into a digital form so your ST can do

miraculous things with it. Once it's inside your ST, it can be treated like any other numerical data – it can be cut, copied or pasted, and have various mathematical functions performed on it. In other words, sampled sound can be processed, just as words are processed in a word processor. Above all, it can be instantly replayed through a monitor speaker, TV, rear phono connectors (on STes) or an add-on Digital to Analog Converter (DAC).

One thing to bear in mind with sampled sound is that it takes up large amounts of memory – and the better quality you want, the more RAM you need. This is because the quality of a sample depends on two things – the sampling resolution and the sampling frequency.. Both affect the amount of detail picked out from the original sound. You can't do much about the sampling resolution, which is a fixed feature of the hardware, but some samplers enable you to set the sampling frequency.

ST samplers are hardware and software combined. The hardware is normally an add-on which plugs into the ST's cartridge port, containing an ADC for recording sounds into your ST and a DAC for playing them back. Stereo samplers have two of each. The accompanying software provides the digital processing options for treating the samples, and may include simple drum-machine style sequencing capabilities.

One company at the forefront of ST sampling for over five years are Audio Visual Research. The AVR samplers offer various different "sample resolutions." Don't be baffled by this – simply put, the higher the sample resolution, the more you pay, but the better the sound quality. AVR make two 8-bit samplers – *Stereo Replay* and *Replay Professional*, both of which are published by Microdeal. Also available are a 12-bit sampler called *Pro-Series 12* and a 16-bit one called, you guessed it, *Pro-*

## THE SOFTWARE YOU NEED: SAMPLERS

### SAMPLERS

#### Stereo Replay

FROM: Microdeal

CONTACT: ☎ 0726 68020

PRICE: £89.95

MACHINES: All STs and STes, medium and high resolution only

FEATURES: Sample editor with three-channel drum machine, MIDI-controllable playback, 8-bit input and output

**STF Rating: 89%**

#### Replay Professional

FROM: Microdeal

CONTACT: ☎ 0726 68020

PRICE: £99.95

MACHINES: All STs and STes, medium and high resolution only

FEATURES: Sample editor with four-channel drum machine, MIDI-controllable playback, 8-bit input, 12-bit output

**STF Rating: 90%**

#### Pro-Series 12

FROM: AVR

CONTACT: ☎ 0582 457348

PRICE: £199.00

MACHINES: All STs and STes, medium and high resolution only

FEATURES: Sample editing, four-channel drum machine, MIDI-con-

trollable playback, 12-bit input and output

**STF Rating: 94%**

#### Pro-Series 16

FROM: AVR

CONTACT: ☎ 0582 457348

PRICE: £299.00

MACHINES: All STs and STes, medium and high resolution only. At least 1MByte of memory is also recommended

FEATURES: Sample editing, four-channel drum machine, MIDI-controllable playback, 16-bit input and output

**STF Rating: 94%**





**Series 16.** They all enable you to sample sounds, edit them, and piece them together to make music – see the Buyer's Guide on page 147 for more details.

*Replay Professional's* top sampling rate is 48kHz – 48,000 cycles per second. On a 520 ST, this sampling rate only gives you five seconds or so of sample time before you run out of memory. At 22kHz you can get over ten seconds on a 520 and over half a minute on a 1040. This may not sound like much, but you'd be surprised – many drum and percussion sounds only last for a fraction of a second, so you can pack a large number of samples into half a minute. Once your samples are in memory, it takes a negligible amount of extra RAM to hold the instructions to replay them in the right order, so don't worry – your finished music isn't limited to mad 30-second bursts!

### Trackers

If your budget doesn't extend to a sampler, consider a tracker. Tracker software is ideal if you're not particularly interested in doing your own sampling but would love the chance to use other people's samples creatively.

A tracker is essentially a sample sequencer, and is usually supplied with a good collection of ready-made samples on disk. If that's not enough, you can easily boost the size of your sound bank for next to nothing by scouring the PD libraries for compatible samples. It doesn't cost much to find out what tracker music can sound like – plenty of examples can be found on PD demos.

Trackers tend not to use traditional musical notation – tracker music is made by creating a list of samples and ascribing various values to them. So, no musical knowledge is needed – but the sample list may be frustrating

for more accomplished musicians.

One program which breaks this convention is Microdeal's *Quartet*, a sample sequencer which enables you to create tuneful music using conventional stave-based musical notation. There's nothing too difficult about it, though. You simply pick up notes of the required length and place them on the stave in the desired order using the mouse.

To get experience of using tracker software, take a look at the *TCB Tracker* demo on *ST FORMAT* Cover Disk 16. Alternatively, try the Public Domain *Sound Machine* from Riverdene PDL (Disk 958) – see our PD library directory on page 83.

### Scorewriters

There are other types of non-MIDI music software. Scorewriters are packages which enable you to create and print musical scores. Some, like *The Copyist DTP* (£249.00 Zone Distribution ☎ 081 766 6564), have quite a comprehensive array of musical symbols and extremely good printer support, making them suitable for serious music publishing work. *The Copyist* has recently been updated, and is also available in an entry-level form as *Copyist Apprentice* (£99.00). Scorewriters can often be used in conjunction with MIDI sequencing software, enabling you to instantly "transcribe" already-recorded music into musical notation.

### Educational music software

Some schools already use educational software which exploits the internal sound chip to teach listening skills and the fundamentals of music theory. Many of these packages (such as SoundTrack's *Rhythm Trainer*, *Pitch Trainer* and *Theory Trainer* – from Keyboards In Action

## TRACKERS AND SCORE WRITERS

### TRACKERS

#### Sound Machine

FROM: Riverdene PDL

CONTACT: ☎ 0734 452416

PRICE: £2.50

MACHINES: All STs and STEs

FEATURES: Three-channel sample sequencing with staves

**STF Rating: 65%**

#### Quartet

FROM: Microdeal

CONTACT: ☎ 0726 68020

PRICE: £49.95

MACHINES: All STs and STEs

FEATURES: Four-channel sample

editing and sequencing with double stave display

**STF Rating: 94%**

### SCOREWRITERS

#### Copyist Apprentice v1.7

FROM: Zone Distribution

CONTACT: ☎ 081 766 6564

PRICE: £99.00

MACHINES: All STs and STEs

FEATURES: Up to five pages of score, comprehensive symbols

**STF Rating: 75%**

#### Proscore

FROM: GFA Data Media

CONTACT: ☎ 0734 794941

PRICE: £200.00

MACHINES: STs and STEs with 1MByte of memory and high res monitor

FEATURES: Up to 27 staves, real-time MIDI input

**STF Rating: 68%**

#### Copyist DTP v1.7

FROM: Zone Distribution

CONTACT: ☎ 081 766 6564

PRICE: £249.00

MACHINES: All STs and STEs

FEATURES: 50-page scores, laser and Postscript printer output

**STF Rating: 65%**



0752 346200) work by presenting a series of tests which ask you to (for example) identify notes and musical intervals after they have sounded. In some, you have to place note symbols correctly on a staff using the mouse; with others you get multiple-choice question and answer tests. You get points for correct answers and sometimes for speed. These packages sound like a good idea, but are sneered at by some teachers for their limited scope, and are only likely to hold your attention for about as long as it takes to beat your own high score three or four times. The better educational music packages, such as *Tunemaker* and *Rhythm Kit* (£39.95 each from Impac Resources 0751 77456) concentrate less on tests and more on creativity, including the option of playback over MIDI.

### Sound synthesis

Sound synthesis software is generally treated as something of a specialist area and is not in wide use. Leaders in the field are The Composers' Desktop Project (11 Kilburn Road, York YO1 4DF), who have developed a suite of ST programs capable of advanced digital synthesis and processing. This is likely to be of interest if you're a serious composer, especially if you have a few bob spare – the CDP system does involve some pretty expensive hardware.

### How MIDI can help you

You don't need to be a musician to use MIDI and you certainly don't need to know how MIDI works to make use of your ST's MIDI capabilities. Look at it this way: did you feel the need to learn about machine code programming before you played your first shoot-'em-up? Did you ever refuse to use a ball point pen because you didn't know what made the ink come out?

If you want to use MIDI, what you need to know in advance adds up to little more than where you have to stick a few leads – and no suggestions required, thank you. The rest is down to your ears, your imagination, and getting the hang of some software. With a simple MIDI setup, anyone can get great results without being able to play a note of music.

Get great results? Yes – imagine being able to write music by playing a MIDI keyboard just one note at a time, by typing notes in from the ST's keyboard, by clicking with the mouse, or by any combination of these three. Imagine being able to construct your music as slowly as you like. Imagine being able to correct any mistakes at any stage. And imagine being able to hear everything you've done so far – instantly, at any time, at any speed. Of course you can get great results. We show you how you can put together a simple MIDI setup for you to make your own multi-instrumental music. You don't even need to worry about how many instruments you have to splash out for. Thanks to "multi-timbral"

MIDI keyboards and sound modules, one instrument can behave like many, giving the effect of a complete band – all in the comfort of your own home.

### Hardware

Where do you start? First, you need the basic equipment – an ST, a MIDI keyboard instrument, two MIDI leads and some form of amplification (some keyboards have built-in speakers, but failing this, any hi-fi equipment with line inputs will do). Let's take the leads first. You may end up using more than two, but that's enough to get you off the ground. Proper MIDI leads have 5-pin DIN plugs at both ends, but only three of the five pins are wired up. Buying any 5-pin DIN lead is not the same as buying a MIDI lead, so we don't recommend you do that. The real thing is easily obtainable from most hi-tech music shops. In fact, you may not need to worry about MIDI leads if you have a MIDI keyboard – MIDI leads are often included.

So what's a MIDI keyboard? If you have a keyboard which was bought in the last few years, the chances are that it has MIDI. Look at the back of it – if it has two or three five-pin DIN sockets labelled IN, OUT (and, if it's there, THRU), then you have a MIDI keyboard. If you need to go out and buy one, the cheapest are in the Yamaha PSS range – these are multi-timbral MIDI keyboards – brand new, they start at around £200. If your MIDI keyboard is not multi-timbral, you can only get one type of sound out of it at a time. This is fine for music for one solo instrument, but you may feel the need to do more than this before long.

One option well worth considering is a multi-timbral sound "module." A sound module is like a synthesizer without a keyboard. Provided you have a MIDI keyboard, a sound module is feasible. MIDI enables devices to be linked together so that they work as a single instrument. So, if you plug a MIDI lead from your keyboard (MIDI OUT) into a sound module (MIDI IN), you get sounds from the module just by playing the keys on the keyboard. Link your ST into this chain, and much, much more becomes possible. Study the picture at the top of the opposite page to see how to connect your equipment.

### The software you want

Your next step is to decide on some MIDI software. To get the most from MIDI, your first acquisition should be a sequencer – the heart of any MIDI system. Although professional sequencing packages can be very expensive – some cost over £500.00 – there are now a number of reasonably-priced packages to choose from. Because of the large number of different sequencers that have appeared on the market in recent years, many of the good packages have now got cheaper, and what's more, many of the cheaper ones have got better. All the fea-



■ This diagram shows you how to connect more than one MIDI instrument to your ST. Now, what could be less daunting?

tures of a typical mid-priced package of a few years ago can now be found on current Public Domain sequencers. If that's still not cheap enough for you, remember that we gave away a fully-working version of Gajits' *Sequencer One* with STF 30.

### What is a sequencer?

In a nutshell, it's a composing device – in other words you can create music with it. There are three popular analogies:

#### 1. A sequencer is like a tape recorder.

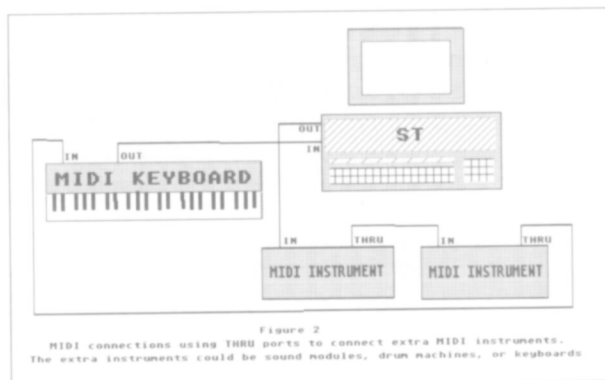
Yes, in the sense that it records and plays back music. But there's an important difference which often causes confusion. A tape recorder records actual sounds and plays them back itself. A sequencer, however, only records information about which notes to play and when to play them, then sends this information to the synthesizer. It is the synthesizer that actually makes the sounds – not your ST. Some sequencers have a front end which is designed like a tape recorder's transport controls – Record, Play, Rewind, Pause and so on.

#### 2. A sequencer is like a player piano.

A player piano is a piano that can play automatically, provided you feed a roll of paper through it that has holes punched in it. As the player piano "reads" each hole in the piano-roll, a mechanism causes a key to be pressed. The result is that the piano seems to play by itself – as if there's a ghost pianist there. The player piano is like a primitive sequencer, except that it only does piano sounds! Many sequencers have piano-roll style graphic editing – the screen looks like a piano-roll, dotted with tiny rectangular shapes of different lengths which represent the notes. Click on one and you can change its pitch, loudness, start-time or duration.

#### 3. A sequencer is like a word processor for music.

Just as you can cut, copy and paste text in a word processor, so you can arrange and re-arrange bits of music in a sequencer. You can correct outright mistakes, re-do parts that could be improved, and generally fiddle about until you're happy. In most sequencing packages



Think of a sequencer as a mixture of these three, and you've got a pretty good idea what it can do. With so many functions being mouse-controllable, you can see why with MIDI it's no longer necessary to be able to play an instrument to get great results. When choosing a sequencer, think about how you prefer to work. If you're not a musician and can't read music, Score Edit options will be low on your list of priorities, but you'd benefit from easy-to-use, "piano-roll" graphic editing. If you're used to programming a drum machine, look out for a sequencer with a Drum Edit facility, enabling drum patterns to be assembled in a similar way.

Sequencers use different ways of arranging music. Pattern-based sequencers enable you to record short sequences (for example, verse and chorus) and later string them together in the right order to make a complete piece of music. Linear sequencers use a system of cut, copy and paste to enable you to arrange your music. In practice, many sequencers now offer a combination of methods.

But there's more to MIDI than sequencing. Important breeds of MIDI software are patch editors and librarians. These are packages which enable you to exercise control – from your ST – over the actual sounds ("patches") your synthesizer makes. Librarians enable you to name your sounds, classify them and save them to disk. To actually create and change your synth's sounds, get an editor. Editors – which also normally have librarian capabilities – take advantage of the ST screen to provide a sophisticated user interface for sound editing, often with graphics. For example, many patch editors have mouse-controllable graphic editing for changing envelope shapes relating to how quickly the sound starts or dies away. The envelope is usually shown on-screen as a graph, with the sound's loudness plotted against time. You just click and drag on the envelope diagram to change the way it looks and what you hear. This is



## CONSIDER THESE MIDI INSTRUMENTS...

**Golden rule: don't buy anything you haven't listened to and liked**

### KAWAI K1

Touch-sensitive, 61-note, eight-part multi-timbral synthesizer with standard size keys which can be bought new for £600 or less. A second hand bargain is well worth hunting for. The K4 is a little more expensive but is 16-part multi-timbral and has extra synthesizer features.

(Turnkey ☎ 071 379 5148)

### ROLAND MT-32

Nine-part multi-timbral sound module which has now been superseded, but which can be bought second hand for around £200.

(Roland ☎ 0792 310247)

### ROLAND SC-55 SOUND CANVAS

Superb high-quality 16-part multi-timbral sound module with reverberation, chorus and pan controls. Not cheap at £545, but considered by many to be the best buy for the home-based computer musician. Is also available in the form of a multi-timbral keyboard, the JV-30 at £789.

(Roland ☎ 0792 310247)

### YAMAHA PSS-795

A popular and inexpensive (under £200) multi-timbral MIDI keyboard, with the strange habit of playing its built-in rhythms without you asking it to. Uses "mini-keyboard" which saves space, but may be fiddly for the big-boned.

(Yamaha ☎ 081 419 5419)

### YAMAHA PSR-400

Touch-sensitive multi-timbral keyboard with standard size keys for £389. For an extra £100 you can have the PSR-500 which has built-in digital reverberation and more sound memory.

(Yamaha ☎ 081 419 5419)

### YAMAHA TG-33

A very impressive multi-timbral sound module which is much used by professional musicians. Worth the £525 price tag if you can afford it. The TG range of modules is paralleled by the SY range of synthesizer keyboards, which also have similar characteristics.

(Yamaha ☎ 081 419 5419)

sizer that's ever been made, but if you want to buy one, try to get an editor that's been made by the same company that made your sequencer. That way it's more likely that you can load both pieces of software into your ST at the same time – very useful.

If you have more than one synthesizer – or you expect to buy one before long – consider a universal (or "generic") editor. These are editors which can be configured for any MIDI synthesizer within reason. The advantage of buying a universal editor is clear – you only need one! Universal editors are regularly updated to support new instruments as they come onto the market. Make sure you check with your supplier that the editor you are after definitely supports your synths. These are the most reputable universal editors: *Chameleon* (Keynote ☎ 0761 432610, £89.00), *X-OR* (Zone Distribution ☎ 071 7385 444, £219.00) and *Genedit* (Atlantic Audio ☎ 071 272 8944, £245.58).

### Who needs a backing band?

A quite recent development is auto-accompaniment software, the best examples of which are PG Music's *Band In A Box* (Zone Distribution ☎ 071 7385 444 £45.00), Frollich's *Freestyle* (Zone Distribution £149.00) and JCD's *Feeling Partner* (Music Pro Import (UK) ☎ 081 789 8641 £175.00). Although these packages are used by professionals, they are perfect for absolute beginners. Auto-accompaniment software creates an instant backing band for you to play along with. With *Band In A Box*, the most popular of the three and a *FORMAT* Gold award winner, all you need to provide is a list of chords – these could be taken from any songbook. Type the chord names in, choose a style of music (for example, rock, jazz, funk), press Play, and you instantly hear music. *Band In A Box* also comes with plenty of ready-made chord sequences and styles on disk, and enables new styles to be created by you. The new version (v5.0) creates accompaniments using five instruments.

All the instruments listed over there on the far left are either very reasonably priced or good value-for-money. They all have multi-timbral MIDI capabilities with built-in drum and percussion sounds. Remember that if you already have a MIDI keyboard which is not multi-timbral, buying a sound module is probably cheaper and more practical than forking out for an additional keyboard. Musical instrument prices are always subject to change, making it difficult to be specific about what you should expect to pay – the prices are given as a guide only.

■ Check out the Buyer's Guide on page 147 for details of sequencers available.



# I CAN DO BETTER THAN THAT!

**Y**ou can't help it. Get your hands on some sexy software and it's natural to pick out its faults. In that otherwise excellent game *Sim City*, for instance, anyone could see that the user interface ought to have been much faster; *First Word Plus* should have included a SAVE ASCII option; *Degas Elite* would have been better if only you could have set certain start-up

## Highs and lows

The easiest way to categorise programming languages is into two distinct types: high- and low-level languages. The former, languages such as C and Assembler, are based around the machine's internal command set. To write even very simple code requires many lines of instructions, but the resulting code runs very fast indeed. High-level languages such as BASIC and Pascal, on the other hand, are designed to be easier to learn and use, but the resulting code runs much more slowly.





intensive maths is a must. One asset for games programmers is its portability. Code written on an ST in C could just as easily be loaded up onto a PC contemptible, requiring only limited alterations before it can be executed. C is not as fast as machine code, however, so many games programmers are compelled to avoid it. Nonetheless, for games which don't make heavy demands in the speed department, C is still held in high regard.

C source code looks complex enough to send you into a foaming fit, making it less than attractive to programming newcomers. It's simply not as easy to learn as BASIC because the commands aren't as obvious. Nevertheless, it's a good language to progress onto when you find yourself limited by BASIC. Unfortunately, there's a distinctive lack of error-checking in C and any obscure bugs lurking in your programs can cause your ST to throw a wobbly.

## Assembly

Assembly, the third and final popular programming language, is quite simply the business if it's your aim to write super-fast, do-anything code. The code is directly compatible with your ST, enabling you to tap the inner resources of your machine. Because of this, programs are complex to write, requiring many instructions to perform even the simplest task. But for routines which are especially speed-intensive, there's just no beating it. Many programmers like to write their main source code in C and then write selective routines in Assembly where the higher speeds are essential. Sadly, with little error-checking, mistakes are hard to locate.

## Pascal

And then there's Pascal. Many teachers love it, largely because its design forces budding programmers to write "good," well-structured and neatly planned code. Pascal has the advantage that the source code is easy to read, so there's little trouble working out what's going on and where. If you're new to the language you're likely to be astounded by the number of error messages you encounter. Before you even get close to running your program, they ring out to keep you informed of inaccuracies you'd otherwise discover too late.

Pascal is especially useful when you want to write long programs. Unfortunately, however, its string handling isn't as good as BASIC's and access to the ST's internal commands and hardware can be problematical.

Pascal doesn't give very good access to the ST's graphics capabilities, so it's not used to write games, though it has found popularity in the business market.

## FORTH

FORTH, another high level language, has one major advantage: speed. It's also ancient, so it can boast many

supporters; but it has a command set which forces you to write very structured programs. Strings are handled more easily in FORTH than in Pascal, and it's particularly good for number crunching and text handling, but like Pascal's, its graphics abilities are severely limited.

FORTH also has one major disadvantage: it's difficult to learn, and many people require intensive instruction. This is partly because programming must be done using reverse Polish notation which essentially means adding numbers backwards. Even the slightest mathematics operation requires extensive use of stacks as numbers are pushed onto and pulled from the stack.

## Read all about it

Whatever language you choose, look out for good books on the subject – you can never know too much – and remember that you can mix languages to obtain the best of both worlds. For example, you could realistically write a game in *GFA Basic* if you choose, and as long as you include machine code routines to handle the speed-intensive operations, you can't go wrong.

Right then. Now you can stop saying "Even I could write something better than that" when a program doesn't live up to expectations. Get on and actually do something about it!

## The easy way out

Before you invest in a programming language, consider the merits of games creators. They enable you to write your own games for a fraction of the effort, though whether the results would ever be good enough to sell is debatable. Games creators like *Talespin*, *STAC*, *SEUCK* and *STOS* require no programming expertise and are well-documented and easy to use, but restrictive. *SEUCK* is for producing shoot-'em-ups, *Talespin* and *STAC* for writing adventures. *Talespin* is for role-playing adventures and the final game is always going to look similar to others; *STAC* enables you to write the more typical adventure involving a pretty picture followed by lines of explanatory scene-setting text.

*STOS* differs from the others because it's a modification on BASIC with options specifically geared towards game design. It enables you to write a diverse range of games, but as a result is far harder to use than the others because you need to learn the *STOS* language. It's extremely popular and supported by a compiler.

■ SEUCK – £9.99; Gremlin ☎ 0742 753423

■ STOS – £29.99; Mandarin/Electric Distribution ☎ 0625 878888, Cover Disk 37.

■ Talespin – £9.95; Microdeal ☎ 0726 68020 Cover Disk 40

For the novice, the babble of languages available is enough to provoke palpitations – by the time you get as



far as looking at the code, you're in the middle of a fully-fledged heart-attack. Before you make a decision about which kind of code looks remotely understandable, consider what you want to do with it.

There's little point getting involved in BASIC if your sole objective in life is to write games – you just couldn't get the code to run fast enough. But if your ambition is to write utilities or even databases, spreadsheets and simple word processors, advanced BASICs like *GFA Basic* and *Hisoft Basic* are fast enough to be surprisingly competent. For Desktop Accessories or small programs which run in the background of the ST's memory, the choice has to be between C and Assembly language. To see what we had to say about any of the programming languages here when we reviewed them, turn to page 147 for the Buyer's Guide.

### Some essential reading

One of the best ways to learn more about any programming language is with the help of a decent book. Those listed below are a good place to start – and don't forget to check out second hand shops as well as the regular bookstores when you're looking.

#### ATARI ST INTERNALS

- ISBN 0-916439-46-1
- ABACUS
- £16.95

An essential companion for the intermediate and expert programmer, *Internals* contains listings of the ST's internal BIOS and XBIOS commands with examples of use in assembly. Also covered are details on how to program the sound chip, serial port and interrupts. Highly recommended.

#### ST TRICKS AND TIPS

- ISBN 0-916439-47-X
- ABACUS
- £16.95

Packed with assembly listings and advice to help you get more out of your programs, this superb book shows you how to combine BASIC and machine code, use GEM with BASIC, set up a RAM disk, write a print spooler...

#### ATARI ST BASIC TO C

- ISBN 0-916439-58-5
- ABACUS
- £18.45

*ST Basic* is the worst version of BASIC in the world: C is currently the trendiest thing since Dee-lite. *ST Basic to C* explains these and all the middle ground.

#### ATARI ST ADVANCED PROGRAMMERS' GUIDE

- ISBN 1 850 58053 7
- SIGMA

- £10.95

#### ST PROGRAMMERS' GUIDE

- ISBN 0938862790
- WEBER
- £22.95

Both the above guides cover much the same ground, and either would get you a good way into the guts of your ST.

#### ST MACHINE LANGUAGE

- ISBN 0-916439-48-8
- ABACUS
- £16.95

Abacus produce an excellent range of computer books for the ST (though they do seem to be getting harder to find): if you're looking to learn machine language you can't go wrong with this one.

#### PROGRAMMER'S REFERENCE GUIDE

- ISBN 1851811729
- GLENTOP
- £17.50

Puzzled by all those XBIOS calls? Want to know what GEMDOS means? This is an invaluable aid. Equally, look at the Jargon Buster's Guide on page 135.

#### LEARNING C ON THE ST

- ISBN 0-673-18738-1
- SCOTT FORESMANN
- £18.45

If you're lucky enough to own Hisoft's C interpreter you're unlikely to need much additional help, but for those still trying to learn the rudiments of C, you can't go wrong with this one.

#### PROGRAM IN GFA BASIC

- ISBN 1851811737
- GLENTOP
- £9.95

Takes you from the early stages of GFA programming right up to advanced instructions like BIOS calls and linking in C code.

#### YOUR FIRST BASIC

- ISBN 1855500108
- BOOKMARK PUBLS
- £14.95

A guide explaining all you need to know to get the most from *FirST Basic*, which was being bundled with STs. It's good but with a little effort you could get the information you need from the guide supplied by Atari.





# TALK AND DISCOURSE

**T**he sentiment that it's a small world has never been truer than in this, the information age. The computer has revolutionised the way we talk to each other forever. Distance means nothing – you can transmit ideas, messages, memos, greetings, software, pictures and sound around the world with nothing more than an ST and a modem.

Nevertheless, you may be left feeling completely bewildered about just how you go about making use of communications technology. If so, then bear this in mind – the most important element in electronic communications is your ST. Think of your ST as an intelligent but reclusive link with the outside world. It likes to talk to other computers, but it speaks a different language. What you need is a translation device, the most popular being a modem.

A modem (short for modulator/de-modulator) acts as the bridge between your ST, the phone line and other computers. It takes the signals you transmit, converts them into a reduced, easily transferable form and squirts them down the phone line to the other computer. Then when the other computer replies, it reverses the process and your ST shows the information on-screen.

There's a plethora of sophisticated software available which takes the hard work out of getting on-line. If you can find your way around GEM, then you can run a comms program. If you can run a comms program, then you can pay your bills, check out the weather, chat to people in the States, order an airline or theatre ticket, become a troll or consult the British Library's catalogue – all from the comfort of your own home or office.

## ON-LINE SERVICES

So just how many computer services can you access? There are literally thousands of computers out there which your ST can converse with. However, there are certain main services invaluable to anyone who wants to stay in touch.

### CompuServe

Few computer networks are as big as CompuServe. It's American and it was one of the first to offer realistic electronic mail right across the States. Logging on to Com-

puServe is now a lot easier for a British ST owner because of the introduction of Istel. This operates as a bridge across the Atlantic and means that you only have to telephone a local computer – it then rings America for you.

CompuServe contains information on a massive variety of subjects. Every taste and need is catered for. Just check out these examples:

- Human sexuality
- ST productivity forum
- Astrologers' club
- Cooking forum
- Satellite maps section
- CB simulator
- Shopping mall
- Commodities guides.

Information on CompuServe is arranged primarily in "forums." These are sub-sections of the network with specialised information. The Atari Productivity forum, for example, contains files, news and conferencing facilities. These files can then be downloaded (or transferred) onto your ST using your own comms software.

Navigating around CompuServe is simple. You simply type GO and then the name of the forum you want to enter. If you want to get a file from the Atari Productivity forum you simply type GO ATARIPRO. If you're a new member you are then prompted to join the conference. There's no extra charge for joining these specialist forums, so they're well worth checking out. The Atari forums have a phenomenal amount of software just waiting to be downloaded. 20 of the biggest American hardware and software companies have their own "vendors forum." Gribnif, who wrote *NeoDesk*, upload updates and add-ons for their software straight into the forum. You can then simply download them straight onto your ST.

An Atari Arts forum caters for the more creative ST user. Here you find pictures, utilities and complete programs aimed at the art loving ST owner. There's a *Degas* picture library and *Cyber* library, for instance. The Atari Productivity forum deals with the more technical side of ST life. Here you can find libraries devoted to desktop publishing, comms software and MIDI software, among many others.



One of the most powerful aspects of CompuServe is its conferencing facilities. Special interest groups can all log on together, enter an electronic hall and chat with each other. Sam Tramiel, boss of Atari, held an on-line conference and was joined by 150 ST users. It's quite feasible that *ST FORMAT* could hold their own on-line conference so that American readers could get in touch with us.

An interesting development on CompuServe is the CB simulator. This real-time chatting service is exactly what it sounds like – an electronic CB. You enter a handle, pick a channel and get talking with users from all over the world. Every taste is catered for on the CB. Channel 1 is for adults, channel 17 for teenagers and channel 10 for people with (ahem) broader tastes.

Each CompuServe user has a unique number. *ST FORMAT*'s is 100012, 2571. Using this you can send mail to people all around the world. What's more, you can upload and read files or simply store them in your "Mailbox."

You needn't just use CompuServe for its Atari sections either. The news section for example is linked straight into the Associated Press wire. This means you can get news from around the world almost the moment it happens. If you're more interested in business applications, then check out the financial forums – you can have the shares, commodities and exchange rates scrolling up your screen as they change.

■ For more information on CompuServe call ☎ 0800 289458

### Prestel

If you can get Ceefax on your television at home, then you should be familiar with the layout of Prestel. It's a similar kind of viewdata service with the same colour and blocky graphics. Within Prestel there's a special computer section called Micronet which has news, views and information about the ST.

Prestel, in conjunction with Telecom Gold, is the most popular medium for sending electronic mail in this country. Celebrities such as Prince Philip have found it invaluable. The system is very ST user friendly, too. To access the information you're interested in, you simply type in the page number indicated in the general index.

Commercial companies make considerable use of Prestel. If you've ever seen a travel agent book a holiday, you've seen the system in action. Anyone can use it to book airline or theatre tickets, check out the sports fixtures, see what's on the box, or find out a new recipe.

The travel industry has its own sub-section in Prestel called Prestel Travel, the agricultural community has a similar section called Farmlink and the insurance services sector has BTIS. In addition, catalogue firms such as Littlewoods have on-line purchasing sections where you can shop for items and input your credit card num-

ber to have the goods sent to your house – you need never go out again!

The financial community has its own sub-section called Citiservice. This enables you to view equities, gilts and traded options via SEAQ, the equivalent of the stock exchange's own TOPIC system. Professional brokers provide on-line expert analysis of shares and commodities. Most of these companies charge a nominal fee for the advice, although Cooke Lumsden are an exception to the rule. If you want to subscribe to Hoare Govett, you can actually buy and sell shares from your ST. This is certainly better than having to get on the phone to a broker.

Micronet is one of the most popular forums for micro users in the country. Considerable space is devoted to reviews of software and hardware, and there's comment from experienced users. An electronic on-line game called *Shades* enables you to interact directly with other adventure-playing fans. You can even save your computer character. This enables you to get on with the game – improving your rank, from lowly serf to mighty wizard. Software is also included in the database. This can be Public Domain or demos of commercially available packages, so you can try before you buy.

■ For more information on Prestel and Micronet, phone free on ☎ 0800 200700.

### Cix

The great thing about the communications revolution is the different ways people are using the technology to provide on-line services. Cix is one of the most remarkable services available in this country. It came about because of the restrictions of home grown bulletin boards. More than just a reservoir of PD programs, it's a meeting place for computer enthusiasts.

Cix is arranged in a large number of "conferences," covering a huge variety of subjects – everything from public toilets to getting the most out of your model aeroplane. Subscribers simply leave a message on any subject which takes their fancy and other people can then reply. To access a conference you type "join" followed by the name of the conference. You can then step backwards and forwards through messages or leap straight to a certain position and input your message. Just type "comment" and enter the text. If there's nothing you like the look of, Cix enables you to start up your own conference – with you as the moderator. With this service you can quickly find yourself in daily contact with hundreds of people.

You can send electronic mail to any Cix user. You simply type "send" and the user's name and then enter your message. The next time the user logs on, he is told that he has some mail and can then read it. You can also download these letters onto your ST. You can even write letters on your word processor and then upload them onto the database.





Each topic or conference can have files associated with it. If the conference is on desktop publishing, for instance, there may also be a series of examples, utilities, updates or images ready for you to download. To see all the files associated with any one topic, you simply type "flist." You can then display detailed information about all the files on-screen and then analyse them. Some of these files may be archived so that they take up less data space, but you can similarly view or download the contents of these archives if you want.

If you yearn for a bit of real chat with another ST owner, you can enter the Chat section of the database. From here you can confer in real time with people who are logged on at the same time as you. The messages you type in can either be read generally or sent privately to a particular chatline user.

Cix isn't restricted just to this country. Using the Usenet facilities, you can send messages right around the world. The Usenet section is split into a series of

newsgroups, with messages, views and information from global Cixers. These messages often end up in on-line newsletters such as *Z-Net* or *ST Report*.

■ For more information about Cix call ☎ 081 390 8446.

### Bulletin Boards

If services such as Cix or CompuServe are run by professionals, bulletin boards are definitely run by hobbyists. Bulletin boards are small on-line services run by computer enthusiasts from home. Very rarely do they charge you to log onto their computers – they run BBSs because they enjoy chatting with fellow enthusiasts.

There are a great many bulletin boards catering exclusively for the ST user. This means that there are always messages, news and files waiting to be accessed. More often than not it's the very cheapest way of getting software or news – and they're constantly updated, so it's easy to stay in touch with them as well.

The files held on a bulletin board are either Public

## LOGGING ON WITH VANTERM

You've taken the modem out of its box, plugged the RS-232 lead into the modem port and switched on. Now what? First of all, get hold of some comms software. We use *Vanterm*, one of the most popular a Public Domain comms programs. You might still have it from *ST FORMAT's* Cover Disk 17, or if you weren't getting *STF* then, you could try your local PD library (see the directory, page 83). The version you want is v3.8 although there are later versions.

Run *Vanterm* and the first thing you see is the front end of the program. From here you can perform a mass of off-line functions – configuring the program, transferring files and performing disk functions. The first thing to do is load up the *Vanterm* Configuration file. Simply pull down the Config menu in *Vanterm*, then just click on "Load Configuration." The dial directory is now full of numbers for you to try out.

As an example, try dialling the Bath BBS. A word of warning, though: if it's your parents' phone

make sure you have their permission first. Of course, if it's you that's paying the phone bill, make sure you remember the number – after all, when your itemised bill comes through and you've forgotten about it and complain, you're going to look pretty silly.

Anyway, move the mouse pointer up to "Dial" and click on "Dial Number." A new screen showing all the numbers available now appears. Click on Bath BBS and if your modem has an auto-dial facility (most do nowadays) it then calls the number.

After a few seconds, providing the board isn't engaged, the message "Connect" and a baud rate should appear. The intro screen should then scroll up. Since you're a new user you now have to go through the registering process. After this you're given some access time and an ID number with which to wander around the board.

Try downloading a file now. From the main menu of the board, press F to enter the file transfer screen. Hit L to list the files and

then press <Return> at the "Q.Q" prompt. Now choose library number two and hit <Return> again. You now start seeing files scroll up the screen. When you see one that takes your fancy, hit the X key and choose the Y-Modem file protocol. When the screen says "Start your transfer," click on the right mouse button and move the pointer up to "File Xfer."

Click on the Y-Modem receive. The program now asks you where you want the downloaded file placed, so click on the appropriate drive/folder and then on "OK." Now hit <Return> once and the file starts downloading.

When it's finished you're prompted to hit a key. You can then return to the file transfer section.

When you want to end the session, press either B or D and you're asked if you want to leave a message to the sysop. When the host computer prompts you to "Disconnect now," press the right mouse button, move up to "Functions" and then click on "Hang up."



Domain or Shareware. It's here where you can find many of the programs we include on the *ST FORMAT* Cover Disks. You can download as many of these files as you want, though the whole idea of a bulletin board is to put back as much as you put in, so be prepared to upload as well.

Since most bulletin boards enable only one user to log on at a time, the message base is the only way to keep in touch with other users. These messages can either be global (aimed at all the users), or private (aimed at one person in particular). This means E-Mail needn't cost you an arm and a leg.

■ If you want to subscribe to CompuServe ring their British office on ☎ 0800 289458 for details of subscription rates. You have to pay an hourly rate for all the time you're on-line as well as the actual American on-line time. Of course you also have to pay for the phone call to your local node.

■ You have to pay a quarterly charge to subscribe to Micronet and Prestel. Connect charges are free at off

peak times (6pm-8am Monday to Saturday and all day Sunday) but otherwise it costs you at a rate charged per minute. What's more, once you subscribe you're entitled to a copy of the quarterly magazine, Log On.

Electronic mail and incoming Telex messages are free but outgoing Telex costs depend on how much text you're dealing with. This starts from 50p per page.

### Your own bulletin board

If you haven't let the cost of getting into comms put you off, why don't you set up your own bulletin board? The first thing to do once you've got your kit and software together, see opposite page below, is to configure your software tailoring the elements such as the log-on screen and the main areas of the board. You have to decide who you want the board to cater to. For example if your hobby is fishing, you could set up the board something like this:

### The greetings screen.

Something like:

## SOME BULLETIN BOARDS FOR YOU TO TRY

BULLETIN BOARD	NUMBER	BAUD
Bath BBS, Bath, Avon .....	0225 840 060 .....	2400
Brunel BBS, Bristol, Avon .....	0272 584 352 .....	2400
Cobra Stretford, Manchester .....	061 864 3295 .....	2400
Eldorado, Coventry, Midlands .....	0203 552 590 .....	1200
Internet, Aylesbury, Bucks.....	0296 395 935 .....	V32/HST
Invicta Conference SVS, Hatfield.....	0622 890888 .....	2400
King of the Castle .....	0233 620228 .....	2400
Lightfingers Place, Bournemouth.....	0202 485 723 .....	2400
Micro-Mola, Plumstead, London .....	081 316 7402 .....	2400
My Little Phoney, Oxford .....	0865 773 277 .....	2400
ST Brum BBS, Birmingham.....	021 427 8077 .....	2400
STar-Tel BBS, Hertfordshire .....	0707 263 695 .....	12/75
STun - Euronet HQ, Stockport .....	061 429 9803 .....	2400
Scary MonSTer, Twyford, Berkshire .....	0734 320 297 .....	9600
Sheffield Alt Sol, Sheffield .....	0742 325 232 .....	2400
Sorcerer's Dungeon, S'well, Nottingham .....	0636 815 705 .....	2400
Starbase One, Brixton, London.....	071 733 3992 .....	2400
The Bath TUB, BBS Bath, Avon.....	0225 480 103 .....	2400
The Domain, Carshalton, London .....	081 773 2422 .....	2400
The Hotel BBS, Rochester, Kent.....	0634 831 389 .....	1200
The Magic Castle, Birmingham .....	021 430 3761 .....	2400
The Penthouse, Whitehall, London .....	071 930 3903 .....	2400
The Silver Link, Telford, Shropshire .....	0952 677 002 .....	1200
The Spinning Disk, Grays, Essex.....	0375 851 046 .....	2400
The Tavern, Finchley, London .....	081 445 6514 .....	2400
The Village, Bromley, Kent .....	081 464 2516 .....	2400



- Welcome to the Fish BBS in Oceanville
- Your Sysop is Reginald Haddock
- This board is running on a 520 STFM with a 40MByte hard drive and a 2400 baud Amstrad modem
- Please logon: (new users type 0)

#### The main menu

- [B] Bulletins: the best fishing grounds in the country
- [E] Electronic Mail: leave a letter for a fishing friend
- [M] Message base: put a notice up on the general access board
- [F] File transfer: upload or download some fishy software
- [Y] Yell for the Sysop: have a chat with the Big Bar-racuda himself
- [G] Games: play "It was this big, I kid you not" or "Mine's a pint of maggots"
- [N] News: Read the most up to date fishing news in the country
- [S] Shop: display your tackle for all to see
- [\*] Change your password or display characteristics

- [C] Cast off (log off)

#### The sub menus

The file transfer section which can include only Public Domain or Shareware software (nothing commercial) could be confined to your area of interest. The news section can be a selection of upcoming meetings and shows, or information about recent notable events (in this case, big catches or competition wins, for example) – whatever your board's users need to know.

#### Electronic Mail

Finally, mail between two parties can simply be left on the board. This means you can stay in contact with someone else even if you log on to the board at totally different times.

## THE ST COMMS KIT LIST

### Some decent software

Your BBS has to be worth connecting to which means getting regular new supplies of good PD software. That means high phone bills for connecting to boards in Germany and the USA where a lot of ST software is produced.

### A computer

Having already had the good sense to invest in an ST, you have the perfect heart of a bulletin board. Any size or configuration of ST does the job very happily.

### A modem

Essential to decode the signals the other computers send down the phone line. An auto answer modem, one which can turn itself on is preferable or you'll have to sit next to the modem 24 hours a day connecting people. Generally, you should buy the best modem you can afford – the more features it has the easier it is to log onto your board. A slow modem which only operates at 300 baud is not

going to be a lot of use: go for 2400 baud and you can cater to a far wider user base. An excellent cheap modem is the Supra 2400 modem (£149.99 from Supra ☎ 081 566 6677).

### A hard drive

Sounds like an expensive luxury, but if you're serious about doing this, a 65MByte hard drive is essential. It is technically feasible to run a bulletin board from two floppy drives, but doing so severely restricts the external users' access speeds and the amount of electronic information you can send and receive – both vital considerations. Once again, go for the largest capacity you can afford. Have a look at the Buyer's Guide on page 147 to see what would suit your needs best.

### A (second) phone line

If you want your board running 24 hours a day, you need another incoming phone line to your house. If you don't already happen

to have a spare line, getting a new one installed costs £160 plus the quarterly standing charge. You can, of course, just run your board from, say ten at night until eight in the morning by using your existing phone line and plugging in the modem just as you would a telephone.

### Comms software

There are dozens of bulletin board packages in the Public Domain which is the place to start if your budget is limited. All the three packages below are available from the ST Club, ☎ 0602 410241 at a cost of £1.45.

■ *Freeze Dried Terminal* is Shareware, has an easy-to-use graphical interface and a more exciting title than the other two.

■ *Uniterm v2.0e* has more features than you're ever likely to need.

■ *Vanterm v3.8* is particularly easy for beginners to use and also has a built-in Help function. It is also on the disks that are with this book.





# GAMES PEOPLE PLAY

**T**he ST range of computers are just perfect for producing excellent games, as has been shown time and again. Games programmers have exploited the incredible potential of the ST in terms of graphics and sound, as well as concentrating on the perhaps more important elements of how well the control system works, how smoothly it scrolls, attempting to create an original concept that's addictive as well as having great gameplay, and whether the game is fast and has that "just one more go" element. Things can only get better with the Falcon's superior speed, graphics and CD sound quality.

In this chapter you can see some of the genres of games you're likely to come across, pick your Christmas present from our list of 50 *FORMAT* Gold rated games, check out some of those games you want your gift-bearing relatives to avoid at all costs and also have a look at those games you can play in mono. After all, if you use your ST for mainly serious close up work, you probably have a mono monitor – a game could lighten up your whole relationship with your ST, so check these out. Of course, £25 is a lot to pay for a game, so if you reckon these are just too costly for you, have a look at the chapter on the Public Domain on page 77 for some bargains.

## WHAT SORT OF GAME ARE YOU INTERESTED IN?

There are eight categories of games – although, of course, some games just firmly refuse to be labelled and placed in a box. (Tough, isn't it – 'cos if they're any good that's what is going to happen to them anyway.) The first three categories originate from classic arcade games:

### 1. Shoot-'em-ups

These games originated from the arcade game *Space Invaders*, the objective usually being to blast your way through loads of levels – Jeff Minter's *Llamatron* is an excellent example of this genre.

### 2. Platform games

These games are arranged on a series of platforms and, while the phrase "it's just another platform game" crops

up rather a lot in *STF*, they are very popular. *Elf* by Ocean is one of the best in this category combining platform leaping with exploring and experimenting.

### 3. Cutesy games

Quite simply, these are pretty childish and often in a cartoon style – *Baby Jo* by Loricel (also on Cover Disk 30) is a prime example. The baby's cute and is attacked by nasties like spitting daffodils.

### 4. Strategy games

These can take literally days to play and complete if you give them the attention the best deserve. *Populous* by Electronic Arts is the best-selling of all the strategy games, involving manipulating your people so they do what you want – in a word, you play god.

### 5. Space-trading

An off-shoot of strategy games, you again have the objective of developing the resources of your empire by buying and selling assets but being based in outer space. *Imperium* by Electronic Arts is an excellent space-trading game.

### 6. Wargames

These are either map-based where you look down upon your opposing armies, or played from the standpoint of a general, as in *Waterloo* by PSS where you play either Napoleon or Wellington, acting on the knowledge they would have had.

### 7. Simulations

These games re-enact particular events and have developed as a result of professional aircraft simulations, although you can simulate all sorts of activities, from submarines to helicopters. *F19 Stealth Fighter* by Micro-Prose is an excellent flight sim.

### 8. Adventures

These vary enormously, having originated with purely text-based romps with lots of typing, but evolving through to purely graphical adventures where you click on pictures to pick them up or examine them – *Future Wars* by Palace being just such a game.



## 50 DISKS OF GOLD

Games you can't afford to miss are given the accolade of a *FORMAT* Gold – here are 50 games that have achieved such a standard of excellence over the past four years. We review every ST game that comes out, so you can be sure this is the definitive list.

### 1. Secret of Monkey Island

**US Gold** £24.99

Stunning effects, intriguing puzzles and superb humour, like the ghost pigs and Roger the talking tatoo make this a lush and intense game.

**Issue 23** 95%

### 2. Populous 2

**Electronic Arts** £29.99

The follow-up to the classic, this is the improved version with more effects like deadly swamps and impenetrable volcanoes as well as superb graphics. Essential.

**Issue 30** 95%

### 3. Lemmings

**Psygnosis** £25.99

A game no classic collection is complete without – it mixes a convoluted plot with easy-to-operate controls for a real long-term puzzler.

**Issue 24** 94%

### 4. Robocop 3

**Ocean** £25.99

An excellent licence conversion with brilliantly gory sound effects like death cries and car crashes. Violent with loads of variety over different sections.

**Issue 34** 94%

### 5. Fire and Ice

**Renegade** £24.99

Sizzling gameplay, cute graphics and addictive action in this excellent gripping adventure starring Cool Coyote on ice.

**Issue 38** 94%

### 6. Rainbow Islands

**Ocean** £19.99

This is one of those frustratingly addictive cutesy-style platform games – the type you swear by and curse at, usually when you mess it up.

**Issue 9** 93%

### 7. Sim City

**Infogrames** £29.99

The town planner's test-bed, this is a strategy game unlike any other. Mind you, it drives you mad when your residents get hit by disasters.

**Issue 12** 93%

### 8. Operation Stealth

**Delphine** £24.99

This classic adventure is packed with full-blooded cloak and dagger international intrigue. Has that all-important one-more-go feel to it.

**Issue 15** 93%

### 9. Captive

**Mindscape** £24.99

A fantastic and involving role-playing game set in a maze of corridors and bursting with puzzles. Superbly atmospheric pseudo 3D images.

**Issue 16** 93%

### 10. Battle Command

**Ocean** £24.99

A realistic tank sim with heaps of strategy elements.

**Issue 19** 93%

### 11. Killing Cloud

**Imageworks** £24.99

A flight sim which concentrates on action over simulation.

**Issue 22** 93%

### 12. Jimmy White's Whirlwind Snooker

**Virgin** £24.99

Smoothness, realism, superb sound effects (like when the balls pull ugly faces at you) makes this irresistible.

**Issue 27** 93%

### 13. Mega Lo Mania

**Mirrorsoft** £25.99

A superb god-game where you have to conquer a series of islands spread over ten epochs. Once the game takes you by the throat, you won't be able to let it go.

**Issue 27** 93%

### 14. Railroad Tycoon

**MicroProse** £34.99

This god-game is hugely enjoyable, complex, fascinating and detailed. Plan a railway line and crush anyone who dares to open another railroad.

**Issue 28** 93%

### 15. Dungeon Master

**Psygnosis** £25.99

An all-time favourite filled with 14 levels of monsters who thrash the life out of you. A unique trend-setter spawning plenty of lookalikes.

**Issue 31** 93%

### 16. Another World

**US Gold** £29.99

An experience not to be missed, this exciting and mysteri-





ous graphic adventure combines incredible animated sequences with absorbing gameplay.

**Issue 33** 93%

### 17. Tower of Babel

**MicroProse** £24.99

Weird 3D game with a strategy element that freaks out action fans and action elements too tough for strategists.

**Issue 5** 92%

### 18. Midwinter

**MicroProse** £29.99

This prequel to *Flames of Freedom* is an addictive strategy game set on an ice-bound island in the future. Can you fend off an attack?

**Issue 9** 92%

### 19. F19 Stealth Fighter

**MicroProse** £29.99

A massive package with stacks of gameplay, *F19* rates very highly in the flight sim scene. MicroProse knew more about the stealth planes than the US!

**Issue 12** 92%

### 20. Damocles

**Novagen** £24.95

Superb 3D graphics take you on a journey through space. The main ingredients are epic encounters, trading, suffocation, and plain disorientation.

**Issue 13** 92%

### 21. Kick Off 2

**Anco** £19.99

So good it spawned a revolution in football simulators.

**Issue 14** 92%

### 22. BAT

**UBI Soft** £39.99

A curious adventure with superb music and graphics.

**Issue 17** 92%

### 23. MiG-29 Fulcrum

**Domark** £34.99

Fly the advanced Soviet MiG in this realistic flight sim.

**Issue 20** 92%

### 24. Gods

**Renegade** £24.99

Hugely addictive platform game with great visuals.

**Issue 22** 92%

### 25. Flames of Freedom

**Rainbird** £34.99

Liberate islands in this strategic shoot-'em-up.

**Issue 26** 92%

### 26. Hunter

**Activision** £24.99

Strategy and frantic action in this 3D world.

**Issue 26** 92%

### 27. Exile

**Audiogenic** £25.99

An absorbing platform shoot-'em-up.

**Issue 28** 92%

### 28. Vroom

**UBI Soft** £19.99

The most responsive and playable racing game ever.

**Issue 29** 92%

### 29. Lure of the Temptress

**Virgin** £29.99

The first game to use Virtual Theatre as well as an interesting plot, character interaction, brilliant sound and graphics. It's great fun, too!

**Issue 35** 92%

### 30. Wizkid

**Ocean** £25.99

A platform cum puzzle game involving lots of collecting, brain power, bright graphics that's great fun to play including, as it does, "bottom humour and childish japes."

**Issue 37** 92%

### 31. Pushover

**Ocean** £25.99

Maddeningly compelling, brilliantly addictive, incredibly original – oh yes, and it's a platformy puzzle game.

**Issue 39** 95%

### 32. Cybercon 3

**US Gold** £24.99

Challenging 3D shoot-'em-up with superlative graphics.

**Issue 22** 91%

### 33. Carrier Command

**Mirror Image** £9.99

Strategy and arcade action combined in a classic.

**Issue 23** 91%

### 34. Armour-Geddon

**Psygnosis** £25.99

An arcade shoot-'em-up bursting with puzzles.

**Issue 26** 91%

### 35. Thunderhawk

**Core Design** £30.99

An action helicopter sim with a great introduction.

**Issue 31** 91%

**36. Knights of the Sky****MicroProse** £30.99

A first rate WW1 flight sim with the added incentive of battling your way through to the bitter end at the controls of a series of fighters. Great long-term appeal.

**Issue 34** 91%**37. Epic****Ocean** £29.99

A game of monumental destruction, all depicted in gut-wrenching 3D, set out there in the midst of space. Incredible music from Holst's *Planet Suite*.

**Issue 37** 91%**38. Parasol Stars****Ocean** £25.99

A very addictive cutesy arcade game involving lots of umbrellas with the chance to vary your strategies to get through the different worlds.

**Issue 37** 91%**39. Sensible Soccer****Sensible Software** £25.99

A realistic and beautifully animated football sim. A joy to behold.

**Issue 39** 91%**40. Xenon 2****Mirrorsoft** £9.99

The most playable vertically scrolling shoot-'em-up ever.

**Issue 3** 90%**41. Interphase****Mirrorsoft** £29.99

Work your way silently past intruder alarms in this unusual 3D strategy game. You need good control of your mouse or joystick to play this.

**Issue 4** 90%**42. Supremacy****Virgin** £24.99

Conquer space in this absorbing god-game.

**Issue 18** 90%**43. Prince of Persia****Domark** £24.99

Action/strategy game with superb animation effects.

**Issue 19** 90%**44. Powermonger****Electronic Arts** £29.99

An absorbing strategy war game with astonishing attention to detail and an engrossing range of options, all at your fingertips.

**Issue 19** 90%**45. Killing Game Show****Psygnosis** £24.99

Tough scrolling platform shoot-'em-up with puzzles.

**Issue 23** 90%**46. F15 Strike Eagle 2****MicroProse** £34.99

A flight sim suitable for beginners. Fast 3D graphics.

**Issue 26** 90%**47. Magic Pockets****Renegade** £24.99

Humorous cutesy platform frolics.

**Issue 27** 90%**48. Utopia****Gremlin** £29.99

Build a perfect world in this icon-controlled god game.

**Issue 29** 90%**49. Mercenary 3****Novagen** £29.99

Explore the Gamma solar system in this follow-up to

## YOU DON'T WANT THESE FOR CHRISTMAS

**PROSOCCER 2190****Vulture Publishing** STF 17: 12%

Dull attempt at some sort of future sports sim. Less pizzazz than a split end and all the graphical splendour of a cardboard box.

**STARWRECK****Castlesoft** STF 7: 15%

Supposedly humorous attempt at parodying the '60s SF show, written in STAC by someone who thinks Benny Hill (is it still wrong to speak ill of the dead?) is a real riot.

**TREBLE CHAMPIONS****Challenge Software** STF 14: 19%

Perhaps a sixth form computing project written about 1979. Just not playable.

**WARP****Grandslam** STF 7: 20%

Fly your three pixels around an empty playing area. Don't ask why - no one knows.

**WILDLIFE****New Deal Productions** STF 14: 21%

Shoot the poor harmless furry animals.



*Damocles*, now with the added (dis)advantage of public transport and inhabitants. Great gameplay.

**Issue 32**

**90%**

### **50. Ishar - Legend of the Fortress**

**Daze**

**£29.99**

A fantastic RPG which is really just a good excuse for a jaunt around the land clobbering things and collecting the goodies. A belter of an adventure.

**Issue 37**

**90%**

### **MONO-COMPATIBLE GAMES**

You know that mono monitors are ideal for applications that require high resolution or fine detail, like desktop publishing or music, and indeed you may well only have a mono monitor to pursue these aspects of your ST. But that's not all you can do with them – you can also play games. It's not just any game you can run, though – games have to be specially programmed to run in mono because of the inherent differences between colour and mono monitors. Colour monitors can only display low or medium resolution screens – the kind you usually need for games – whereas mono monitors only display high resolution screens. Inside a colour monitor, there are three small guns which fire electrons at the screen. One of these guns makes the screen glow red, one of them green and the other blue. By combining these three colours in different proportions you produce the colours your ST uses.

In a mono monitor, however, things are slightly different – there is only one gun which makes the screen glow white. Since there is only one gun and one set of electronics to run it, mono monitors are cheaper than colour monitors, which have three guns and the corresponding electronics. Check out the Buyer's Guide on page 147 for details of those low prices. The low costs of mono monitors isn't the only thing that makes them special compared to colour monitors or TVs, though.

#### **Why are they so good?**

■ They display high res screens so you can see more detail than low or medium res screens. They're essential for programs where you need to display a lot of detail on-screen at once – in DTP, for example, if you lay out a page in medium resolution, you can only see half the area you can see in high res, making it difficult to get an idea of what the finished page is going to look like.

3D Computer Aided Design (CAD) programs are often used to show complicated wire-frame structures in which every wire can be seen in high resolution, but in medium res the individual wires run together and just end up looking a mess.

■ Mono monitor screens have a matt finish which cuts down glare and makes them easier on the eye. They also have less flicker than colour monitors since mono moni-

tors are redrawn more times a second than colour monitor screens – that is, they have a higher frame rate. This makes the screen display seem more solid.

■ They're good for your health, since they give off less radiation than colour monitors or TVs.

So, mono monitors are good things, right? What how about black and white TVs? No, sorry, black and white TVs work in a similar way to colour and cannot be used for high res screens. Considering they're so wonderful, why aren't games usually written in high res? Well, most game-players prefer their games in colour and do not use mono monitors. Few game-writers can justify the time and effort it would take to convert their programs to run in high resolution – after all, if you play games, the chances are that you're already going to have a colour monitor or, at the very least, a colour TV. Games which can run in mono are usually aimed at the sort of people (intelligent, attractive, sensible, fun-loving...) who have a mono monitor for some other reason.

There are quite a range of mono games for you to try... and don't forget to turn to the Public Domain chapter on page 77 to check out the bargain black and white PD games. So, then, here are the top ten mono games available in the commercial sector – arranged alphabetically, incidentally, if you're interested.

#### **Hitchhiker's Guide to the Galaxy**

**£9.99 Mastertronic/Infocom ☎ 081 960 2255**

Some years ago, Douglas Adams wrote a radio series called *The Hitchhiker's Guide to the Galaxy*. This soon developed into a book, a record, a TV series, a stage play, some more books and finally (and not before time) an ST game. Adams co-wrote the game himself, using the interactive fiction system developed by Infocom, the pioneers of text adventuring. The result is a classic text-only adventure packed with humour and obscure references to Douglas Adams's peculiar universe.

**STF Rating: 76%**

#### **Imperium**

**£25.99 Electronic Arts ☎ 0753 549442**

This is a "you've just been elected leader of a galactic empire" strategy game. Training in military strategy, political science and economics would help in ruling the universe. *Imperium* is a large, complex game with a friendly screen layout. You control your empire by entering information into boxes similar to the windows on your ST Desktop. Your aim is to conquer all other Galactic Empires, a task which is likely to take months of midnight oil burning even to half finish.

**STF Rating: 79%**

#### **Ishar - Legend of the Fortress**

**£29.99 Daze ☎ 071 490 2944**

A classic role-playing game with plenty of mighty war-



riors, mythical wizards and ravening princesses. Along the way you can recruit up to four other homicidal maniacs to join you, then you all go off to tackle a different selection of homicidal lunatics, traitors and invisible things, disguise yourself and generally have a thoroughly groovy time of it all.

A highly polished state-of-the-art version of an old favourite. Highly recommended.

**STF Rating: 90%**

#### **Leather Goddesses of Phobos**

**£9.99 Mastertronic/Infocom** ☎ 081 960 2255

*Leather Goddesses* is a classic text adventure from Infocom, recently re-issued by Mastertronic. It's a spoof of 1930s pulp science fiction and is not only stuffed with innuendo and double entendre but is also funny and well-observed. True to type, you're kidnapped from a bar in Ohio and taken to Phobos, where you must start your mission to save the Earth from the Leather Goddesses... Even in "Lewd" mode, *Leather Goddesses* is most tastefully crude, debauched and graphic.

**STF Rating: 78%**

#### **Loom**

**£30.64 Lucasfilm/US Gold** ☎ 021 625 3388

Wield vast magic in a fantastic world on the brink of apocalypse in an age when dragons ruled the twilight sky. Yep, this is a fantasy game. You play young Bobbin of the Weavers' Guild, setting out on a mission through some superb cartoon graphics to save the universe. *Loom* is a big game featuring some long animated sequences which, although impressive, do slow down the gameplay. The presentation is slick but the story sometimes slips into silly sounding melodrama.

**STF Rating: 83%**

#### **The Magnetic Scrolls Collection**

**£30.99 Virgin/Magnetic Scrolls** ☎ 081 960 2255

*Corruption*, *Fish!* and *The Guild of Thieves* make up this collection of three graphical adventures. Playing the games is made easier by the addition on-screen of map, compass, inventory and "items in room" windows. You enter your commands and get descriptions in a text window and can see many of the locations in a graphics window. The games cover an odd variety of subjects: *Fish!* offers upbeat humour, *Corruption's* a thriller and *The Guild of Thieves* has you stealing as much as you can to gain entry into the aforementioned guild.

**STF Rating: 77%**

#### **The Secret Of Monkey Island**

**£25.99 Lucasfilm/US Gold** ☎ 021 625 3388

*Monkey Island's* a massive adventure from Lucasfilm (you need at least 1MByte of RAM), sending you back in time to go swashbuckling with a crowd of scurvy

seadogs as you try to qualify as a bloodthirsty pirate. The game is entirely controlled by pointing and clicking your mouse and has better graphics than any other Lucasfilm game to date. The average playing time seems to be about 30 hours which might seem too long if it weren't for the finely tuned balance of humour and suspense.

**STF Rating: 96%**

#### **Proflight**

**£39.95 Hisoft**

☎ 0525 718181

This is the sort of flight simulator that pilots train on. Yet in spite of there being at least a million different options and controls, you can climb straight into the cockpit and get flying. After just a couple of weeks' training, you should be able to go into combat – and once you master that on your ST, you should be ready for the real thing! The manual tells you more about a Tornado than you're ever likely to want to know, including a snazzy cutaway diagram of a Tornado, and it also extensively covers flight theory, advanced flight theory and where you find the eject button if it all gets to be too much for you.

**STF Rating: 88%**

#### **Starglider 2 (Virtual Reality vol 1)**

**£29.99 Elite**

☎ 0922 55852

There's a whole start system of planets and moons in solid 3D for you to explore, but first you have to get proficient at flying your Icarus Patrol Craft if you're going to survive more than a few minutes. Your Patrol Craft can be controlled by mouse or joystick (using the mysterious One Hand Mode) but somehow always seems to fly like a cornflake packet in a hurricane. This isn't helped by the torrent of missiles that home in as you're buffeted about.

*Starglider* comes as part of a collection containing *Midwinter*, *Carrier Command*, *International Soccer Challenge* and *Stunt Car Racer*.

**STF Rating: 77%**

#### **Wonderland**

**£30.74 Virgin/Magnetic Scrolls** ☎ 081 960 2255

State-of-the-art text adventuring with utterly stunning graphics and a truly wonderful scenario. Magnetic Scrolls have taken Lewis Carroll's *Alice in Wonderland* as a starting point and then built it into a fantastic adventure where knowing the book might help a little but is certainly not necessary. The adventure is displayed in a series of windows containing text, graphics, a map, inventory, items in room and a compass. The drop-down menus at the top of the screen enable you to select commands so you can play the adventure virtually just by using your mouse.

**STF Rating: 90%**



# CALL ME A CHEAT?

**A**re you an all-round boffin who, semi-awake, slaughters all the latest releases while casually tinkering with calculus homework? Or perhaps you stumble precariously through each of your games, full ashtray and pile of fingernails at your side, thinking, "I'm getting old and I haven't completed a game for ages!"

Go on, just do a quick count of your titles – how many have you completed? Or how many have you, fuming with frustration, assigned to that battered cardboard box known as the dust-gathering area? If you do find yourself falling into the latter category, then perhaps you've considered turning to those obscure passwords and phrases included by the programmer to assist players with dodgy hand to eye co-ordination. Collectively, they are known as the cheat mode and they are the reason for Gamebusters.

## Wibble wibble wibble

Of course, there's nothing actually wrong with cheating – complete a game suspiciously quickly and you get called a cheat anyway – so why shouldn't you stoop to that level? What have you got to lose? The stigma of sitting at your ST like a sad and pathetic individual, furiously typing in "Cabbage" and "Wibble Wibble Wibble" has, largely, been eradicated. You are no longer going to be institutionalised or written off as a dangerously ill lunatic. So, go ahead – or, as the not-very-well-known saying goes, "Cheat To Complete!"

## Robert Maxwell

Cheating has a long and exciting history. Famous cheating antics appal us, titillate us and make us wonder why anyone ever bothered to invent rules in the first place. Diego what-do-you-think-this-is-volleyball?" Maradona, Ben Johnson, Robert Maxwell – er, the bloke who publicised Hitler's "diaries" have all (apart from Robert Maxwell, who is dead) reluctantly slouched, bashful and side-stepping, into the annals of history. They have all gone down as people who decided to dispense with the more, ahem, *conventional* methods and, instead, chose the way of the cheat, the charlatan, the quack, the fake, the scoundrel, the rogue, the cad...

## Incompetent

But why the spurious activity? Do these people feel such a strong need to prove themselves that they have to offer results under any circumstances – even if it means not exactly playing entirely fair? Or, translated into the wonderful world of ST gaming, are most games just too hard to complete without cheating? Surely that's why the programmers include the cheat modes in the first place; because they find it impossible to get the difficulty balance right and so need to include something to assist the incompetent or the desperate.

## The meaning of existence – revealed!

And another thing, what's all this moaning about not being able to get to the end of a game, anyway? Games used to be like *Space Invaders* and *Galaxian* – games that you could just play and play and not give a ZX81 about whether the scenario was finite or infinite. Well, games have moved on since then. Just as we no longer sit back in front of the wireless or wander happily around the streets, whipping our tops and spinning our hoops, we also no longer drool at the thought of such simplistic, one-dimensional zappers with in-built two minute attention-spans and graphics that would be mocked by CEEFAX. The key word now is complexity. Games like *Monkey Island* and *Another World* have it, but, at the same time, they don't sacrifice their playability or originality. It is from these kind of games that you expect a lot more for your efforts, and rightly so. You wouldn't want to pay three quid to get into a cinema, sit through the film and, just as it's getting really good building up to a magnificent climax, it suddenly stops with no ending at all, no heartwarming reconciliation or baddies getting their come-uppance. All you see is a blank screen.

## Why? We asked the programmers

We got in touch with some ST games programmers and asked them just why they included cheat modes in their games. These were their responses:

### Andrew Braybrook (Graftgold)

Responsible for *Fire And Ice*, *Rainbow Islands*.

"I try to aim my games at everybody. I want them to be easy early on – to get people hooked – and hard at the



end... A slope. It's actually very difficult to get right. As for myself, I'm not the greatest games player in the world and I know that there are people out there who are a lot better than me, but I have the advantage of knowing how it all works; it's a sort of demystification.

"As for cheat modes, I've never actually put a cheat mode in a game. Basically, we're under pressure from publishers to make it easy for them to check that the whole game is there, and it's the same with reviewers. So often cheat modes may come about as a purely practical consideration to ensure that the game gets a fair and thorough airing."

**Kevin Bulmer** (Dimension Creative Designs)

Responsible for *Corporation* and *Legends of Valour* with Ian Downend.

"It's hard. We start things off by actually making the games and, if you spend over a year working on something, you tend to get very good at it, so you make it harder and harder... We had our own people testing *Legends of Valour* and so we got feedback from them as to its difficulty. Often, we think that it's too easy and other people think it's too hard, particularly with puzzle-games; that's because, being the programmers, we devised the puzzles and we know how to do them!

"You don't want to exclude people and so it's important to pitch your games at a broad age range."

**David Jones** (DMA Design)

Responsible for *Lemmings*.

"The cheat mode came about as a purely practical aid to testing the game. As for incentives, at the end of *Lemmings*, you're presented with a digitised picture of the programmers and sampled clapping and cheering. But not many people actually make it, so you don't want to spend too much time on it. There's a fine balance between providing a decent ending and not letting it chew up too much memory."

**Martin Kenwright** (Digital Image Design)

Responsible for *Epic*, *Robocop 3*.

"We've been criticised for our games being too easy and too hard; criticisms which are often levelled at the same game - *Epic* being a good case in point. It really is impossible to create the right pitch.

"Cheat modes are practical inclusions for our game-testers. Hackers disassemble the code and look for strings of text. We do leave in messages explaining that it's against the law, but it still goes on. Often, a cheat mode can be synonymous with the game name; in some cases, it can become more famous than the game itself! As for making the cheat mode easy or difficult to find; with *Epic*, we told Ocean and they put the <Enter> cheat in the manual. We wanted to make it more accessible because we decided that the game was just too difficult.

## TEN THINGS TO SAY BEFORE YOU RESORT TO GAMEBUSTERS

1. There's something seriously wrong with this joystick!
2. This game just isn't pitched correctly, difficulty-wise.
3. You've played this before, haven't you?
4. (Yawn) God, it's so late. I'm much too tired for this.
5. Ah! I knew there was something wrong - I had the auto-fire switched on!
6. I shot that! Did you see the explosion?
7. Check the port, will you? It's definitely faulty.
8. I was miles away! Dodgy collision detection!
9. The light from the window's shining on the screen.
10. Look, really I'm telling you, this joystick is awful.

"We are worried about the shelf-life of a game which can suffer as a result of cheat modes being publicised too early, but that's way below the piracy issue on the list of anxieties."

**Jeff Minter** (Llamasoft)

Responsible for anything with the word "Llama," "Camel" or "Mutant" in the title which renders you absurdly high on adrenaline-rush.

"I try to offer options for players of varying playing abilities. I like the idea of gradually increasing difficulty. My games have been criticised for being too difficult, but that's unfair because they're always easy at the outset and this gives the player the chance to become familiar with the game before it gets maniacally demanding."

### The lowdown

We can conclude from those observations that cheat modes are included for the benefit of the software house's play-testers and not for players - although you might feel that you're attempting a mini battle of wits against the programmer in trying to find the cheat... without hacking, of course, because it's illegal.

Games are *not* too hard. Granted, there are people with differing co-ordination skills and some people enjoy games but just don't have the aptitude to effortlessly progress like the hardened types - and it's important for programmers not to alienate these groups. They have to spend a little more time on aiming the difficulty-pitch of their games a bit more accurately. A shoot-'em-up like *Llamatron* quickly ascends into utter mayhem but, as the





Yak pointed out, its initial waves have a fairly serene quality, enabling the less able to enjoy, appreciate and perhaps even – gasp – get better at the game. Surely, this should be a major requirement of all games, enabling the player to be casually drawn in, giving him the opportunity to experiment and explore the workings of the game before being bombarded with all manner of nigh-on invincible flying and blasting thingies.

### **OK, we give in**

Still not convinced that you should be able to complete games without a little help? Then worry not, here's a selection of cheats for you to get winning... take it away!

### **ACTION FIGHTER**

#### **Firebird**

While playing the game press Q a couple of times to get more weapons.

### **ADDICTABALL**

#### **Alligata**

Before pressing the space type IJC. To start on a certain level, press the appropriate F-key.

### **AFTER THE WAR**

#### **Dinamic**

During the first stage, press <Alternate> and B and 1 for infinite energy and time. Alternatively, press <Alternate> and M and 1 to jump to the second stage.

### **AMC**

#### **Dinamic**

Access codes: NOSTROMO, DISCOVERY, ENTERPRISE, DAGOBAH, REPLICANT, KRULL, METROPOLIS.

### **ARMOUR-GEDDON**

#### **Psygnosis**

When you start a game, go to Messages from the HQ screen. There's only one line of text here – DAY1 in yellow. Holding down the left mouse button on the top left of this text produces a continuous bleeping noise. Press <Esc> while you do this and you get a message saying "YOU WOULDN'T LET IT LIE!" You're now invincible and have an unlimited supply of whatever you load up with. You and your undercarriage can still collapse, but the enemy can't destroy you. When you've crashed a vehicle, go to EQUIP and click on its former vehicle icon. You can then drag back into the stores any unused equipment by taking it back as you would normally.

### **ARMY MOVES**

#### **Dinamic**

For part two, the code is 101069. In part one, press <Alternate>, 1 and D for immunity. For the same effect in part two, press <Alternate>, 1 and J.

### **ATOMIX**

#### **Rainbow Arts**

Press <Help> to enter password mode, then enter TIME for a frozen clock.

### **BAAL**

#### **Psygnosis**

Enter LOVEBUNDLE as your name in the high score table to use the game's trainer mode.

### **BACK TO THE FUTURE 2**

#### **Mirrorsoft**

First pause the game, then type THE ONLY NEAT THING TO DO (including spaces). You should have infinite lives and pressing Z skips a level.

### **BART SIMPSON vs THE SPACE MUTANTS**

#### **Ocean**

On the title screen, while the family are watching TV, type in COWABUNGA – you have to be pretty nippy about this. Now you're invincible and have an infinite time limit. Or type in EAT MY SHORTS to skip levels.

### **BEACH VOLLEY**

#### **Ocean**

Type in DADDY BRACEY. Now pressing F1 skips levels.

### **BLOODWYCH**

#### **Mirrorsoft**

Buy something as normal until you pay the creature. Put an object in the transfer slot instead of money. The creature moans but gives you what you want.

### **BLUES BROTHERS**

#### **Titus**

For infinite lives, all you have to do is type HOULA then press the Spacebar on the screen where you choose between Jake and Elwood.

### **BOMBUZAL**

#### **Imageworks**

Level codes: ROSS, TREE, RATT, LISA, SINK, DAVE, BIKE, IRON, BIRD, BIRD, LEAD, TAPE, WEED, VASE, RING, PILL, GIRL, SPOT, GOLD, PALM, OPAL, LOCK, SONG, SAFE, FIRE, WORM, LAMP.

### **BSS JANE SEYMOUR**

#### **Gremlin**

Level codes: SLUMBER, INTEREST, BULKHEAD, SHOWROOM, MUSHBASH.

### **BUILDERLAND**

#### **Loricel/Infogrames**

The level codes are

Level One: BUILD1



Level Two: YOTTHA  
Level Three: BEARBY  
Level Four: OCTOPY  
Level Five: DIABLO  
Level Six: GOTIU

**CISCO HEAT****Imageworks**

For infinite time, pause the game and type TIME UP followed by <Return>.

**CONTINENTAL CIRCUS****Virgin**

At the starting line when the first red light comes on, push the joystick forward, pull back for the second and push forward for the green light to get off to a good start.

**CRACKDOWN****US Gold**

Pause the game and enter the word SMURF. Pressing F1 and F2 now boosts both players' lives.

**CYBERNOID 2****Hewson**

Type NECRONOMICON on the title screen for infinite lives.

**DAYLIGHT ROBBERY****Electronic Zoo**

Try these level codes on STF 29's Cover Disk demo.

Level One: FIRST  
Level Two: DRILLS  
Level Three: ZOOOOO  
Level Four: BUSHES  
Level Five: MAYHEM  
Level Six: XAMPLE

**DEFENDER 2****Arc**

Type RAVEN while playing. After that I toggles invincibility and N teleports you to the next level.

**DEUTEROS****Activision**

Press <Caps Lock>, then press C twice. Two numbers appear and you'll find that anything you now design is available to you without you having to go to the trouble of building it. In addition, you have an infinite number of each item.

**DRAGON BREED****Activision**

After a level, and while the next one is loading, hold down the left mouse button, <Delete> and <Help>. When

the screen flashes, you can skip levels by pressing one of the keys on the keyboard.

**DRAGON'S LAIR 2****Empire**

Press <Return> on the credit screen then type GET MOR-DROC DIRK (including spaces).

**DYNAMITE DUX****Activision**

Type CHEAT on the title screen to get infinite lives. F1 to F6 skips levels. Enter NUDE if you want to play the sub-game.

**DYNASTY WARS****US Gold**

Type CHEAT MODE on the title screen. While you're playing, F2 skips a level.

**ELF****Ocean**

Type CHOROPOO to get 99 pets - handy at shops.

**ELITE****Firebird**

To hyperspace across the galaxy on two light years of fuel, do the following. Leave the space station and call up the galaxy chart. Select a planet within your fuel range, then move the pointer over the planet you really want to visit. Start the hyperspace countdown, then keep pressing 6 until the pointer is locked on your planet - or very near it. Be careful not to overshoot it. Then wait for the countdown to finish - and lo and behold you've jumped right across the galaxy.

To get more cargo than is available, buy all the available cargo. Save the game to disk, reload and five more tonnes appear. Repeat as needed.

**E-MOTION****US Gold**

On the title screen, type E-Motion. Now F1 advances a level, F2 advances ten levels, F3 goes back a level, F4 moves back ten levels.

**ENCHANTED LANDS****Thalion**

On the intro screen type TCB RULES FOREVER and the screen should flash. Pressing F3 enables you to enter an edit and F2 followed by a space takes you to the end-of-level guardian.

**E-SWAT****US Gold**

Type JUSTIFIED ANCIENTS OF MU MU while the game is paused - the border flashes and you get 99 lives.



## **F-15 STRIKE EAGLE 2**

### **MicroProse**

To be invulnerable, have infinite everything and still get medals: load and run as normal until you choose the skill level. Choose demo, pick a location, then go on as normal. The plane is now flying along under the ST's control. To refill everything, hit R. Note you can still crash but enemy missiles don't hurt you. Complete the mission, land safely and you get loads of points and medals - unless you crash, of course.

## **FANTASY WORLD DIZZY**

### **Codemasters**

On the high score table enter IMMORTAL to gain infinite lives.

## **FINAL BLOW**

### **Sales Curve**

When fighting, pause the game and press F10 six times. Unpause for infinite energy.

## **FLOOD**

### **Electronic Arts**

Enter the password MEEK to pick any level you want.

## **GHOSTBUSTERS 2**

### **Activision**

When the word ACTIVISION comes onto the screen, press <Control> and <Alternate> and S and U to get a variety of effects.

## **GHOSTS AND GOBLINS**

### **Elite**

On the credit screen, type DELBOY. The words CHEAT MODE ACTIVATED should appear and you are now invincible.

## **GREMLINS 2**

### **Elite**

Type SINATRA into the high score table for infinite lives.

## **HAMMERFIST**

### **Activision**

When you've got a high score, enter TAEHC OT TNAW (including spaces). F7 now takes you to the next level.

## **HEIMDALL**

### **Core Design**

On a 520 STE press K in combat to kill the enemy, keep it pressed down and then punch. Press K on the inventory screen to open the door without using the key.

## **HITCHHIKER'S GUIDE TO THE GALAXY**

### **Infocom**

For the Babel Fish, hang your gown on the hook, cover

the drain with the towel, put the satchel near the panel, put the junk mail on the satchel, press the dispenser button. Now you can have the pleasure of a poetry recitation!

## **HORROR ZOMBIES FROM THE CRYPT**

### **Millennium**

Hold down M and "," and "." for infinite lives.

## **HUNTER**

### **Activision**

Make the game completely pointless by having all the coordinates to hand.

Security pass:	90, 153
Master key:	164, 169
Old man:	181, 197
Second man:	99, 61
Third man (in rock):	195, 119
Professor:	49, 115
Prisoner:	135, 239
Injured man:	10, 36
Antibiotics and saw:	151, 121
Monk (in tree stump):	85, 174
Scroll:	91, 173
Disk:	100, 225
Computer:	244, 199
General's bunker:	135, 239
Officer's red uniform:	190, 65

General tips: always have at least one fuel can, and, if possible, one medical kit, wherever you go. The best vehicles are hovercrafts, helicopters (the faster kind), rocket boats and jeeps. Always try to have a vehicle that can travel over water, unless you're on a large expanse of land. Use your aerial observation units when approaching a target, because if there are SAM launches and you're in a helicopter, it may be wise to find a boat to go in with. Always stay at a high altitude when travelling through enemy territory. Always take the safest route, not the quickest. And finally, only swim short distances.

## **IVANHOE**

### **Ocean**

Pause the game, then type in JC IS THE BEST <Return> (including spaces). Unpause. N advances you a level, <Delete> kills all on screen, "," for extra levels. <Control> kills the big guy on bonus screens.

## **JIMMY WHITE'S WHIRLWIND SNOOKER**

### **Virgin**

When only the colours are left on the table, you can go for any colour without fouling by pressing the corresponding keys 2 to 7, depending on the value of the ball you want to hit. This is very useful if you're snookered, but you do only get the points of the ball you were "on."



### JUG

#### Microdeal

On the title screen, hold down <Esc> and click the mouse pointer on the right edge of the picture for infinite energy and nine lives.

### JUMPING JACKSON

#### Infogrames

Some codes to try: KAYLEIGH, ALCHEMY, OCTOBERON, TANGRAM, INCUBUC, SIRIUS.

### KICK OFF 2

#### Anco

Keep pressing R when taking a penalty. This shows you where the player's going to kick the ball.

### KID GLOVES

#### Logotron

Pause the game and type in RHIANNON and hit F9. Unpause and you should be invincible.

### LEMMINGS

#### Psygnosis

On the title screen, type FQUIGGLY to activate the cheat modes.

### LEISURE SUIT LARRY

#### Sierra On-Line

This works for any of the three games. Select Load Game, but instead of using a saved game disk to load from, insert game disk 1, 2 or 3 and you can access various parts of the game instantly. Also, if you get stuck on the very American questions at the start, just press <Alternate>X to skip them.

### LOTUS TURBO CHALLENGE 2

#### Gremlin

Here are the level codes for this racer:

Stage Two:	TWILIGHT
Stage Three:	PEA SOUP
Stage Four:	THE SKIDS
Stage Five:	PEACHES
Stage Six:	LIVERPOOL
Stage Seven:	BAGLEY
Stage Eight:	E BOW
DEESIDE:	go to the next stage when you run out of time.
TURPENTINE:	the timer stays on for ten seconds.

### MAGIC LAND DIZZY

#### Codemasters

Type in DIAMONDS AND PEARLS to gain infinite lives. This can be done anywhere in the game. Remember to press P to unpause because typing this pauses the game.

### MEGA LO MANIA

#### Imageworks

Try these passwords:

EPOCH	PASSWORD	MEN
1st	UWIANCIYIWM	100
2nd	CKPCHDQGIHJ	170
3rd	BOYBZGHWSHT	225
4th	FWBDXZCDXBR	624
5th	BYPCHZNYUHN	630
6th	PDSDFOIAXHL	620
7th	YLHBDNKDIBB	600
8th	SMQCTGFDTL	580
9th	SUDCNQTMAMB	380
10th	RGFDHVYKGF	420

### MIDNIGHT RESISTANCE

#### Ocean

On the title screen, type SAMANTHALYON in order to gain infinite lives.

### MIDWINTER

#### Rainbird

During the game, switch from skiing mode to sniper mode, then go to maximum zoom. You should then be invulnerable.

### MONTY PYTHON

#### Virgin

Type SEMPRINI as your name on the high score table and you can choose to start on the level you died on.

### NAVY MOVES

#### Dinamic

786169 is the code for part two.

### NITRO

#### Psygnosis

Enter MAJ as your name to get 5,000 fuel and 50 credits.

### ONSLAUGHT

#### Hewson

On the map, press F9 and F10 together. You can now edit the map using the cursor and F-keys.

### OPERATION THUNDERBOLT

#### Ocean

Enter the following key sequences to have laser sights throughout the game:

Player one	F8 F7 F6 F5 F4
	F3 F8 F1 F1 F1
Player two	F8 F7 F6 F5 F4
	F3 F8 F2 F2 F2



## PANZA KICK BOXING

### US Gold

On the menu screen enter your name as PANZA. This enables you to change all the statistics to 99% and win.

## PIPE MANIA

### Empire

Level codes: BALL, BLOB, WILD, DOCK, GRIP, TICK, OOZE. Incidentally, try filling the screen with pipes to get a hugely big bonus score.

## PIT FIGHTER

### Domark

When playing, type LOBSTERS and then press keys 1 to 0 to go to any level you want. Press C to go to the championship match and L to visit the elimination match.

## 3D POOL

### Mirror Image

Here are the solutions to the 20 trick shots in *3D Pool*. All you have to do is set the position of the table to these figures and then just watch the results.

Shot 1	0768 024 63 10
Shot 2	1002 041 63 09
Shot 3	0032 100 63 00
Shot 4	0962 024 63 00
Shot 5	0512 024 63 10
Shot 6	0405 060 63 20
Shot 7	0018 061 63 20
Shot 8	0771 099 56 12
Shot 9	0932 024 63 11
Shot 10	0927 027 63 20
Shot 11	0751 100 16 20
Shot 12	0916 025 55 10
Shot 13	0004 054 58 20
Shot 14	0864 100 63 10
Shot 15	0084 076 12 00
Shot 16	0880 048 39 20
Shot 17	0372 100 63 10
Shot 18	0512 100 63 10
Shot 19	0601 024 63 20
Shot 20	no solution: define as you wish

## RAILROAD TYCOON

### MicroProse

Go to the regional display and type <\$> to top up your cash to \$500,000.

## RAINBOW ISLANDS

### Ocean

On the title screen of this game, type in one of the following codes. If the code is accepted, an enlarged version of the relevant object appears on the screen.

BLRBJSBJ Activates permanent Magic Shoes.

RJSBJSBR

Activates permanent Double Rainbows.

SSSLLRRS

Activates permanent Fast Rainbows.

BJBJBJRS

Activates Hint A.

LJLSLBLS

Activates Hint B.

SJBLRJSR

Activates Hint C.

LBSJRLJL

Activates The Book Of Continues so you can continue after Doh Island.

RRLBBJS

All hidden bonus objects become money bags.

RRRSBSJ

Activates the two above cheats.

SRBJSLSB

Increases the score counter to ten million points.

## RAMBO 3

### Ocean

Type RENEGADE into the high score table, then you can press 1, 2 or 3 to go to the corresponding level.

## RICK DANGEROUS

### Firebird

Press T when the game is loaded and you are asked whether you want infinite lives or not.

## ROBOCOD

### Millennium

Press <Control> and the screen flashes; press<Return> and you get a shield which means, in effect, infinite lives.

## ROBOCOP

### Ocean

Pause the game then type in BEST-KEPT-SECRET to get infinite lives.

## RODLAND

### Storm

At the beginning of the level you're playing, press the Spacebar and everything on the screen dies.

## ROLLING THUNDER

### US Gold

Type JIMBBBY <Return> on the title screen to get infinite lives.

## R-TYPE

### Activision

When you are asked for the second disk, press <Help> then type ME and press <Cursor up>. During the game the F-Keys are now active:

F5: Invincibility.

F6: Lasers do not harm you.

F7: Infinite credits.

F8: Enables another player to play using the mouse.



### **SATAN**

#### **Dinamic**

Hold down <Alternate>, 1 and D during game one to get infinite lives. Hold down <Alternate>, 1 and M during game two for infinite lives and credits.

### **SIM CITY**

#### **Infogrames**

Type MONEY while playing for an extra \$10,000.

### **SKIDZ**

#### **Gremlin**

During play, hold down <Alternate> and press C to get infinite energy and M to skip levels.

### **SKYCHASE**

#### **Mirrorsoft**

When the game starts, pull back and loop the loop. You should immediately see the opponent so you can shoot at him. This is a quicker and easier way of getting the better of the enemy and you're less likely to get hit yourself.

### **SLY SPY**

#### **Ocean**

Enter the code number 007 then, while playing, type in SHAKEN NOT STIRRED. You now have infinite credits.

### **SPACE ACE**

#### **Readysoft**

Pause when Borf comes to attack you, then type in GODEMODEXTER. Press <Fire> and tap <Enter>, then unpause and carry on playing. Instead of dying, the game plays through to the end.

### **STRIDER**

#### **US Gold**

Pause and hold down <Help>, <Left Shift> and 1. Release and unpause. Keys 1 to 5 put you on different levels and F1 to F4 put you at different places on the level.

### **SUPER GRIDRUNNER**

#### **Action Sixteen**

Pause the game and enter PINK-FLOYD-ARE-GODS.

### **TEENAGE MUTANT NINJA TURTLES**

#### **Mirrorsoft**

When asked for a code enter 8859, and then 1506. On the third time, enter the correct code. During play, pressing <Help> gives you infinite lives.

### **TERMINATOR 2**

#### **Ocean**

Pause the game and press keys F1 to F10, then restart and press <Esc> to jump to the next level.

### **TIME MACHINE**

#### **Activision**

Enter DIZZY into the high score table for infinite lives.

### **TORVAK THE WARRIOR**

#### **Core Design**

Enter CHEAT... (as many full stops as you can fit in) on the high score table. Now hold down <Fire> and press 1 to 5 to be moved between levels.

### **TOYOTA CELICA GT RALLY**

#### **Gremlin**

Start the engine, then press the C key. When the chequered flag has risen, you've completed the stage in first place. Repeat this for all 30 stages to win the game.

### **TURRICAN 2**

#### **Rainbow Arts**

On the title screen, press the Spacebar to access the main menu. Now press 1, 4, 2 and then <Esc>. Now you start the game with infinite lives and power lines.

### **VIZ**

#### **Virgin**

Type in WHAT A LARGE SET OF BOLLOCKS on the character selection screen and you should then hear a funny noise. Hit a number between 1 and 5 on the keyboard and you're instantly taken to the corresponding level.

### **WWF WRESTLEMANIA**

#### **Ocean**

During a match, pause the game and then type in the password HULKHOGANWEARSTIGHTYELLOWKNICKERS. Whatever else you do, you win the fight.

## **AND AS IF THAT'S NOT ENOUGH...**

*The Cheater's Digest* from True Images is Utopia in disk form if you want to get just that little bit more from your games. It's a double-sided disk containing cheats, hints, tips and complete solutions for 391 ST games and, if that doesn't keep you holding down A, G, Y, £ and, er, the space-bar (after the credit screen) until this time next year, they've thrown in three complete games and a word processor – all for less than a fiver.

**Definitely recommended.**

**PROGRAM:** *The Cheater's Digest*. Version 1.6

**BY:** True Images

So, send £4.99 (cheques payable to PjH Publishing) to PjH Publishing, 4 Manor Close, Brampton, Huntingdon, Cambridgeshire PE18 0UF.





# FREE SOFTWARE FOR ALL

**T**o get hold of cheap software, you need to get involved in the Public Domain scene where there are thousands of free programs. They're free because the author has, for one reason or another, decided to let go of all copyright, so you are free to use, copy and distribute them as you wish – but not for profit, and normally with all the files on the disk intact.

The sort of stuff that's available is a weird and wonderful collection of utilities to help you make the most of the software you already own, games that enthusiasts have written for fun, demos of commercial games so you can try before you buy. There are also complete programs covering art, music, programming and the like as well as loads of sound samples and clip-art that you can use in your own documents. Finally there are demos which programmers have written to show off their talents, featuring lots of scrolling wibbly bits.

The quality of all these programs varies immensely, but they're such a bargain you can't complain. Since it would be impractical for you to get hold of programs direct from authors, Public Domain libraries have sprung up to distribute the disks. The programs are free, but PDLs have to cover the costs of the disks, packing, posting, time and effort so you usually end up paying about £3 a disk. Prices and services vary, but, to get you started, have a look at our listing of PD libraries on page 83. You could even start your own library if you find the existing ones don't serve your needs, or if there isn't one in your area. Have a look at page 81 for some ideas.

## Shareware

Also from PD libraries comes Shareware, which is slightly different to PD. The copyright remains with the authors but they permit the programs to be distributed freely, although you're invited to register your copy with them in return for a small fee. In return, you usually get full instructions, updates and other goodies – often other

## Licenceware

Then there's licenceware. This is only available from approved vendors who pay a small royalty to the authors for each copy sold. The biggest and best known range of licenceware is from Budgie UK who have over 100 titles. The quality is often better than the usual PD releases and you've already made your contribution to the author when you buy the disk.

## THE BEST OF THE PUBLIC DOMAIN

Over the years we have reviewed hundreds of Public Domain releases, here's just a small selection of the best that PD has recently had to offer.

## UTILITIES

### DBWriter

#### Floppyshop ST

#### Disk WRD 3124

A fully featured word processor packed with functions like a global search and replace, mail merge, spelling dictionary, comprehensive text formatting and loads of others. 1MByte is recommended to take full advantage of *DBWriter*. A very serious mover in the text handling stakes.

Issue 38

92%

### Sagrotan

#### Goodmans PDL

#### Disk GD 1226

An expandable virus killer which can match boot sectors with its own library that you can add to. You can also store the boot sectors of your games so you can get back in business if the worst happens. One of the best PD virus killers.

Issue 28

91%

### DB Master One Softville

#### Disk ACC 26



**Kaosdesk**  
**16/32 PDL**

A German-written replacement for the ST's GEM Desktop, making it much easier for you to copy, move and display files. Environmental variables have been added, along with improved window handling and disk functions.

**Issue 27**

**90%**

**Mini Draft**

**Platinum Disks**

**Disk ATA 111**

A complete drafting package with an impressive range of functions including block numbers, cut and paste, load and save. It moves at a fair pace, too.

**Issue 37**

**90%**

**ART AND MUSIC**

**Alchemie Junior**

**Caledonia PDL**

**Disk MU 55**

A 16 track MIDI sequencer with a smooth interface and bags of features, you need 1MByte of memory, a mono monitor and a MIDI instrument of some sort to use it. You can create up to 16 songs from 256 patterns. Each function has its own window and everything is easy to use.

**Issue 35**

**94%**

**Crack Art**

**Goodmans PDL**

**Disk GD 1524**

A powerful art program, comprising all the usual tools plus a few unusual ones like splines, as well as the ability to animate through multiple work screens. The interface feels polished and you need 1MByte to run it. Amazing all around.

**Issue 34**

**94%**

**Accompanist**

**Riverdene PDL**

**Disk MUS 569**

One of the most famous bits of Shareware MIDI software and recently upgraded to v2.4, this is a cracking program. It runs on all STs – colour as well as mono – and there's room for 10,000 notes on a 520 ST. You even get a manual and tutorial with this program.

**Issue 35**

**91%**

**Sound Merlin**

**Caledonia PDL**

**Disk MU 49**

This Shareware program enables you to import samples and edit them, create your own samples from raw waveforms or even sample straight into it with the right hardware. There's also a sample sequencer, a drum machine and the ability to assign samples to keys and play them with your keyboard.

**Issue 36**

**91%**

**Pad**

**Goodmans PDL**

**Disk 1351**

A mono fully-featured art program – as well as the usual stuff you get the ability to load and save GEM and Signum fonts, easy creation of 3D shapes, parallel line creation – and more. The icons are all fairly self-explanatory, just as well since the text is all in German.

**Issue 36**

**90%**

**GAMES**

**Llmatron**

**Llamasoft □ 0734 814478**

**Cover Disk 24**

The purest example of a shoot-'em-up, the aim of each level being to blow away all the aliens and reach the next. You play a llama packing some heavy firepower. This game is Shareware so you ought to register to wear that halo.

**Issue 31**

**95%**

**Ozone**

**Goodmans PDL**

**Disk GD 1425**

Another Shareware game, this one's a platform puzzler with smooth flicker-free sprites and zippy scrolling. You play a blue blob who has to collect things and stay out of trouble – brilliant fun with loads of gameplay.

**Issue 30**

**93%**

**Revenge of the Mutant Camels**

**Llamasoft □ 0734 814478**

**Cover Disk 31**

In this Minter shoot-'em-up, you play a camel who's helped by a goat as you stroll down the solar highway blowing hell out of telephone boxes, exploding sheep and joints. The whole concept is bizarre and totally plotless.

**Issue 34**

**92%**

**Penguin**

**Floppyshop ST**

**Disk GAM 243**

You have to guide a load of daft penguins through a maze of pipes – they're incapable of managing this themselves 'cos they fall through holes and then get zapped – it's rather *Lemmings*-like, really. The game is Shareware, once having been a commercial release.

**Issue 31**

**90%**

**Blaster**

**Jennix PD**

**Disk JPD 267**

Version of the classic arcade game *Defender*. You zap around the horizontally-scrolling world keeping aliens away from your chaps. Small sprites but everything moves well. Addictive stuff.

**Issue 29**

**90%**



## MONO-COMPATIBLE GAMES

### Super Break-Out Riverdene

Disk GAM 776

One of the most addictive games of all time, you also get a selection of others like *Arkanoid* and the *Revenge of Doh* on this disk.

Issue 30

95%

### Risky Public Dominator

Disk G133

*Risky* is the board game *Risk* transferred to the ST. You take on ST-controlled or human players, moving armies around small defenceless countries.

Issue 30

88%

### Puzzle Puzzle Public Dominator

Disk G 8.3

An addictive and original jigsaw game where you have to complete, yes, jigsaws. Each completed puzzle then becomes a piece in the next puzzle.

Issue 30

85%

### Macpan TruST

Disk MON 3

A good copy of *Pacman* with the added bonus that you can adjust the speed the game plays at.

Issue 30

80%

### Vector Invasion Riverdene

Disk GAM 776

Make your ST sound like an arcade with this fiendishly difficult *Galaxian* style *Invaders* game with pretend vector graphics, so you're attacked by spinning little triangles and squares rather than cute space invaders.

Issue 30

79%

## A PD LIBRARY OF YOUR OWN

If you really want to get into the PD scene – getting to know the stuff that's available for your own use as well as sharing your knowledge (and programs) with others, you could consider setting up your own PD library. Few PD libraries are full-time affairs, however – most people regard them as hobbies rather than a way of earning a crust. If you imagined that setting up a library would be an easy way to making your first million, or even earning a living, then think again. If it was that easy everybody would be doing it.

These days the problem with setting up even a part time PDL is not really a question of how but what. Anyone can get going by just ordering a variety of disks from any already established library, giving each item a disk number, bunging all the details down on a catalogue – either on paper or on a disk – and you're away.

Your problem is that you're never going to be able to compete with long-established libraries with their thousand-plus items. It can be discouraging, looking at Mike Goodman's catalogue or the sumptuous and beautifully put together booklets issued by the ST Club or South West Software.

But arrivals such as *Awesomedemos* suggest a fruitful area of potential growth: specialisation. Instead of trying to cater for every conceivable type of software available, why not concentrate your energies on a subject you know something about. In that way you can target your market more effectively, you know what sort of thing to look out for when deciding whether a particular program is worth including in your library and you'll be better able to advise people on what they need. If you can build up a good reputation in one area you'll get known as *the* place to go first if people want software of a specific sort – and that can't be bad.

## STEPS TO SUCCESS

### 1. Get some assistance

It's much easier as a partnership, and you'll keep each other going when one of you is wondering why you ever bothered.

### 2. Identify a need

Games and demos are already catered for, but what about specialising in art and graphics, say, or education? Competition is pretty severe now, and if you don't have a specialisation or some kind of angle – something to set you apart from the crowd, you'll go under quicker than a Channel swimmer with cramp.

### 3. Work out your costings

Make sure you have enough of a margin to keep yourself from going broke. If you fail to calculate your costs properly you're bound to go bust. Don't forget items such as enormous phone bills that can build up without you noticing.

### 4. Be sure you can meet orders

Once you get behind, you'll find it harder to get back to square one than you'd realise.

### 5. Build a good reputation

In the *STF* office no one can ever recall seeing a letter of complaint about Goodman PDL or the ST Club. Aim to keep your customers satisfied. Make sure you have the latest versions. Always keep promises and fulfil orders. That way you can build repeat custom. And remember – there are no shortcuts to long-term success.



It's easy to see – and over-estimate the benefits of running a PDL. But consider some of the difficulties. The costs, hidden and otherwise, can be quite frightening. Besides the price of the disks themselves, postage, jiffy bags and advertising, there's also administration and the incredible cost of having your catalogue printed. Then there's the sometimes exorbitant cost of sourcing software – Mike Goodman speaks of spending £50 downloading one item from America and expecting to sell one copy a month! – as well as translating foreign software into English. On top of all this you should also remember the hidden costs such as repairs to overworked STs and disk drives.

One option is to diversify into plastic: disks and diskboxes may not be the world's most romantic items, but they've kept many a PDL afloat when orders for software are as few and far between as a jockey's legs.

After all, it's easy to assume that because everyone has the *Mindbomb* demo, for example, it's made a lot of money. You've got a copy but did you buy it? Did you hell! You copied it from your friend, just as the rest of us did. Of course, there's nothing wrong with that – that's what the Public Domain is all about – but spectacular demo disks in particular are notoriously poor sellers. Don't let all this apparent doom and gloom put you off,

though – it's more a matter of knowing what you're getting into – there's just far more work and far less financial reward than many people believe.

## WHAT TO AIM FOR – BE REALISTIC

- 1.** It's a whole lot of fun and you get in touch with lots of other ST owners who also share your interests – but don't think of it as something you can just do for a couple of months. It'll take you six months to get going and just as long to wind it down.
- 2.** You can afford to finance your own PD interests, getting hold of the latest versions and new additions – but you need to invest in equipment, especially at the beginning. Watch out for those phone bills when you're downloading programs.
- 3.** If you're young, it might possibly impress potential employers, but it won't make you a millionaire. If you expect to get rich quick or indeed at all running a PDL, get your head examined.



## ST FORMAT PUBLIC DOMAIN DIRECTORY

■ Where to go for Public Domain software – demos, games and utilities for around £3 a disk!  
■ If you write to any of these libraries for a catalogue, enclose an SAE.  
■ Budgie games are available from all PD libraries indicated by a (B). Simply mention the disk number when you order the disk.

### SOUTH OF ENGLAND

16/32 PDL, 35 Northcote Road, Strood, Kent ME2 2DH ☎ 0634 710788

ARROW PD, 6 Kents Orchard, Perry St South Chard, Somerset TA20 2QB

ATARI ADVANTAGE, 56 Bath Road, Cheltenham, GL53 7HJ ☎ 0242 224340

AWESOMEDEMOS, 3 Mason Road, Seaford, East Sussex BN25 3EE

B-SOFT, 2 Oliver Drive, Calcot, Reading, Berks RG3 5XN.  
☎ 0734 419981

DRAKE PD, 12C How Street, The Barbican, Plymouth, Devon, PL4 0DA

EVPD, 15 Cleeve Road, Gotherington, Cheltenham, Glos GL52 4EW

FREAKS PDL, 29 Leap Valley Crescent, Downend, Bristol BS16 6TQ (B)

IMAGEART, 19 Brenda Road, Tooting Bec, London SW17 7DD  
☎ 081 767 4761

MELVILLE MARRIOT MUSIC MEDIA, 46 Market Square, Whitney, Oxon OX8 6AL ☎ 00993 779500

MERLIN PD, 11 Grange Close, Minchinhampton, Stroud, Glos GL6 9DF

MERTON PD, 10 Grasmere Avenue, Merton Park, London SW19 3DX

MT SOFTWARE, Greensward House, The Broadway, Totland, Isle of Wight PO39 0BX ☎ 0983 756056 (B)

NEW AGE PDL, 30 Anderson Estate, Lower Road, Hockley, Essex SS5 5NG  
☎ 0702 232826 (B)

PARADISE COMPUTERS, 11 Winfield Avenue, Patcham, Brighton, East Sussex BN1 8QH

PD ESSENTIALS, 22 Fern Avenue, Mitcham, Surrey CR4 1LS

PDSSC, 5 Walnut Close, Barkingside, Essex IG6 1HE ☎ 03548 448

PROBUS, Birchy Hill, Sway, Lymington, Hampshire, SO41 6BJ

PROPHECY PD, 390 Coulsdon Road, Old Coulsdon, Surrey CR5 1EF  
☎ 0737 554536

PUBLIC DOMINATOR PD ATARI, PO Box 801, Bishops Stortford, Herts CM23 3TZ. ☎ 0279 757692 (B)

PUBLIC SECTOR PDL, 50 Ripon Road, Stevenage, Herts SG1 4NA  
☎ 0438 364722 / 361324

RIVERDENE PDL, 30a School Road, Tilehurst, Reading, Berks RG3 5AN  
☎ 0734 452416 (B)

SENLAC, 14 Oaklea Close, Old Roar Road, St Leonards On Sea, East Sussex TN37 7HB ☎ 0424 753070

SEVEN DISK, Digswell Water Lodge, Digswell Lane, Welwyn Garden City, Herts AL7 1SN ☎ 0438 840456

SOFTVILLE PD, Unit 5, Stratfield Park, Elettia Avenue, Waterlooville, Hants PO7 7XN. ☎ 0705 266509 (B)

SOLENT SOFTWARE, 53 Rufus Gardens, Totton, Hants SO4 3TA  
☎ 0703 868882

STE CLUB, The Lodge, Dolly End, Whitney, Oxon OX8 5XD

STEVENS PD, 14 Depot Rd, Horsham, West Sussex, RH13 5HA

TUMBLEVANE PDL, 6 West Road, Emsworth, Hants, PO 107JT  
☎ 0243 370600

WARPZONE PDL, 53 Ropewalk, River Street, St Judes, Bristol BS2 9EG

WIZARD PD, 178 Waverley Road, Reading, Berks, RG3 2PZ. ☎ 0734 574685 (B)

### NORTH OF ENGLAND

ALPHA COMPUTING, 32 Meadow Drive, Halifax, West Yorks HX3 5JZ

AKORE SHAREWARE, 7 Fishergate Point, Lower Parliament Street, Nottingham NG1 1GD ☎ 0800 252221

D W STABLES, PO Box 78, South Shore, Blackpool FY1 6AD  
☎ 0253 404550

GOODMAN PDL, 16 Conrad Close, Meir Hay Estate, Longton, Stoke on Trent, Staffs ST3 1SW. ☎ 0782 335650 (B)

LAPD, 80 Lee Lane, Langley, Heanor, Derbys DE7 7HN ☎ 0773 761944 (B)

METROPOLIS PD, 38 Howick Park Drive, Penwortham, Preston PR1 0LU  
☎ 0772 748422

NIGHTSHIFT PD, 50 Averill Road, Highfields, Stafford Staffs ST17 9XX

PAGE 6 PUBLISHING, PO Box 54, Stafford ST16 1DR ☎ 0785 213928 (B)

PD ST KIER BAILEY, 95 Elton Road, Sandbach, Cheshire CW11 9NF  
☎ 0270 762520 (B)

PLATINUM DISKS, 181 Anson Close, Padgate, Cheshire WA2 0HJ ☎ 0925 820693

ST CLUB, 2 Broadway, Nottingham NG11 1PS. ☎ 0602 410241 (B)

STING PUBLIC DOMAIN, 23 Manor Grove, Westvale, Kirkby, Liverpool L32 0UZ ☎ 051 546 4640

THE SOURCE PD, 7 Shearwater Lane, Norton, Stockton-On-Tees, Cleveland TS20 1SH ☎ 0642 550896

TOWER PD, PO Box 40, Thorton-Cleveleys, Blackpool. FY5 3PH

TRUST PD, 18 The Park, Southowram, Halifax, HX3 9QY ☎ 0422 341606 (B)

### SCOTLAND

CALEDONIA PDL, 250 Oldtown Road, Hilton, Inverness, IV2 4PT  
☎ 0463 225736 (B)

THE CIRCULAR PD LIBRARY, 14 Morrison Drive, Lennoxtown, Glasgow G65 7BA

FLOPPYSHOP ST, PO Box 273, Aberdeen AB9 8SJ ☎ 0224 586208 (B)

OFFICE CHOICE, Suite 14, Avon House, Town Centre, Cumbernauld G67 1EJ (B)

STATE 808 PDL, 3A Old Lanark Road, Carlisle, Scotland ML8 4HW

WOOLLEYSOFT, Humblesknowe Cottage, Ramolye, Dunblane, Perthshire, Scotland FK15 0BA

### WALES

SHOESTRING SOFTWARE PDL, 78 Carmarthen Road, Swansea SA1 1HS

### IRELAND

PD 4U, 4 Sintonville Avenue, Belfast BT5 5DG ☎ 0232 672338

### OVERSEAS

ALGEMENE COMPUTER CLUB NEDERLAND (ACN), Postbus 5011, 200 CA Haarlem ☎ Holland 023 351100 (B)

A-ONLINE, 1229 East Mohawk Ave, Tampa, FL33604 USA  
☎ 0101 813 2371656

ATARI ST USER GROUP NORWAY, c/o SA Jensen, N-3630 Rodenberg, Norway  
DOM' PUBS, 10 Rue du Vergeron 38430 Moirans, France

LTPD, 37 Montye Ave, Box #2, Toronto, Ontario, M6S 2G8, Canada

PUBLIC DOMAIN CORPORATION, 4320 - 196th SW, Suite B-140, Lynnwood, WA 98036-6721, USA  
☎ 0101 206 745 5980 (catalogue £1)

**BUYER BEWARE:** Inclusion in this directory does not imply that **ST FORMAT** endorses or recommends any PD library in any way.





# ST ANSWERS





# ST ANSWERS BEGINNERS

## First things first

What does "ST" stand for?

**C Rogers, Weston-Super-Mare**

*stf: "ST" stands for "Sixteen-Thirtytwo." This is a reference to the 68000 processor chip, which has a 16-bit external data bus and 32-bit internal registers. This means it talks to the outside world 16 bits at a time and talks to itself in 32-bit chunks – a bit being the smallest piece of data a computer can recognise.*

## Please direct me

What is a folder and a directory? I have seen reference to both, but I am not sure what they do.

**Richard Douglas, Cornwall**

*stf: Folder and directory are two names for the same thing. To keep a disk tidy so that there aren't hundreds of files to search through, files can be stored "inside" a folder. This is purely for housekeeping reasons, for example, you can simply move all your wonderful Degas creations into a folder called "Tate" so you can easily find them. All word processing files can be kept in another folder, and so on.*

## Quickdisk installation

I am trying to use the RAMdisk program *QuickDisk* off the Cover Disk, but despite reading your instructions carefully, no matter what I try to copy into disk M, I get the following alert: "This application cannot find the folder or file you just tried to access."

**Kerry Norman, London**

*stf: You can't move files to your RAMdisk because it has not been installed correctly. Assuming you have one drive, follow these steps to set up the QuickDisk Accessory – the same method can be used to set up any*

*RAMdisk.*

**1.** Make a backup copy of your Cover Disk as described on page 30 of STF 31. Put your original Cover Disk in a safe place and write-protect your backup by sliding the black tab so that you can see through the hole.

**2.** Format another blank disk, then remove it from the drive. Keep this disk write-enabled – leave the tab so you can't see through the hole.

**3.** Put the backup copy of your Cover Disk into the drive and double-click on the Drive A icon, then on the RAMdisk folder so that you can see a window showing the three files inside.

**4.** Move the mouse pointer into the window and click and hold down the left mouse button. Keeping the button held down, move the mouse until you have drawn a box around the three files. They now turn black or "highlighted." Release the mouse button.

**5.** Click and hold down the mouse button over one of the files, then move the mouse pointer to the Drive B icon on the Desktop.

**6.** Follow the screen prompts until all the files have been copied to your blank disk. Remember, the disk you are copying from is Disk A, and the disk you are copying to is Disk B. If you have write-protected your backup of the Cover Disk, you can't really go too far wrong.

**7.** Put away your backup Cover Disk and put your new disk with the files on into the drive. Restart your machine by pressing the reset button (or, if you have an STE, by pressing <Control>-<Alt>-<Delete> at the same time).

**8.** The Desktop now reappears. Click once on the Drive A icon so that it becomes highlighted. Move the pointer to the Options menu and click on the Install Disk Drive option. Change the Drive Identifier line from A to M and then change the Icon Label line to RAMdisk. Now click on the Install box. A new Drive M icon now appears on the Desktop.



9. Move the mouse to the Desk menu and select the QuickDisk option. A box opens with several options in it. Select the capacity you require for your RAMdisk and then click on the install button. You now get a message saying "RAMdisk installed as Drive M."

10. You can now move files to Drive M and back from it, exactly as if it were another floppy disk drive. But remember: you must save any data you want to keep to a real disk or hard drive before you switch the power off!

Another point you should always check: a Desk Accessory never works if it is inside a folder. It must always be in the root directory of a disk – the first level you see when you open a disk window.

### Transferring files

Should my 1040 STE be able to read PC DOS disks and text files? My first attempts at doing this seemed to work OK, but now my files are garbled at the end of the text – could this be because of a virus?

**Hugh Stewart, Glasgow**

*stf: STEs can read PC disks without any problems, but you might have difficulties if the files you are trying to read are not pure ASCII. Even though many programs have an ASCII Save option, they may still leave bits of code embedded in the file.*

### Upgrades unlimited

I have just bought an STM with an external single-sided drive and I would like to replace it with an external double-sided drive. My father is interested in investing in an AT PC emulator and a 1MByte memory upgrade for the same machine. Is it possible to upgrade a 520 STM like this, or should we buy a more recent machine?

**Matthew Beilby, South Yorkshire**

*stf: You can buy a Golden Image external drive for the STM with a through-port from Ladbroke Computing (☎ 0772 203166) for £69.95. This is an ideal replacement drive for the older STM machines. The Xtra-RAM Deluxe SIMMs memory upgrade board from Marpet Developments (☎ 0423 712600) can be configured for any ST, and costs £67.99 for a 0.5MByte upgrade to 1MByte. You may need extra adaptors for machines with surface mounted MMU or video shifter chips, Marpet can provide these at no extra charge when you provide your receipt number.*

*The AT PC emulator is more tricky – on the STM, the emulator has to be soldered directly to the 68000 processor. The ATSpeed C16 from Compo Software (£249.00 ☎ 0480 891819) can upgrade your machine to a 286 PC, but it needs to be sent to Compo for fitting or fitted by a competent electronics engineer.*

### Which disks?

Am I supposed to use double-density or high-density disks with my 1040 STE?

**P Freeman, Southampton**

*stf: You use double-density disks because normal STEs are equipped with double-density disk drives. Only Mega STEs and TTs are fitted with high density drives.*

### Artificial pictures

I enjoy using the art program I got with my ST, but when I save a picture it saves it as text and not as a picture. How can I save the file as a picture?

**Dionne Beal, Middlesex**

*stf: You are probably trying to view your pictures by double-clicking on them from the Desktop, which, as you've discovered, you can't do. You can only see your pictures by loading them into an art program or a special picture viewer. Picswitch 7 is an excellent picture viewer and conversion program, you can get it from the ST Club – disk UTI.142 at £1.45. Get in touch with them on ☎ 0602 410241*

### Is the Mega STE compatible?

Can all the software written for STs and STEs run on the Mega STE?

**Nick Waring, Essex**

*stf: We have tested hundreds of software packages on the Mega STE at the ST FORMAT office. The only problems we have encountered have been with some games software, STOS and STOS generated programs and with NeoDesk 3 which is sometimes reluctant to operate with TOS v2.06. Everything else we have tested has worked without a hitch.*

### TV connection

Can the Mega STE be used with a normal TV?

**Matthew Parker, Illinois**

*stf: Yes, the Mega STE is provided with a modulator so it can be used with a TV, although you should use a monitor for serious applications because of the better image display quality.*

### Blinking horrible

I didn't touch my STE for a year and a half until the other day when I tried switching it on. The colour goes completely haywire, then the picture flashes and blinks. This happens when I connect it to any of the TVs in the house.

**Ken Gaskell, Merseyside**

*stf: You definitely have a problem with your machine.*



Contact WTS Electronics on ☎ 0582 491949 – they offer an excellent repair service for £49.95.

### Auto-loading GEM programs

How can I make a .PRG or .TOS run from an AUTO folder? I tried to do this with Neochrome, Write On and First Basic but it doesn't work.

**Nevil Skelton, Northants**

*stf: The only programs that work in an AUTO folder are applications and utilities which do not access GEM because the programs that are in the AUTO folder run before GEM is installed from ROM. If you have an STE, you can make a program run automatically by using the Install Application function from the Options menu on the Desktop.*

Try putting the program disk in Drive A and click once on its icon so it turns black. Go to the Options menu and select Install Application – a dialog box opens. Click on the AUTO box in the status window so it becomes highlighted, then click on Install. Now use the Save Desktop option to save the information to disk. Reset the ST with the program disk in the drive and it loads automatically.

### BASIC problems

I am using First Basic and cannot get my saved programs to run although I save them with a .PRG or .TOS extension. Have I got a faulty copy of First Basic?

**Keith Halcrow, Cleveland**

*stf: BASIC programs need to be compiled into machine code for them to work directly from the Desktop. Unfortunately, First Basic does not include a compiler because it is a cut-down version of Hisoft Basic. Contact Hisoft on ☎ 0525 718181 for details of Hisoft Basic 2 (£79.95) which we reviewed in STF 36, page 109.*

### Manic mouse

I am having problems with my mouse pointer – the arrow goes up when I move the mouse down. Have I got a dodgy mouse?

**Dean Williams, Dyfed**

*stf: There is nothing wrong with your mouse, but you've got the Ghost Virus. You need the UVK (Ultimate Virus Killer) from Douglas Communications (☎ 061 456 9587), it costs £9.99 and is well worth the money to keep all your disks virus free.*

### Driven to distraction

My ST was taken away for repair and I have just heard that I need a different case because a new size of disk drive is being put in. Is this drive bigger?

**John Rhodes, Leeds**

*stf: You need a new case because the ST's disk drives have an angled eject button shaped rather like the function keys. New drives have small oblong buttons which do not fit through the old hole in the case. Most companies normally cut the case so the drive fits – buying a new upper case is a way of charging you extra.*

### Amoeba emulation

My friend laughed when I told him I have an Atari ST because he has an Amiga. Is there an emulator which enables me to play Amiga games? Is the STOS collection a good package for beginners in programming?

**Brian Bell, N Ireland**

*stf: There is no method of emulating the Amoeba games machine on an ST and, quite frankly, there is no need to. The ST has an enormous range of games software available for it and has many more serious applications. The STOS collection is an excellent introduction to programming on the ST because it supplies a complete suite of programs – the BASIC language, a compiler, graphics and sound utilities.*

### What's the difference?

What's the difference between an STFM and an STE? Is it worth replacing my old machine with an STE?

**Rik Waring, Bristol**

*stf: The STE is an enhanced version of the STFM – it has a larger colour palette and stereo sound capabilities. It also has an improved version of the operating system (TOS) which speeds up many of the system's functions. It is worth upgrading because Atari have commissioned STE-only games which do not work on the older machines. Other software producers are also considering STE-only games.*

The STE also has built-in hardware for reproducing sound samples. Alternatively you could get yourself a Falcon with CD quality sound capabilities and faster processing speeds.

### TOS versions

I have an STE and I was concerned to read that Rainbow TOS 1.4 is only fitted in STFMs and that the minimum TOS version of TOS in the STE is v1.6. I have a rainbow Atari symbol in my machine's info box – how can I get TOS 1.6 installed to replace the Rainbow TOS 1.4?

**Neil White, Shropshire**

*stf: Don't worry, you do have TOS 1.6 or 1.62 in your STE – if you didn't, your STE would not work. All versions of TOS above v1.4 have the rainbow Atari symbol in the information dialog box to indicate this higher TOS version.*

**Budding programmer**

I wish to learn to program games without learning machine code, how do I go about this? Should I upgrade my machine's memory to 1MByte of RAM?

**Steven Chesney, Glasgow**

*stf: The easiest way to learn to write games is to use STOS which is a version of BASIC for the ST and it is designed specifically to create games. Coupled with the STOS compiler (£20.99) you can create games which run directly from the Desktop. STOS costs £29.99 from Mandarin Software (☎ 0625 859333). If you have more memory, you can load more utilities when you're designing games, so it would be a good idea to upgrade your machine's memory.*

**Basic programming**

Can you recommend a book or package suitable for beginners to learn BASIC programming?

**Scott Carlin, Edinburgh**

*stf: The best book is The ST Basic Sourcebook and Tutorial – it costs £9.50 from Ramara House Software ☎ 0924 473556 – it is well laid out and easy to follow.*

**Second manual required**

Can you recommend a simple book for getting to grips with the STE?

**M Baker, Cheshire**

*stf: There are two books which can get you on the right track, The Atari ST Explored (£9.75) and Your Second Manual to the ST (£14.95). Both books are available from Ramara House Software, phone ☎ 0924 473556 for further details.*

**Cheap games**

Where can I find cheap games for the ST? I am unemployed and I cannot afford even £10 for a game – £25 is out of the question.

**Peter Brooks, Avon**

*stf: There are a large selection of games available from Public Domain libraries for as little as £1.45 each. Try contacting the ST Club (☎ 0602 410241) for a catalogue or try any of the libraries listed on page 83. Budgie Games are also very good – they cost £2.95 each and are usually of a very high standard – PD libraries that supply these are indicated by a (B) in that listing.*

**File extenders**

Can you tell me what the various file extenders mean? I am confused by all the different types such as .PI3, .IMG, .DOC and .PRG.

**Jim Rockford, Herefordshire**

*stf: There are so many different file extenders that it is impossible to list them all – almost every program saves data with its own extender so it can recognise it. Here are some examples and their meaning:*

.PI1	Degas uncompressed low res picture
.PI2	Degas uncompressed medium res picture
.PI3	Degas uncompressed high res picture
.PC1	Degas compressed low res picture
.PC2	Degas compressed medium res picture
.PC3	Degas compressed high res picture
.NEO	Neochrome picture
.TXT	ASCII text file
.ASC	ASCII text file
.RSC	GEM resource file
.DOC	word processor document such as First Word
.WO	Write On document
.PRG	runnable program
.TOS	runnable program that does not use GEM
.BAS	BASIC file
.GFA	GFA Basic v3 file

**Mouse vs trackball**

Which is better to use, a mouse or a trackball?

**Andrew Armstrong, Newcastle-upon-Tyne**

*stf: It depends entirely upon what you are most comfortable with – some people prefer a mouse and some a trackball. Trackballs can be awkward to use, especially when you're dragging things on the Desktop, but they take up less room in cramped conditions.*

**What do I get?**

What degree of compatibility can I achieve with a PC emulator – would I have a PC, an ST or both?

**Mac Asherman, West Yorkshire**

*stf: It depends on the emulator. 286 emulators run more software than NEC v20 emulators, and 386 emulators offer more compatibility than 286 emulators. A lot of PC software depends on specific hardware additions that you can plug into PCs' card slots – these cannot be installed in your ST. You also have an ST which can be switched to run PC software.*

**Cartridge question**

What are cartridges for and where can I buy them?

**Ben Powell, Lancs**

*stf: The cartridge port is designed for ROM (Read Only Memory) cartridges. A cartridge is a device that plugs into the edge connector slot on the left of your ST near to the MIDI ports. Cartridges can contain an entire program which is available instantly from the Desktop, can provide a real-time clock to keep system files correctly dated or you can plug an emulator in to make your ST*





*think it is a completely different machine.*

*Example cartridges are the Forget-me-Clock 2 (£17.95) from Marpet Developments (☎ 0423 712600), the Power Clock (£17.95) from Power Computing (☎ 0234 843388), the Spectre GCR Macintosh Emulator (£300) from HCS (☎ 081 777 0751) and the Stereo Master sound sampler (£39.95) from Microdeal (☎ 0726 68020).*

### Patch problems

When I load my STE language disk I get this message before the Desktop icons appear: "ERROR – this STE ROM version does not need the patch." What does this mean and can it affect any programs? I have had four replacement disks which are all the same.

**Steven Wood, Cheshire**

*stf: The early version of TOS for the STE could not save the Desktop in medium res, so a program was developed to fix this problem. This program is in the AUTO folder of the STE language disk and adds extra code to the system to correct or patch the fault. You can ignore the message – it does not affect any other software.*

### Disable it

How can I disable AUTO folder programs without erasing them from the folder? I need to use them at different times without losing the order in which they run.

**Simon Shand, Bristol**

*stf: You can disable the program from the Desktop by opening the AUTO folder and left-clicking on the program you wish to disable so it becomes highlighted. Then move the mouse cursor to the file menu and select the Show Info option. When the dialog box opens, press the <X> key, this changes the file extender to .PRX. Press <Return> and the program is disabled. You could also use Superboot 7.4 which was on STF Cover Disk 36.*

### Backup disks

Is it possible to make backup copies of games disks from the Desktop?

**Shane Walker, London SW12**

*stf: You can make backup copies of some games in this way, but only if the documentation expressly permits it, otherwise you are breaking the law by making a backup copy. 95% of all games cannot be copied because of special formatting methods.*

### Training course

Is there a book for beginners to STOS programming? I have the package but I am not sure where to start.

**Christopher Hollister, Avon**

*stf: The manual supplied with STOS is very good,*

*although it can be a bit confusing for beginners. Try The Game Maker's Manual (ISBN 1-85058-158-4) from Sigma Press (☎ 0625 531035). It costs £12.95 and guides you through the various programming techniques.*

### File copying made simple

How do I copy files from ST FORMAT Cover Disks to a blank disk? Do I need a special copying disk or program?

**Alex Vokes, North Yorkshire**

*stf: Follow these simple steps to copy files between disks from the Desktop on a one drive system.*

**1.** Format a disk and mark it "Disk B."

**2.** Put the Cover Disk in the drive, ensuring that it is write-protected (so that you can see through the hole). This is "Disk A."

**3.** Open the Drive A icon by double-clicking on it.

**4.** Open the folder you wish to copy files from by double-clicking on it.

**5.** Press the <Shift> key, and, keeping it pressed, single-click on each of the files so that they are all highlighted.

**6.** Release the <Shift> key. Click on one of the highlighted files, and, keeping the mouse button pressed, drag it to the Drive B icon. When the drive icon turns black, release the mouse button.

**7.** Your ST prompts you to swap disks until all the files have been copied to your new disk. Follow the screen prompts and make sure that you don't mix up the disks.

### Cartridge compatibility

If a cartridge is plugged into your ST does it affect other hardware such as memory upgrades?

**Jonathan Brace, Surrey**

*stf: Cartridges do not affect any other part of the ST hardware because they are designed as additional blocks of Read Only Memory. They do not affect memory because the MMU (Memory Management Unit) treats them as a separate section.*

### Icon based

How can you make a BASIC program run from an icon?

**E Tunstall, Cheshire**

*stf: You cannot make a BASIC program run from an icon – BASIC programs only run from the interpreter they were created with.*

### £ signs

Why can't I get ST Writer to print the £ sign? I don't have any other printing problems.

**John Edgington, Lancs**

*stf: Try using the hash (#) symbol, this usually works.*



### What the F?

What does the "F" mean in the name of my machine? I haven't got an "STE" or an "STFM" but an "STF."

**Jonathan Tyrell, Middlesex**

*stf: First came the Atari 520 ST, a machine without a built-in floppy drive or TV modulator. Then came the 520 STM, a machine with a built-in modulator, hence the "M." At the same time as the 520 STM there was the 1040 STF, a machine with the floppy drive built-in but no modulator which was intended as a business machine. Next came the 520 and 1040 STFMs, with built-in floppy drive (F) and modulator (M). Finally came the STE, which is an "enhanced" version of the STFM.*

### Bargain programs?

Where can I get a cheap easy-to-learn language to produce standalone programs?

**Simon Reeve, Birmingham**

*stf: Hisoft Basic 2 is a complete programming system – including the BASIC language, the compiler and WERCs – a resource construction kit for creating GEM programs with menus, alert boxes and other GEM attributes. Hisoft Basic 2 costs £79.95 from Hisoft on ☎ 0525 718181. See the full review in STF 36, page 109.*

### It's all ASCII to me

I am having problems loading ASCII files into *First Word*, what the hell do I have to do to get them in?

**Abi Hicks, Kent**

*stf: First Word is a bit fussy about some ASCII files because it can't read hard carriage returns – you need a utility to strip out any non-ASCII characters from the file. Disk WPR.09 from the ST Club (☎ 0602 410241) contains a program called TOASCII which does exactly this. The disk costs £1.45.*

### Hyperpaint formats

In *Hyperpaint* there are various picture formats: Neo, Degas and IMG. What is the difference between them?

**D W McCluskey, Northumberland**

*stf: Neochrome pictures can be loaded and saved in low resolution only and cannot be compressed to save disk space. Degas pictures can be loaded and saved in all three resolutions either compressed or uncompressed. IMG files can be loaded in high resolution and pictures can be larger than the screen area.*

### Support?

What does it mean when a program "supports" the most popular picture formats?

**Ernie Clutterbuck, Derby**

*stf: This means that the program can load in the many types of picture file created by the most popular paint programs – typically Neochrome and Degas file formats are supported.*

### Microphonic query

Can I use the RCA ports (phono sockets) on my STE to connect to a stereo microphone socket on a hi-fi system?

**Nigel Deacat, Wilts**

*stf: No, the phono ports output is designed to be connected to the line input of a stereo system – the CD or AUX inputs are the best.*

### Hyperproblems

I cannot load *Hyperpaint* and *Music Maker* into my new 520 STE. What am I doing wrong?

**Thomas Allmark, Liverpool**

*stf: You have to load Hyperpaint and Music Maker by double-clicking on their icons from the Desktop. Hyperpaint only loads if GDOS is installed. GDOS is a part of the ST operating system not included internally and has to be loaded from disk via an AUTO folder. The Hyperpaint manual goes into some detail on installing GDOS and is provided with an installation program.*

*To load Music Maker, place the program disk in the drive and reset the machine by pressing the <Control>, <Alternate> and <Delete> keys at the same time. When the Desktop appears, double-click on the Drive A icon and a window opens showing the contents of the disk in the drive – this is the directory of the disk. There should be an icon that looks like a box with the name MUSIC.PRГ underneath. Double-click on this and the program loads and runs.*

### How many can I...

How many files can I place in the AUTO folder?

**G B Holt, Wilts**

*stf: The only limit on files in a directory is set by TOS and GEMDOS, so the limit is 112. Realistically, you can load as many AUTO folder programs as will fit into your memory configuration.*

### What's the difference?

What is the difference in print output between PI1, PI2 and PI3 filetypes?

**Brian Damage, London W14**

*stf: The print density is related directly to the screen resolution, so a high resolution PI3 picture produces a more detailed printout than a low resolution PI1 picture.*

**Justify my text**

When I try to print out justified text from *Write On* the words on the printout become left aligned using the Star LC-200 printer.

**Ben Lehner, Herts**

*stf: Ensure that you have installed the correct printer driver for your machine, it sounds as if your printer is operating in text mode, not graphics mode. Try installing various printer drivers until you find the one that gives the best results.*

**Getting coding**

My ambition is to write a demo like those from PD libraries. I have *STOS*, *GFA Basic* and some sound samplers. Could you tell me some code that would display a picture and play music simultaneously?

**Daniel Moss, Cumbria**

*stf: To produce demos of the quality seen in PD libraries, you need to learn to program in machine code. Try *Introducing Atari Machine Code* from zzSoft (£20 ⇐ 0254 762965), this book is an excellent first step to assembly language programming. Alternatively delve deeper into your *STOS* manual – it is an extremely versatile form of BASIC.*

**Clock up**

I have the *Forget-me-Clock 2* and I use *Harlekin 2* with it. I am unable to get the clock to automatically set the *Harlekin* clock and I have to enter the time by hand. Can I make *Harlekin* read the *Forget-me-Clock*?

**J B Senior, Nottingham**

*stf: The *Forget-me-Clock (FMC)* sets the ST system clock, so as long as the FMC program runs before *Harlekin*, the system already holds the correct time and date. When *Harlekin* asks for the time and date, press <Return> and the system time is retained.*

**Automatic loading**

How can I make a program autoload on my 520 STE? It is a GEM program, so it cannot go in the AUTO folder.

**Martin Woodhouse, Dyfed**

*stf: With any TOS version above v1.4, you can autoload any program when you boot up your ST. Put the disk with the program you wish to boot in drive A. From the Desktop open the disk window and click once on the file you wish to run automatically so that it becomes highlighted. Now move to the Options menu and select *Install Application*. When the dialog box opens, click on the AUTO box and then on OK.*

*Now go to the Options menu again and select *Save Desktop*. Now reset your ST with the disk in the drive*

*and the program runs automatically after the *Desk Accessories* have loaded.*

**Speed up**

How good is *PC Speed* and is it possible to run commercial games, PD and Windows with it?

**Amir Shahran, London NW8**

*stf: *PC Speed* (STF Rating: 74%, issue 25) is an excellent PC emulator, as is *AT Speed C16* (STF Rating: 82%, issue 25). You can run CGA and EGA games and software, but Windows requires 4MBytes of RAM and a hard drive to work properly. Compo Software sell *PC Speed* for £99.00 and *AT Speed C16* for £249.00. Contact Compo on ⇐ 0480 891819 for more information.*

**Off key**

Is it possible to add a PC keyboard to the ST?

**Harry Keogh, London N12**

*stf: HCS can provide an interface to enable any PC keyboard to be used with an ST for £55. HCS can be contacted on ⇐ 081 777 0751.*

**Trade in?**

I have a 520 STFM and am interested in graphics and sound – is it worth getting an STE? Where can I trade in my STFM for an STE?

**Mark Burgess, Cambs**

*stf: It is always worth upgrading to a better specified model of ST, especially since Atari are soon to introduce games which will not run on the STFM, but only on the STE or above (Mega STE, TT and Falcon). You can get a 1MByte STE from Gasteiner Technologies for £265 or a 2MByte machine for £305. It's unlikely that you could trade in your machine, so place an advert in a weekly computer sales magazine priced at about £200 along with enough software to get your potential buyers started. Gasteiner are on ⇐ 081 365 1151.*

**What does it do?**

What does an emulator actually do? Does it provide IBM compatibility or speed up the machine to IBM speeds?

**A Herbert, Kent**

*stf: You seem slightly confused between an emulator and an accelerator. An emulator is a hardware device that enables STs to run PC-contemptible or Macintosh software. An accelerator is another hardware device which fits inside your machine and can double, treble or even quadruple the processing speed. Contact Compo Software (⇐ 0480 891819) for details of their *PC Speed* and *AT Speed* emulators. HCS (⇐ 081 777 0751) can provide *Spectre GCR*, the Apple Macintosh emulator, for*



£300 – have a look at our full review in STF 39.

System Solutions provide a wide range of accelerator boards to match any price range, call them on ☎ 0753 832212 for full details.

#### TOS up

What is TOS error 34 and why do I get it?

**James Quinn, Co Tyrone**

*stf: TOS error #34 is Path Not Found. This usually means that GEM has tried to look in a folder that does not exist, gets confused and coughs up the ever-helpful TOS error #34 message to let you know what the problem is. It often happens because a disk has been changed and the directory information has not been updated within the machine. If you change disks with a drive window open while at the Desktop, press the <Esc> key – this updates the directory.*

#### Write On blues

When I copy and install the Write On disk I get a message that there is not enough room for all the files, then I am returned to the Desktop. WRITE\_ON.PRG is not created – what am I doing wrong?

**Lee Wilkinson, Otley**

*stf: It sounds as though you are trying to install Write On onto your backup master disk which is already full of files. After making a copy of the master disk you must install the program onto a blank formatted floppy. See page 16 of STF 33 for the full installation procedure.*

#### Upgrading for beginners

Could you recommend a cheap but good memory upgrade kit for my 520 STFM? How easy are they to upgrade?

**Nadeem Zakir, Berks**

*stf: Most upgrades to 1MByte of RAM are easy to install and require little technical prowess – just common sense. Power Computing (☎ 0234 843388) provide an excellent plug-in upgrade for £45. See ST FORMAT 35, page 26 for a guide to upgrading your ST's memory.*

#### Bestest, cheapest mouse

Which mouse or trackball gives the best response for the

least money?

**Andrew Armstrong, Newcastle-upon-Tyne**

*stf: The Naksha Mouse (£28.99) is regarded as the most efficient and best quality mouse available, but the Power Mouse (£14.95) is probably the best value-for-money. Naksha are on ☎ 0458 74011 and Power Computing are on ☎ 0234 843388.*

#### Value-for-money?

Why is it that a 40MByte hard drive which costs £300 is called good value-for-money when I can get 600 (or more) 3.5 inch floppies for the same money? If I formatted each disk to 0.75MByte that means I would have 450MBytes of storage capacity available. I would be grateful if you could clarify this seeming paradox.

**N Austin, Hereford**

*stf: The main advantage of a hard drive over a floppy-based system is the speed of access, both for reading and writing of files and for loading programs. It is like comparing the floppy drive to the cassette tape loading systems of the Spectrum and C64. Another advantage is the size of files that can be stored – when working with sound samples or picture data for animation, the file size can often exceed the capacity of a floppy. Many of the more serious applications for DTP, MIDI, CAD and animation come on several floppy disks and it can be impossible to work efficiently if you have to keep swapping floppies to load in different files or sections of the program. Once you have used a hard drive, you won't believe how much your productivity improves. For more information see the hard drive roundups in issues 27, 31, and 39.*

#### PD Info

Where can I get a mouse accelerator program and a program to stop the menus dropping down until they have been selected by a mouse click?

**C Slaughter, Mosman, NSW, Australia**

*stf: There is a mouse accelerator on STF Cover Disk 31 – MACCEL3.PRG. The other program you need is RAT-TRAP, available on Disk UTI.142 from the ST Club (☎ 0602 410241) for £1.45.*



# ST ANSWERS DISKS

## Corrupted fonts

When I try to print documents from *Write On* I get a message "Font xxxx is missing, corrupted or too large." How can I get a font to print?

**Blair Battersby, Warks**

## Cover Disk control

Several Cover Disks recently have advised using *ST Writer Elite* for control. Can I use either *First Basic*, *Organiser* or *ST Basic* instead?

**Neil White, Shropshire**

**str:** Your font file was corrupted when you installed it – try re-installing the program using a formatted disk.

## Viruses: Ten things you need to know about them

1. A virus is a program and cannot damage your machine physically.
2. When you switch off your machine, the virus goes away, it does not lurk in a dark corner under the disk drive and come back later.
3. Always keep disks write-protected – there is no way a virus can infect a protected disk.
4. If you think there may be a virus on a disk, switch on the ST without a disk in the drive.
5. A disk cannot catch a virus by being stored next to a disk with a virus on it.
6. Never use a virus killer program on a games disk because it thinks the game's loading code is a virus and destroys the game.
7. Most viruses are spread by people lending disks to each other, so always check any disks given to you by friends (and enemies).
8. Always check any PD disks you buy, especially if they have come from the smaller libraries.
9. Always check disks you give to anyone – it would be foolish to accidentally pass a virus on to others and irresponsible to do so intentionally.
10. Keep a permanently write-protected virus-free boot disk with a virus killer program on it in a safe place, so you can use this to boot up your system if the worst happens.

**str:** We are not quite sure what you mean unless you are referring to control codes to alter the output of your printer. You can use **BASIC** to send control codes using a line like:

```
LPRINT CHR$ (27), CHR$ (71)
```

*On most printers this sets double strike mode where every line is printed twice to make it darker. Refer to your printer manual for the correct codes for your machine.*

## Font loader tip

**Les Bessant** of **Gateshead** has a couple of easy methods of loading fonts automatically into *Write On*.

1. *Write On* looks for a file called **Fonts** when loading, this file should be in the **WRITE\_ON** folder. It is an ASCII file which can be edited by *Write On* and contains the name of the screen font that matches the default printer font installed. The default Epson font is called **spica**, for screen **pica**. You can edit this line to include whatever fonts you want to autoload. List each font name on a separate line with a CR/LF at the end of each line and save as an ASCII file. Make sure that you use the name of the screen font, without any extension. The next time you load *Write On* all your fonts are loaded for you.
2. Set up all the paragraph layouts you are likely to need including fonts. Go to the **Layout** menu and select **Save Layout** with the name **WRITE\_ON.LAY** in the **WRITE\_ON** folder. The next time you load *Write On* the complete layout is restored, including the fonts.

**Singular tips, double display**

**Neil Hellowell** from **Leeds** sent in some file copying tips for ST owners with single drive systems. Copying a file from inside a folder to the root directory, or into another folder on the same disk, can be a great puzzle to the beginner. Indirect routes such as using a RAMdisk or the drive B icon can do the job but are not needed if you use the following procedure.

Double-click on your Drive A icon and you open its root directory. If you now double-click again on the drive A icon, you open a second copy of the same directory. Position and re-size the two windows to suit your own preferences. You can now manipulate the two windows completely independently of each other, using one to delve into a folder and seek out your file, however deeply it is nested. The other window can be set to show the desired destination, either the root directory or a folder of your choice.

File copying now becomes a simple task: just drag the stuff about from window to window and dump it where you want it to end up.

**Is it safe?**

I have an STE with an external floppy drive. Both my drives can format to 84 tracks and 11 sectors, not just the normal 80 tracks and 9 sectors. How far is it safe to format a disk?

**W Hart, Mid-Glamorgan**

*stf: Usually a disk should not be formatted beyond 80 tracks and 10 sectors because a normal double-density disk is only designed to accommodate these parameters. However, most good branded disks can happily format to 82 tracks and 10 sectors. To format a disk beyond these levels is risking data loss or corruption.*

**Data dilemma**

When I try to copy files or make backup disks I am often presented with the message "Data on disk A may be damaged. You must use the right kind of floppy disk or connect your hard disk correctly." What is going wrong? I don't have a hard drive with my ST.

**Simon Mower, Norfolk**

*stf: Do you have problems loading your games? If you don't then this message usually means that the floppy disk you are trying to copy has become corrupted in some way, but there is a chance that there may be a problem with your disk drive itself. Try formatting a new branded blank disk (in other words, not a cheap one - cheapies often prove to be a false economy for this very reason). If it formats without any problem then your drive is probably OK. If you do get the message while formatting then your drive may be at fault. Contact WTS Electronics on ☎ 0582 491949 who offer a*

*repair service for £49.95. Remember, though, that you cannot copy commercial games disks - they give this error if you try.*

**Mac transfer**

I have an STE with TOS v1.62. Why can't my friend's Apple Mac read my ST disks when he can use it to read MS DOS PC disks? A message appears saying "cannot read disk."

**C Allen, Llandysul**

*stf: Although the STE can format disks to PC standard, this is only true if the disk is formatted from the Desktop. Use the Format Floppy option from the Files menu to create MS DOS disks. If you use a PD disk formatter to create extended formats, then the disk is not in MS DOS format and the Mac is unable to read it.*

**Data loss**

I have been doing a project using *Degas Elite*, *Neochrome*, *Timeworks* and *First Word Plus*. Some of the files have become completely corrupted and some of the data on the disks has been deleted. This has happened previously with other files - what can be causing this and how can I rectify it?

**M A Phillips, Staffs**

*stf: The basic ground rules for looking after data are as follows:*

- 1. Always make a backup of every file - save all your files to two disks every time and always work on a copy. No matter how good you are, it takes only a brief lapse of concentration to commit a disk to the big blue yonder.*
- 2. Never store disks near a magnetic field - your disk box isn't next to a monitor, TV, telephone or loud-speaker, is it?*
- 3. Always write-protect a disk with vital data on it to prevent accidental erasure and virus infection.*
- 4. If you accidentally delete a file, do not use that disk again until you have recovered the file using UNDEL.TTP - supplied with KnifeST. Saving something else to the disk may overwrite the file.*
- 5. Never try formatting a disk beyond its capabilities of 10 sectors and 80 tracks. 11 sectors and 85 tracks sound attractive but may result in the permanent loss of data.*
- 6. Beware of cheap disks - it's worth paying the extra for a branded disk to ensure reliability.*
- 7. If you are using a memory cache, always turn it off when attempting to recover data. The cache usually checks the disk serial number, and since this won't have changed, you end up seeing the old directory in the file-selector.*
- 8. Virus check all disks - all the PD libraries stock virus killers or try the Ultimate Virus Killer (£9.99 from Dou-*





glas Communications ☎ 061 456 9587)

**9. Make another backup (just to be sure).**

*We suggested various ways to recover data in STF 22, page 34 and STF 34, page 78.*

### Copier wanted

Can you recommend a PD disk copying program?

**James Fotheringham, Bucks**

*stf: Hmmm, why do you need to copy disks? If you want a good PD disk copier which cannot copy protected disks, Fastcopy 3 is what you need – it has a host of extra options including hard drive backup. You can get Fastcopy 3 from Goodman's PDL (☎ 0782 335650) on disk GD723 for £2.75.*

### STOS compatibility

I have just got a Mega STE and I have upgraded my STOS Basic to v1.62. I have now found that the mouse and joystick controls are disabled, making it useless for creating games. I contacted Europress and they replied that there are no plans to produce a Mega STE version of STOS. Are my three STOS disks now useless or is there some way that I can still use them?

**Larry Harris, British Columbia**

*stf: Unfortunately you can't use your STOS disks. Unless the authors of the program produce an update, or a programmer can produce a patch or extension, then there is little prospect of owners of machines with TOS 2.06 being able to use STOS.*

### Compiler program wanted

Where can I get the STOS Compiler program so I can produce STOS programs rather than just BASIC listings?

**F Earnest, Somerset**

*stf: Datagem Ltd can supply the STOS Compiler for £13.95. You can contact them on ☎ 071 608 0624.*

### Tip: Speedy file copying

For swift file copying on a single drive system, set up a

### Out of (a)line

The metal slide has broken off a floppy disk and damaged my ST's drive heads. Is there any way I can repair it?

**Paul Jones, Leicester**

*stf: It would be just as cheap to replace the drive with a new one as it would to get the old one repaired. Power Computing can provide the PC7201 replacement internal drive for £39.95. Call them on ☎ 0234 843388 for more details. This is what you do when you've got all the bits and pieces – and assuming your ST is over a year old – if it isn't you'll be voiding your guarantee which isn't a good idea:*

**1.** The first thing you need to do is disconnect your ST from all power sources and remove the mouse, joystick, monitor and printer cables from the various connectors. Then turn your ST upside down and remove the seven Phillips head (cross-head) screws which secure the top of the casing. Put the screws safely to one side, noting their lengths and which holes they came from – some are longer than others and if incorrectly re-inserted they can damage the top surface of your keyboard. You have been warned.

**2.** Next, remove the three screws which secure the disk drive to the base of the unit. Once you've done that, flip the ST over and gently prise off the top part of the casing. It should come off easily, but it might need a bit of jiggling to get it free. When the lid's off, you'll see a large plate of metal covering the guts of your ST. Put the lid safely somewhere and see if there's a smaller plate screwed down near the back of the disk drive. Remove it carefully to give you better access to the drive's cables.

**3.** There are two cables connected to the drive – a large 34 way ribbon cable and a multi-wire affair with a small white plug on the end. Remove these carefully and the disk drive should be totally free. Lift it out, but don't chuck it away.

**4.** Take your new double-sided drive and plug in the small white connector which provides the power to the drive. Next, check the ribbon cable to find the correct



*All you have to do now is reconnect your ST to its favourite peripherals and life will go on as normal!*

#### What is an HD disk?

What is the difference between DD 720K disks and HD 1.44MByte disks?

**Jamie Kanj, London NW10**

*stf: DD 720K disks are the double-sided disks that are in common usage on all major computers – they are normally blue in colour. A High Density (HD) disk uses a special magnetic coating which enables it to pack more data onto each track – 20 sectors instead of ten. The disks can only be used in special HD drives and are usually black. HD floppy disks have an extra hole in them which are similar to write-protect holes. If HD drives detect these holes they permit high density formatting to take place, therefore 720K disks cannot be formatted beyond their normal capacity.*

#### Drive all night

Is there any reason why I shouldn't leave a boot disk in drive A while my ST is switched off overnight?

**John Rutherford, London SW12**

*stf: Is there any reason you should leave it in the drive? There is a small chance of data being written to or erased from the disk when the machine is switched on or off. So, just to be on the safe side, just pop the disk out when you switch your ST off – it only takes a second.*

#### This is the BBC

Can I use programs from a BBC Master computer at school with the BBC emulator on my 1040 STE?

**Neil Rummy, Beds**

*stf: No, you cannot use the programs. The BBC emulator only emulates BBC Basic and can only run BASIC listings. Tell your school to get a real computer and get rid of their expensive toy.*

#### Single-sided perhaps?

On my ST some of your Cover Disk programs do not work. Since STF 33 nothing at all on the Cover Disk works with my machine – why is this?

**Ben Ladson, Northampton**

*stf: After a quick show of hands around the office (unanimous) we have come to the conclusion that you must have a single-sided disk drive in your machine. Full instructions for replacing your internal drive are given on page 97. Power Computing (☎ 0234 843388) supply an excellent replacement internal drive for just £39.95.*

#### Data files

What is a data file?

**Colum Bryce, Didcot**

*stf: A data file is information stored on the floppy disk for use by a program. It could, for example, be a picture file used by Degas or a text file used by a word processor.*

#### Disk formats

What are different disk formats?

**Henry Morecome, Beds**

*stf: When you format a disk it is prepared so that it can store data. A normal ST disk is made up of 80 concentric rings, known as tracks. Each track is split into nine segments like slices of a pie chart. These are called the sectors, each of which can store 512 bytes of data. A normal disk uses both sides of the disk. These settings, or parameters, are the standard format. Extended formats squeeze extra tracks and sectors onto a floppy disk, thus extending its storage capacity.*

#### External worries

I have just bought a second disk drive and I have found to my dismay that two disk games don't use the external drive for disk B. Is there any way I can get around this?

**Gavin Berry, Mid Glamorgan**

*stf: Unfortunately you are stuck with the problem. A very small piece of code to check for the presence of a second drive could be written into any game program, but the software houses don't bother.*

#### Out of service

I have bought *Silent Service 2* for the ST and it would not run on my machine. I got a replacement copy and that didn't work either. Other games work on my machine and the game works fine on other STs. What could be the cause of this?

**Barry Andrews, Devon**

*stf: Perhaps the game disk uses extra tracks to store data and your drive cannot access them – some games use this method as an anti-piracy gimmick. Although most disk drives can format and read up to 84 tracks, they are only designed to read and write 80 track formats. Get your drive tested at a local computer repair shop – they will be able to tell you if it can read more than 80 tracks.*

#### PC formatting tip

If you want to format disks so that data files can be read by a PC then *Diamond Format* on ST Club disk DMG.23 (£1.45) is recommended. This program formats disks



with ten sectors and 82 tracks with a PC bootsector. As a bonus it also writes a PC bootsector to a previously formatted disk, enabling data on it to be read by a PC compatible machine. Contact the ST Club on ☎ 0602 410241.

**Alan Kennedy, London SW1**

### Missing pictures

I have a corrupted disk with several picture files on it. I have tried to retrieve them using *Salvage DL2* and *ProbeST* and have had no luck. Is there anything else I could try?

**Alex Rassail, Wilts**

*stf: Your best bet is to get KnifeST (£29.95) from Hisoft – if this program can't help you then nothing can. It is supplied with a comprehensive manual and a suite of programs to examine and rescue files. Contact Hisoft on ☎ 0525 718181.*

### What's the score?

Is there a Public Domain music score writing program that is STE compatible?

**Steve Mansfield, Manchester**

*stf: Yes, there is, Final Score was reviewed in STF 37 where it received a rating of 85%. You can get it for £2.75 from Goodman's on disk GD1555, ☎ 0782 335650.*

### Budding editor

Can you recommend a good text editor?

**Jonathan Gibbins, Essex**

*stf: Just about the best text editor you can get is Tempus 2 from Hisoft. It costs just £19.95 and is well worth the price – you can contact Hisoft on ☎ 0525 718181.*

### PC compatible ST?

I have a 1MByte STE and, even though I don't have a PC emulator, I can access the files on a PC games disk and display them on the Desktop. Does this mean that my Atari is PC compatible?

**Ashim Bhaugeerutty, London SE13**

*stf: No, it doesn't mean you can run PC software. Because the ST and the PC have similar disk formats, the ST and the PC can read data on each other's disks. In this way ASCII text files and clip art can be transferred between the two types of machines.*

### Dungeon editor

I have been trying to get hold of the *Dungeon Master* editor utility without success – what can I do?

**Lee Foster, Cambridgeshire**

*stf: Place an advertisement in a computer magazine*

*which has a classified ad section. There is bound to be someone with a copy to sell.*

### Magical disk wanted

Where can I get a disk that turns ST software into Amiga software and vice versa? How much does it cost?

**D A Wadeson, Cheshire**

*stf: There is no way to convert ST software to run on an Amiga or Amiga software on an ST. No amount of money can change this situation.*

### DBase yourself

I have been using *DB Master One* for some time and I find it very useful. I need to create ASCII files from it and I think I need a program called MOVEONE.PRG to do this. Where can I get this program?

**Tim Murrill, Surrey**

*stf: Softville have DB Master One on disk ACC 26 which should be complete with all modules – contact Softville on ☎ 0705 266509. For a more comprehensive database why not try Super Card 2 on the Cover Disk of ST FORMAT 36? It has all the functions you will ever need built-in, including an ASCII save option.*

### Ravenous beastie

Help! My STE is eating disks. I've only had it for five months and it has corrupted about 20 disks already. They are all good branded disks from different sources. Is my machine faulty?

**S Canine, Northants**

*stf: There are two possibilities here. The disks may be being corrupted by a magnetic field (in which case, take extreme magnetic media precautions – see page 97) or your disk drive may be faulty. Take your machine back to where you got it, along with the disks and get them to check it for you under guarantee. Make sure that they check the disks on a separate machine to verify whether it is the disks or your machine at fault.*

### Historical charting

Where can I get a program for working out a family tree? I need to be able to chart about 20 generations.

**Steven Charlesworth, Newton Hyde**

*stf: Floppyshop have an excellent genealogy program called Family Roots which was rated 77% in STF 37. Huge databases can be created and the program uses genealogical features as used by professionals. The program costs £24.95 from Floppyshop on ☎ 0224 312756.*

### RAM raider

Why can't I copy a floppy disk to a RAMdisk by dragging



the disk icon from the A icon to the D icon? I have tried it several times even with RAMdisks set up to 720K and it still doesn't work.

**Andy Taylor, Gloucester**

*stf: It is impossible to do this because of the way the built-in diskcopy command works. TOS examines a source disk to determine how many tracks and sectors it contains and tries to create an exact duplicate of the disk. Obviously TOS cannot format an area of memory as if it were a disk. It is quick enough to copy groups of files from a floppy to a RAMdisk in any case – performing a diskcopy function would give you no speed advantage.*

#### **Directory enquiries**

What is the directory found on a disk used for?

**Steve Chapman, Glasgow**

*stf: The directory is a list of the files stored on a floppy or hard disk. The information about each file is 32 bytes long and includes the filename, the file type, the attribute (hidden, system, archive), the time and date the file was created, the address on the disk of the first cluster of data and the length of the file. If this information is damaged in any way, files are lost. They are not destroyed – your ST just doesn't know where to look for them on the disk.*

#### **Complete loony**

A friend of mine has told me that I can take the metal sliders off a single-sided disk and turn it over to use both sides. He said that it works with his Amstrad word processor. Is this true?

**Chris Rome, West Lothian**

*stf: Your friend is talking nonsense! There is no way a 3.5 inch disk can be inserted into a drive upside-down without damaging the disk drive – do not even try it. The old Amstrad word processors had a special type of 3 inch disk which could be used either way up, but these disks are completely different to the 3.5 inch floppies used by today's modern computers.*

#### **More medium resolution**

I have NeoDesk 3 installed on my hard drive and STE combination. The problem is that even using the medium res fix program, NeoDesk still appears in low resolution. Am I missing something really basic?

**G J Edwards, Leeds**

*stf: Once you have booted up and NeoDesk has loaded in low resolution, select Change Resolution from the NeoDesk Options menu. This causes NeoDesk to modify*

*the DESKTOP.INF file and reboots the system. The system now reloads NeoDesk in medium resolution. Set up the Desktop to your requirements and use Save Configuration from the Options menu. NeoDesk then boots up in medium res and with the desired layout.*

#### **Desktop editor**

Do you know of a PD utility that will enable me to edit the Desktop icons on my STE? I don't want an replacement Desktop program, just some new icons.

**Jeremy Holland, Buckingham**

*stf: The only such program we know of is the Window Icon Editor. The editor program is designed for high resolution only but does work with a mono emulator, and the icons designed can be used in any resolution. It is on disk GD928 from Goodman Enterprises (☎ 0782 335650) and costs £2.75.*

#### **Weird trip**

I have been told about a program called Trip-A-Tron by a friend, who said it was a light synthesizer. What does this mean and where can I get it from?

**C Gasper, Ewhurst**

*stf: Trip-A-Tron is another masterpiece from Jeff Minter, he of Llamatron fame (STF Cover Disk 24), not to mention Revenge of the Mutant Camels (Cover Disk 31). The program is designed to produce a "light show" on-screen, the visual equivalent of a piece of music. It consists of a suite of sub-programs enabling you to set up sequences of events, program different parameters to produce effects of your own designs, trigger events from a MIDI keyboard and a video sequencer, giving you control over the screen and enabling you to perform all sorts of TV style special effects. The more advanced features need 1MByte of RAM, although the basic program runs on a bog-standard 520 ST. Trip-A-Tron costs £34.95 from Llamasoft ☎ 0734 814478.*

#### **Movie mogul in waiting**

I am interested in producing amateur video films and I need a decent video titling program and a text scroll program. Do you know where I could get them from?

**Fred Olen Grey, Hammersmith**

*stf: In STF 35 we reviewed Video Titler ST v2 (£34.95) from Laser Distribution and awarded it a rating of 79%. Contact Laser on ☎ 0579 82426 for details. Alternatively you could try the Video Master disk from Budgie Productivity Software. It is available on disk GPR020 from Goodman's International and will set you back £3.95. Call Goodman's on ☎ 0782 335650.*

**Mike Sharman, Kings Lynn**



# ST ANSWERS GAMES

## **I keep on knockin'**

Could you please tell me how to enter the cave in the *Leander* demo from STF 33's Cover Disk? No matter what I do I can't get in!

**Lorraine Brown, Belfast**

*stf: If you mean the cave with the swinging ball and chain there should be no problem – just push down in the entrance. We think you might be thinking of the other entrance to Level Two. This you can't do anything with – the preview didn't include any more than Level One.*

## **Deus ex machina**

How can you get infinite energy or lives in *Gods*?

**Matthew Heneghan, Berkshire**

*stf: Become a fantastically talented assembly programmer, disassemble the game and do it yourself. In other words, you can't. Here are the level codes, though: Level Two, TFP; Level Three, YEF; Level Four, BWV.*

## **Oh No! No Lemmings**

*Oh No! More Lemmings* and *Robocod* wouldn't load on my 520 STFM. The games loaded on other STFMs, and all other software loads on my machine. I've been told the trouble is caused by complicated copy protection. Is this correct?

**Lee White, Norfolk**

*stf: Well, there certainly is complicated copy protection on both these disks, but that shouldn't stop them loading on a 520 STFM. If you're certain you have a double-sided disk drive (both these games are on double-sided disks), it may be that you have an early version of the FM that has trouble coping with the protection. Send your disks back to the software houses concerned,*

*Psygnosis (122 Century Building, Tower Street, Brunswick Business Park, Liverpool L3 4BJ) and Millennium (St John's Innovation Centre, Cowley Road, Cambridge CB4 4WS), explain your problem, and ask for replacements.*

## **Turn on the worm**

At the end of Level Two of *R-Type* the worm always kills me. What do I do?

**Anthony Bellis, Middlesex**

*stf: You cheat by doing this: when the prompt for the second disk appears, press <Help>, type ME and press the up arrow. Wang in the second disk and you have infinite lives. Hit the function keys for interesting effects.*

## **It's a dog's life**

In *The Secret of Monkey Island* I can't get past the piranha poodles outside the Governor's mansion.

**Gavin Campaigne, Glasgow**

*stf: Have a wander around the forest and search out a yellow leaf. Put this leaf on the meat you've also found (haven't you?) and feed it to the poodles. Easy.*

## **Good morning, Vietnam**

I bought *'Nam 1965-1975* at a show, and it won't run on my 4MByte STE running on a TV. When booting up it displays the message that it won't run on the STE or with my TOS version (1.62). Can I buy an STE and/or TOS patch to run my game?

**Simon Cole, Gloucester**

*stf: No need. Just send your copy of the game back to Domark, Ferry House, 51-57 Lacy Road, Putney, London SW15 1PR, and they'll send you a new version which runs on STEs.*

**Is it out on tape?**

I've bought the PD Spectrum emulator and I was wondering if there is any way I can transfer my collections of old Speccy games onto disk, perhaps by connecting a data recorder to the ST.

**Mark Hockings, Hants**

*stf: There's no feasible way of connecting a cassette recorder to the ST. It might be possible to transfer the games first onto a Spectrum disk and then convert them to an ST disk, but you'd need (a) detailed knowledge of both the ST and Spectrum disk formats, (b) the ability to write the converting software and (c) a way of linking the Spectrum disk drive to the ST. Besides, the Spectrum emulator is so slow that the games wouldn't be worth playing, at least not without some form of accelerated ST.*

*Incidentally, Software Projects, who published the classic Spectrum games Manic Miner and Jet Set Willy, are debating whether to convert these to the ST. Software Projects are part of Computer Software Distribution ☎ 061 371 8423. If you want to see these games on the ST, give them a call and register your support.*

**Get it together**

My friend and I like the idea of a two-player game using linked STs. The manual says to use a null modem. Please could you tell me what a null modem is and where I can buy one?

**James Clarkson, Plymouth**

*stf: First, of course, you need a game that supports the linking of two STs, such as PowerMonger or Populous 2. Next you need a null modem cable, which you plug into both ST's serial ports. These cables can be bought from your local computer shop or by mail from cable specialists Meedmore ☎ 051 521 2202.*

**What's er, the Lynx?**

**To: ST FORMAT**

**From: Duncan Ross**

**Subject: Lynx**

OK, STF - you've been warned but you just wouldn't listen. There's only one thing left to do now... yes, I'm afraid it's Ten Things To Do With A Lynx With Flat Batteries (seemingly the default condition).

**1.** Paint your Lynx lime green and attach lots of dayglo fluorescent pink velcro. You can now sell it to a mountain bike enthusiast for many times its original value - mountain bikers love paying well over the odds for colourful plastic rubbish.

**2.** Glue bristles to the top and use it to scrub elephants clean at the zoo.

**3.** Always get a seat on the train by attaching a travel

clock, curly wires and two blocks of grey plasticene to your Lynx, remembering to set the timer for five minutes as you do so.

**4.** When you're having a picnic on a windy day, position a Lynx at each corner of the tablecloth to stop it blowing away.

**5.** An upturned Lynx can be used to carry two pints of beer from the bar to your table.

**6.** Glueing a Lynx to the sole of each shoe makes you seem an inch taller.

**7.** Keep kids quiet during long car journeys by striking them firmly over the head with a Lynx and informing them sternly to be quiet.

**8.** Ladies! An upturned Lynx can be used to carry three glasses of wine from the bar to your table.

**9.** A Lynx makes a handy pencil case for six "AA" sized pencils.

**10.** Pretend your Lynx is a portable colour Videophone by sticky taping a picture of a business associate over the screen and getting half your brain removed by a qualified neural surgeon.

**Duncan Ross (mad as a chair) via Bath BBS**

**Falcon won't fly**

Can you tell me why F-16 Falcon works perfectly on my friend's STFM but refuses to load the second disk on my 1MByte STE?

**Dave Edwards, Colwyn Bay**

*stf: Unfortunately F-16 Falcon is one of the few older games that do not run properly on the STE because of the hardware differences between STEs and the older STFMs. Most ST games were modified to run on the STE when the new machine appeared, but Falcon was not among them.*

**Four player adaptor**

I have a 1040STE and I am wondering how to connect two extra joysticks for playing four-player games such as Great Courts 2.

**Thomas O'Donohoe, London**

*stf: Microdeal (☎ 0762 68020) supply a four-player adaptor for £4.95 which connects to the parallel printer port.*

**Have a blast**

Where can I get a Trojan light gun and software as reviewed in STF 33? How much are they?

**C Chessman, Humberside**

*stf: Trojan live at Trojan Products, Unit 7, Dafen Park, Llanelli, Dyfed SA14 8LX ☎ 0554 777993, and the guns are £39.99 each.*





# ST ANSWERS GRAPHICS

## Is 3D for me?

I am getting a mono monitor which I intend to use with a 3D CAD program. I saw the Stonehenge pics produced by CAD-3D in ST FORMAT 30 and was very impressed. Does CAD-3D rotate objects for editing? How does it compare with *Cyber Sculpt*? Can I create a 3D object and save it as a picture file to be imported into a low res art package such as *Canvas* or *Degas Elite*?

**Nic Butler, Weymouth**

*stf: CAD-3D 2 is part of the same software range as the Cyber series by Antic Software and objects you produce with it may be directly imported into Cyber packages to produce animations. It can rotate objects, zoom or out, fill objects, scale objects and so forth. It can also save files in Degas high res format which can then be imported directly into Degas Elite in low res, or converted to low res Degas or Neochrome files by the Pic-switch 7 file conversion utility (which is PD). CAD-3D 2 is £39.95 from Cambridge Business Software on ☎ 0763 262582.*

## Spectre tip

**M Lauretta from London N7** sent in details of converting ST-generated *MacPaint* files for use with the Spectre GCR Mac emulator or on a Mac.

For some reason files saved in *MacPaint* format from an ST package do not work on the Mac emulator, but there is a way around this.

1. Save your pictures in .IMG format onto a PC disk.
2. Use the *Graphic Workshop* Shareware program on a PC or a PC emulator to convert the file to *MacPaint* format and resave to the floppy.
3. Use the *Transverter* program supplied with Spectre GCR to copy the file to an MFS format Spectre disk.
4. When the disk is used in Spectre or on a Mac it now has the correct icon and works perfectly.

## Graphical knowledge

Where can I get the program *ST Graph* from?

**Lee Tolkien, Berkshire**

*stf: Contact Silica Systems (☎ 081 309 1111) who can supply you with ST Graph for £19.99.*

## Artistic novice

I have a 1040 STE and have produced some good pictures using *Hyperpaint 2*. How do I show the pictures on-screen once they are saved to disk?

**Ron Lightfoot, Wiltshire**

*stf: You cannot display pictures directly to the Desktop without using a program designed to do this. The Auto-play program and Intro Designer on STF Cover Disks 29 and 34 respectively enable you to produce a slideshow of pictures to which you can add sound.*

## Which paint package?

Can you recommend a good paint package?

**Nigel Deacat, Kent**

*stf: Deluxe Paint (£59.99) from Electronic Arts (☎ 0753 549442) is an excellent colour drawing package with many features including an animation facility. Another popular program which has stood the test of time is Degas Elite (£25.99), also supplied by Electronic Arts and is simple enough for beginners to pick up easily.*

## Scan this

Which art programs can import scanned pictures into them directly?

**Ann Barlow, High Wycombe**

*stf: If you save your scans as Degas or IMG (which most scanners can do) then they can be imported into any*



*program which can load these filetypes – simply select the filetype when loading.*

#### **Colour prints**

Is there an art package for the ST that prints colour on the Deskjet 500C?

**Michael Squires, London**

*stf: Most ST software is not provided with a colour printer driver – you also need a printer utility – try IMPrint from zzSoft (☎ 0254 672965) which costs £15.95. This program deals with 9-pin and 24-pin printers and can import pictures in all the popular file formats – Degas, Degas Elite, NEO and Tiny. It works in any resolution and converts pictures from one resolution to another, automatically greyscaling colour images when transferring them to high res. It also includes a drawing toolbox so you can make last minute alterations to your pictures before you print them out. Have a glance at the review in STF 35 – we gave it 66%.*

#### **Neochrome colours**

I have noticed that you can only display 16 colours in Neochrome pictures yet the colour selector can show all of them. How is this possible?

**Michael Power, Ireland**

*stf: A special machine code routine is used to enable you to see more than the maximum number of colours on-screen at once. A common method of doing this is to change the colour palette after every scan line is displayed on-screen.*

#### **Pretty lines tip**

If you press the right mouse button instead of the left when you're using the paintbrush in Neochrome, you draw lines coloured with the shades that are in the current palette.

**Tim Davey, Coventry**

#### **Cracked up**

In Crack Art I can't load in any pictures saved using any other art packages. I've tried by using Degas, Neochrome, Canvas and Paintpot pictures but none of them works. Have you any suggestions?

**Simon Wells, Herts**

*stf: Our copy works fine with every picture we have tried to load into it from other packages. You may have a corrupted copy of the program. Return the disk to the PD library you got it from and ask for a replacement.*

#### **Timeworks free**

I want a graphics program to use with Timeworks DTP but I don't wish to spend more than £40 to £50. Is Degas

Elite suitable and has it been reviewed by ST FORMAT?

**David Collins, Surrey**

*stf: Degas Elite saves its files in PI1/PI2 or PI3 format, which can be imported into Timeworks, as can IMG format files. Degas was reviewed in STF 30 and was rated at 90%. Degas is still one of the best art packages around and is one of the easiest to use. It costs £25.99 from Electronic Arts (☎ 0753 549442).*

#### **How do you do that?**

**Mark L. Posvar** from **Huntington Beach, California**, asks how we get the screen shots of games which we use in our Screenplay section of the magazine.

*stf: There are several methods, but most often we use an ST or STE with its monitor RGB output connected to a Macintosh 2cx via a magical device called a Radius graphics board. The output from the board is piped into the Mac, where a program called Theatrics displays the ST display in real-time in a window. This window can be grabbed at any point and saved as a PICT2 format picture to a Mac floppy. This picture can then be loaded into our DTP software. So now you know.*

#### **Am I rendering?**

I have a problem with QRT that I got on Cover Disk 35. I've tried doing a sample picture, entering the parameters in the dialog box as stated, and all I get is a screen with the authors' names and a flashing cursor. There's no indication that rendering is taking place. Help!

**Paul Cardin, Merseyside**

*stf: Right, assuming both QRT.TTP and the sample text file (say MIRROR.QRT) are on disk A, all you need to do is: double-click on QRT, enter -a 0.625 a:MIRROR.QRT and press <Return>. The title screen should appear along with some information and line that says "Tracing scanline xxx (xx% complete)". Both numbers increase as the rendering takes place until it's 100% complete.*

#### **Picture formats**

I have come across some picture files in formats such as TNY, TN3, MAC, IFF, TIFF and so on. How can I get these pictures into Degas Elite or Neochrome?

**Peter Brooks, Harrow**

*stf: The best way is to use PicSwitch 0.7 on disks DMG.14 and UTI.142 from the ST Club (☎ 0602 410241) for £1.45 which can convert pictures between formats.*

#### **Which scanner?**

I'm thinking of buying a hand-held scanner for my ST. Can you recommend one in my price range – up to £150?

**David Tyack, Derby**



*stf: You don't mention which ST or STE you have. This could be important because some scanners are not STE compatible – such as the Datel. One of the best buys around at the moment is the Zydec Handy Scanner from Evesham Micros (☎ 0386 765500) for £100. You can switch scanning resolutions between 100, 200 and 400 dpi (dots per inch). The higher the scanning resolution selected, the sharper the scanned image. The package comes complete with the Daatascan Professional scanning software, which is as good as you can get.*

#### **PD CAD required**

I need a cheap PD CAD package that can print to a 24-pin printer, produce solid shading and save files in *Degas*, *Neo* and *IMG* formats.

**Andrew Meredith, Chippenham**

*stf: There are very few PD or Shareware CAD (Computer Aided Design) packages about. JILL 2D and ST CAD are on Disk GD992 from Goodman Enterprises (☎ 0782 335650), and the ST Club (☎ 0602 410241) have 3D CAD on Disk GRA.71. These packages offer a good basic introduction to CAD on the ST at low cost. However, if these don't cover all the options you require, the original version of Antic's CAD-3D 1.0 is on sale at £20 from Gasteiner Technologies on ☎ 081 365 1151.*

#### **Hyperpaint query**

Can a hand scanner be used with the *Hyperpaint* graphics program from Atari? I have checked the manual but I can find no mention of scanners in it. I don't want to buy a scanner if I can't use the pictures in *Hyperpaint*.

**David Linton, Sheffield**

*stf: No, you cannot scan pictures directly into Hyperpaint. Don't worry, though, because all scanners come with software which enables you to save images in a variety of picture file formats including *Degas* .PI format and .IMG format. You can import both these file formats into Hyperpaint without difficulty.*

#### **Graphic tablet**

I use my STFM for graphics mainly using *Degas*, *Quantum* and *ZZ Rough* but I find it awkward to use the mouse for drawing. Can you recommend a graphics tablet I could use with my ST?

**Nicola Dewit, Harrow**

*stf: The only graphics tablet for the ST is the Cherry Digitiser Mark 4, but it is a rather expensive option at about £535. It is more suited to a professional designer's needs than for home use. It is directly compatible with any drawing or art package you own as long as it is GEM based with access to the Desk Accessory menu. You can also use it with non-GEM packages if you hold*

*down the <Alternate> key while loading the program. For a detailed review see STF 29. Cherry Electrical Products can be contacted on ☎ 0582 763100.*

#### **Canvas tip**

Here is a snippet of information concerning the art package *Canvas* (ST *FORMAT* Cover Disk 30) which might help people having problems with high resolution pictures they have created with it.

**Goffart Maurice** from **Antwerp** in **Belgium** says: "Did you know *Canvas* saves *Neo*, *Degas* and *IMG* files incorrectly in high resolution? It saves *Neo* and *Degas* screens as low resolution files and *IMG* screens as 0 x 0 resolution files in one colour. Only *Canvas* itself is able to reload these files. The solution is to use a screen-grabbing utility – like *James the Desktop Butler* (£2.75 from Goodmans PDL ☎ 0782 335650) with the Snapshot function on. Change the cursor in *Canvas* to the Point cursor (single pixel size) and position it so it is not visible in the picture. Press the <Alternate> and <Help> keys together and the file is saved properly in *Degas* .PI3 format.

#### **Degas block tip**

When you're using *Degas Elite* in block mode, it is possible to reflect the block by pressing the cursor keys. The up and down keys perform a reflection in the X-axis (that is, up and down) and the left and right arrows perform a reflection in the Y-axis (left and right).

**Paul Hammond, Isle Of Wight**

#### **What a view**

Can I convert *Degas* .PI1 or .PC1 files to .IFF format for my friend to view on his Amiga games machine?

**I Walton, Daventry.**

*stf: Both Picswitch 7 and View GIF can read .IFF picture formats and save them as .PC (compressed) or .PI (uncompressed) Degas files. Degas Elite can import .IFF files directly, but you wish to transfer files in the other direction. Since Degas saves blocks in .IFF format, the solution is as follows:*

- 1. Load Degas Elite and load in the picture file you wish to transfer.*
- 2. View the picture and select the Block option by pressing <Esc>.*
- 3. Cut the whole screen as a block.*
- 4. Go back to the menu screen and select the Save Block option from the Block menu. Save the block to disk.*
- 5. Repeat for all pictures you wish to transfer.*
- 6. Exit Degas. Use the Show Info option from the File menu on the Desktop to alter the file extenders of your saved file from .BL1 to .IFF.*

*The .IFF format is used on machines like the Amiga games machine, so if you save to a PC formatted disk in*



*step 4 (the STE can do this as part of the Format option at the Desktop), your friend can use the Cross-DOS utility on the Amiga to transfer the files to an Amiga format disk so he can use them.*

#### **What are they all?**

I am interested in getting into art and graphics on the ST, but I am a bit confused by the various hardware options available. Could you please explain the differences between scanners, digitisers and genlocks and what they are used for?

**E L Brown, Corsham**

*stf: Each device is used in different ways for varying purposes. A scanner works rather like a photocopier by scanning the page with a strong light source and creating an image in memory in a form that can be used by your ST. This device is used to transfer photographs, drawings or text from the printed page into an art or graphics package to be manipulated and used as you need it – usually to be imported into a DTP package.*

A scanner can come in two forms: either a flatbed or a hand scanner. A flatbed scanner is a large table-top device which can handle documents up to A3 in size and can be very expensive. There are also A4 versions available that are not quite so expensive but are usually out of the price range of the home user.

The other option is a hand scanner. This is rather like an overgrown mouse which you use by dragging it

across the picture in a smooth steady movement. The scan width is usually about 105mm, so you have to make several scans to copy an A4 page. Hand scanners vary in price from £100 to £250. The Naksha Scanner costs only £99 and is available from Naksha on ☎ 0925 56398.

A video digitiser is an add-on which can take TV and video pictures from video cameras, TVs, video recorders and laser disk players and convert them to an ST graphics format. Most digitisers work best with still pictures (meaning simply that you can do better if your VCR has a good freeze-frame facility) and produce monochrome output. The VIDI ST digitiser from Rombo can grab pictures in "real-time" (from a moving picture) at a rate of 12 frames, or pictures, per second. With various add-ons and accessories, you can grab colour images. The basic VIDI ST can be obtained from MJC Computer Supplies (☎ 0462 481166) for £84.95.

A genlock is a device which enables you to mix video output with high quality ST-generated graphics and is ideal for creating titles for videos or graphics presentations. Genlocks tend to be expensive devices and are not generally used in the home. The GST Gold 40E genlock is a German import and costs about £250. Contact Ladbroke Computing on ☎ 0772 203166 for availability.

See our special feature on using your ST for video in STF 24 for a more detailed look at what you can do and the hardware available.



# ST ANSWERS HARD DRIVES

## Hard drive hang-up tip

In *ST FORMAT 13* Roland Given claimed that the only way to rescue a hard drive from a corrupted ICDBOOT.SYS which crashes the drive is to use the HDUTIL.PRG copied to a RAMdisk before the hard drive is turned on. There is a much simpler solution as long as you have an ICD card. On the floppy disk supplied with the ICD interface is a program called ICDBOOT.PRG. This file installs and boots the hard drive. Simply follow these steps.

1. Turn off the ST but leave the hard drive on.
2. Insert the floppy with ICDBOOT.PRG in drive A.
3. Switch on the ST and hold down the <Alternate> and the left <Shift> keys.
4. The Desktop now loads from the floppy disk, not the hard drive.
5. Run the ICDBOOT.PRG from the floppy disk.
6. Install a drive C icon from the Desktop and you are now able to access the hard drive and get to the corrupted files.

**Richard Fitzgerald, Essex**

## 5.25 inch disk drives

Would it be good to have a 5.25 inch external disk drive connected to my ST rather than a 3.5 inch? Would this give me greater memory capacity and easier storage of disks?

**D R Rattle, Cambridgeshire**

*stf: No, a 5.25 inch drive would not give you greater storage capacity. Although 5.25 inch disks are physically bigger, they cannot store more information. In fact, it is only comparatively recently that 5.25 inch disks have been able to be formatted to as much as 720K on a PC. You can only use a 5.25 inch drive with an ST if you have a PC emulator, and even then most PC software that's now available comes on 3.5 inch disks.*

## Single-sided

Can I change the single-sided internal drive of my 520 STFM for a double-sided drive? If I buy a replacement drive is it likely to be double-sided?

**Roderick Cowie, East Lothian**

*stf: There are full instructions for upgrading to double-sided in the Disks section on page 98. It is a simple operation and should not take more than 30 minutes. All replacement internal drives are double-sided, Power Computing (☎ 0234 843388) can supply an internal drive for just £35.*

## Partitions

What is a drive partition?

**Emma Parfy, Yorkshire**

*stf: When a hard drive is formatted, most people find it a bit daunting to have one huge drive containing 40MBytes of programs. That can work out to be an enormous number of files and folders making it easy to lose track of where programs and information are. Many people find it helpful to format the hard drive in a special way that splits the 40MBytes of space into four 10MByte sections called partitions. Your ST treats each partition as if it were a separate hard drive and assigns each one a letter. In this way you end up with four hard drive icons and you can use each one for different types of data. Drive D could, for example, contain your art packages, drive E your MIDI programs and drive F your word processing packages.*

## Tip: single to double file transfer

If you have a new ST with a double-sided drive and you know someone else with an older machine with a single-sided drive, you can use an old *ST FORMAT* Cover Disk to transfer info between STs. Remove all the folders one



by one until only the side two folder is left. In this way, you can use both sides of the disk and your friend with the single-sided drive can use side one.

**John Rhodes, Leeds**

*stf: That's a good idea, but why not just use a single-sided disk to transfer data? A double-sided drive can read both kinds of disk.*

### **Driven by a Mac**

What is an ICD Hard Disk Interface? I have seen Apple Macintosh SCSI drives available for much less than ST hard drives – if I buy a Mac drive and the ICD interface can I build my own ST hard drive? Where can I get an ICD interface and how much is it?

**Stephen Smith, Tyne and Wear**

*stf: There are 40MByte hard drives available for the ST now for as little as £299 – such as the Reference 40 drive from Evesham Micros (☎ 0386 765500). If you think that adapting a drive is going to save you money, then read on.*

*The ICD interface is a DMA to SCSI adaptor – it simply enables the ST to speak to any SCSI hard drive. You should be able to adapt a Mac SCSI drive without too much difficulty if you have some technical knowledge. You can get the ICD Advantage ST SCSI Host Adaptor from System Solutions (☎ 0753 832212) for £69.*

### **DMA doubts**

I have an early STE which is, I believe, is equipped with the allegedly faulty DMA chip (hard drive controller) you reported in your News pages early in 1991. I want a hard drive and I am worried that it may become damaged if I use it with my STE. How can I tell if the chip is a faulty one and how much would a replacement cost?

**Dave Griffiths, Wirral**

*stf: There have been very few reported cases of the DMA chip problem. The simplest thing to do is to buy your hard drive and format it. Save and reload some picture files back and forth to the hard drive from an art package such as Degas or Canvas. If the pictures become corrupted on reloading, then this immediately indicates that there is a problem with your machine. In the unlikely event of this happening you can contact Atari (☎ 0753 533344) and they will replace the DMA chip free of charge.*

### **External drive A required**

I have a 520 ST with external drives A and B. The problem is that my old Atari drive no longer works and I can-

not get a replacement mechanism for it. Do you have any suggestions?

**Barry Aldous, Suffolk**

*stf: Ladbroke Computing Ltd can supply the Golden Image 3.5 inch Floppy Disk Drive for £69.99. The drive includes a throughport and digital track counter. Phone Ladbroke Computing on ☎ 0772 203166.*

### **Doubly floppy**

I am thinking of getting a second floppy drive to use with my STE and I have several queries about it.

**1.** Is there a real advantage to having two floppy drives?

**2.** Can I connect more than two floppies?

**3.** Do I have to use the Atari own brand drive to avoid invalidating my warranty, or is safe to use other manufacturers' drives?

**4.** Is it safe to use a drive powered from the joystick socket?

**5.** Are all external drives double-sided, or do I have to ask for them specifically?

**J Humphries, Leicester**

*stf: 1. Yes, there is an advantage to using two floppy disk drives. You not only eliminate all that tedious disk swapping but you also increase data transfer rates when moving files between disks. What's more, you can use drive B as a data drive when using applications such as word processors and graphics or art packages while keeping the program disk in drive A. (Some programs require you to keep the program disk in the drive at all times.)*

*2. No, you can't have more than two floppy drives. The ST is limited by its hardware to two floppies.*

*3. Any brand of drive is fine as long as it is ST compatible. This should be clearly stated in advertisements and on the box.*

*4. Using a drive that draws power from the ST's joystick port should be OK in most circumstances, but could conceivably overload the power supply if you have heaps of internal add-ons connected, such as emulators or extra memory. There are several drives available powered from the joystick port, but there is usually only a £5 to £10 price difference between these models and floppy drives with their own internal power supply. If you are concerned about the risk, then pay the few extra pounds for peace of mind.*

*5. All current ST disk drives on the market are double-sided as standard. There are several companies advertising in STF that can supply you with drives at very reasonable prices. Try Evesham Micros on ☎ 0386 765500 – they provide an external drive for £54.95 with its own internal power supply.*





# ST ANSWERS PRINTERS

## **Colour printing with 1st Word Plus**

I have a Citizen Swift 9 colour printer and I am wondering if it is possible to use it with 1st Word Plus. The printer can emulate Epson FX850 and IBM Pro Printer 3 modes, so can I output in colour from 1st Word?

**Gareth Walker, Merthyr Tydfil**

*stf: According to the 1st Word Plus manual you should use the Epson JX printer driver supplied when using a 9-pin colour printer. This should work with all Epson-emulating colour printers.*

## **Auction bargain?**

I bought a Hermes 18-pin wide-carriage printer at an auction for £10. It has a Centronics and a parallel interface, and although the parallel interface works perfectly with the office PCs I can get no results from my ST. How can I get it going?

**Andy Mills, Hampshire**

*stf: Check the software you were using at work to see which printer driver was installed (Epson for instance) and set up your own machine in a similar fashion. If the software you are using does not contain a matching printer driver, then contact a PD library to see if they can supply what you need – see our directory on page 83 for one near you. Most have a wide range of printer drivers in their collections.*

## **Make that connection**

How do I get my Epson MX80 9-pin printer to work on my 1040 STFM?

**Paul McCool, Glasgow**

*stf: Essentially you plug it in and hit the "Print" command in your software. You need a Centronics printer lead – between £7 and £10 from a computer shop, or*

*contact WeServe (☎ 0705 325345) for leads by mail order. Connect the lead between your printer and the printer socket on your ST. Any program which outputs to a printer gives you an option to select the printer type – check the manual for how to get at these if you're not sure. If there is no option for Epson MX printers, choose Epson FX. This is present in all programs which use a printer. It's even possible that this is the pre-set default printer. Now select the program's Print option and you're ready to go.*

## **Deskjet errors**

I have been using an NEC dot matrix printer with my ST for some time with no problems at all. I am now using an HP Deskjet 500 and I appear to be getting some problems when printing. Characters are replaced by other characters for no apparent reason. My original printer cable is two metres long and works fine with my NEC. A shorter ribbon cable seems to work OK with the Deskjet. Is the fault with the printer or my ST?

**S B Price, Gloucestershire**

*stf: You have already solved the problem by using a shorter printer lead. The ST's parallel port is a touch under-powered, although this problem varies between machines. An alternative solution to a shorter lead is to use a hardware printer buffer which can have the effect of increasing the signal from the parallel port. Marpet Developments (☎ 0423 712600) supply a range of printer buffers ranging from 128K (£49.99) to 1MByte (£99.99).*

## **Colour output problems**

I am using a Citizen ProDot 24 colour printer with my ST but I can't get colour printouts. I have tried Hyperpaint 2, Degas Elite and Neochrome to no avail. How can I manage a colour printout?

**Mike O'Shea, Birmingham**



**stf:** *The Flexidump Plus colour printer utility from Care Electronics (☎ 0923 894064) is the solution to this problem. It comes complete with mono and colour 9-pin and 24-pin printer drivers and costs £39.95. You simply use your favourite paint package as normal to produce your graphics, save them to disk, load up Flexidump, load in the pictures and print them out. Not as simple as just hitting Print, but it works.*

#### **Doesn't tally up**

I have been given a second hand Mannesman Tally printer. I have no instruction manual. Could you tell me which printer it is compatible with? I am using the word processor Write On.

**Paul Allison, Berkshire**

**stf:** *Try Silica Systems (☎ 081 309 1111) for a manual for your printer – they are official Mannesman Tally distributors. Alternatively contact Mannesman Tally on ☎ 0734 788711. Be sure to let them know the model number of your printer. If you are setting up your printer for use with Write On, try installing the program using the Epson FX drivers. In 99% of cases the Epson drivers do the trick. If the Epson driver doesn't work, then try installing some of the other 9-pin printer drivers. Trial and error is your best bet – at least until you get a manual.*

#### **Printer novice**

I have been given an Epson LX-800 with no manual and I have no idea how to use it. What are all the buttons on the front for, and what do I do with all the switches on the back? Where can I get some instructions and a tractor feed from?

**Paul Hamblin, Birmingham**

**stf:** *You need to contact Epson on ☎ 0442 61144. They can provide the instructions and the information on the tractor feed that you need.*

#### **Colour 1st Word Plus printer driver**

**Mike Bowen** of Chester-le-Street, County Durham, has a tip for anyone trying to produce coloured output from a printer.

It is possible to print colour images from within 1st Word Plus files, although the manual makes only a minor reference to this fact. Medium resolution images can be captured with the Snapshot Desk Accessory and incorporated into documents in the normal fashion. Although the four default medium resolution colours are somewhat limiting, this is quite adequate for line drawings and diagrams.

However, the real beauty of 1st Word Plus for those with unusual printers (like 24-pin colour) is the facility to customise the printer driver. For example, it is quite sim-

ple to modify the printer driver to enable sections of coloured text to be printed. This is how:

1. Make yourself a copy of the most appropriate printer driver hex file.
2. Edit this file using 1st Word Plus in non-WP mode – that is, as ASCII.
3. Select one of the accented characters in the character translation table that you do not wish to use.
4. Replace the hex code for that character with the hex code instruction from your printer manual for a particular colour of print.
5. Repeat steps 3 and 4 for each of the colours supported by your printer – including black.
6. Save the edited driver file and run the Install program provided with 1st Word Plus.

When this driver is loaded it is possible to print blocks of coloured text by preceding the text with the relevant accented character from the Font Table. The end of the block must be succeeded by the character representing black. This technique can be used to control just about any feature of your printer which is not directly supported from within 1st Word Plus.

It is a good idea to create a file called "HELP.DOC" containing a small table indicating the modified characters and their effects. This file can then be opened within a document whenever a special effect is required.

#### **Amstrad DMP 2000 printer**

Can I connect an Amstrad DMP 2000 printer to my ST?

**P Keogh, Midlothian**

**stf:** *As long as a printer has a Centronics (parallel) interface, it should work with any ST using Epson printer drivers. A Centronics socket looks like a 36-pin edge connector and is larger than a normal 25-pin D socket.*

#### **Colour printing... or not**

I have a 1040 STE and a Star LC24-200 colour printer, but I cannot produce any colour output using Hyperpaint 2. What do I need to do?

**J Danbury, Shropshire**

**stf:** *Hyperpaint 2 does not have a colour printer driver. You need a print utility program called IMPrint from zzSoft (☎ 0254 672965) which costs £15.95.*

#### **PageStream 2**

Does PageStream 2 print in colour on the Deskjet 500C?  
**Michael Squires, London**

**stf:** *Yes, there is a printer driver provided for the Deskjet 500C.*

#### **Print it!**

I have a 520 STE and a Panasonic KX-P1123 printer and



am having trouble getting graphics printouts. Would a colour printer give better results?

**H Clarke, Macclesfield**

*stf: No, a colour printer would not give you better results – when you're using any software package and a Panasonic 24-pin printer, select an Epson 24-pin printer driver because Panasonic printers use Epson emulation, this should give the correct output. If it is not quite right, try several printer drivers until you achieve the best results.*

#### **Memory time**

When I use *Timeworks* DTP pages I keep getting messages saying "Disk is full, unable to print all messages from this page." If I continue, the text is printed but not the graphics. I also get messages saying "Internal error #1." I am using a 1MByte STE – do I need more memory?

**James Kaye, Herts**

*stf: We recommend that you use at least 2MBytes of memory if you want to produce large documents or many graphics. Contact HCS (☎ 081 777 0751), who can provide you with 2MBytes of SIMMs for £60.*

#### **Oh brother**

What printer driver do I need to use for the Brother S2518 and *Write On*? I do not have an instruction manual for this printer.

**G Watson, London**

*stf: In most cases, either Epson FX or IBM emulators work with any 9-pin printer. Try installing the program with the Epson printer driver – if this does not work, try the other drivers until you find one which does work. Contact Brother on ☎ 061 330 6531 to check out instruction manuals.*

#### **Printer manual required**

I have bought a Star NL-10 printer second-hand, but there was no instruction booklet with it. Where can I get one?

**Steve Harper, South Humberside**

*stf: Phone Star Micronics ☎ 081 840 1800 and ask them for the one you need.*

#### **Serial killer**

I have recently acquired a second-hand Silver Reed EXP 500 serial daisy-wheel printer, and I wish to use it with my STFM. The printer is fitted with a 25-pin female D connector. Could you please tell me if this needs a standard serial cable or is it a special one?

**H Hatchett, Middlesex**

*stf: A normal serial printer lead should solve the problem. If your local computer shop or Tandy can't supply you with one, contact lead specialists Meedmore (☎ 051 521 2202). However, some older STs have problems driving serial printers. There is an official Atari patch program to cure the fault, and you can get it from the ST Club (☎ 0602 410241) on utility disk UTI.125 (£1.45).*

*Bear in mind that a daisy wheel printer can only give you text output – you may be better off buying a second-hand dot matrix printer capable of supporting graphics output as well if you're likely to need it.*

#### **Out of control (codes)**

I am having a problem using *ST Writer Elite* to output control codes to my Star LC-10 printer. I have entered the control codes before the text in documents but I just get the numbers printed out before the text. Can you give me some advice on this?

**Robert Chambers, Blackpool**

*stf: To enter decimal codes into ST Writer you must first press the <Control> key (on the left end of the keyboard) and the letter "O". A highlighted letter O appears at the start of the line of text. Now enter your decimal control codes separated by commas and press <Return> after the last code. All the following text is now printed in the new style – don't forget to reset the style of the text afterwards.*

#### **Which is better?**

Which is the better printer, Canon's BJ-10ex or the new Star SJ-48? The prices are similar but what about the output?

**Niall Moran, Argyll**

*stf: Both the Star and the Canon printers use the same mechanism, so the output is virtually identical. Both printers can be obtained from We Serve (☎ 0705 325354) by mail order, the Star SJ-48 for £229.00 and the Canon BJ-10ex for £235. Both printers are supplied with cable and paper included.*

#### **Old thingy**

I have an old Amstrad DMP1 printer which I use with an Amstrad 464 to print graphics. Can I use it to print graphics with my ST?

**Kevin Russell, Alloa**

*stf: If the printer is a 9-pin then there is a good chance that it will work if you select Epson printer drivers from any art packages you use. Contact the Amstrad hotline on ☎ 0891 808181 for further details of your machine – but remember that calls cost 48p a minute on ☎ 0891 numbers.*



**Mind the gaps**

I have an old Schneider NLQ-401 printer. Straight text works OK, but if I try to print anything in graphics mode I get white lines about every 4mm.

Can you recommend a printer driver to solve the problem?

**Kelvin Bird, South Glamorgan**

*stf: Unfortunately you do not indicate which programs you are having problems with. Every application has its own customised printer drivers supplied with it.*

*First, check your printer manual to see if it can be set to Epson or IBM emulation by setting DIP switches. If so, you can use those drivers.*

*If you are using 1st Word Plus you can edit one of the printer hex files found in the printer's folder with the aid of your printer manual. Load up 1st Word Plus and load in a hex file – the Epson one is probably the best one to experiment with. The problem you wish to solve is the line feed length. You simply enter the codes relevant for your printer on the correct line – each entry is clearly labelled. Save the edited hex file as ASCII with a suitable name (SCHNIDE.HEX) and use the INSTALL.PRGM to create a printer driver.*

*If you are using different programs then you have to experiment with various drivers or contact the producers of the software concerned. Many companies can supply extra drivers.*

**Kodak snap**

I've seen an advert for the Kodak Ektaplus 7008 laser printer for £499. The recommended price is £1,459, so this looks like a bargain to me. Can I use it with my STE?

**R Stammers, Leeds**

*stf: As long as the printer has a standard Centronics parallel port, then it should run with any micro – although you may experience problems when you try and find a suitable printer driver. Most laser printers emulate the HP Laserjet series of laser printers; Kodak confirm that the Ektaplus 7008 emulates the HP Laserjet 2. Since most good DTP and word processing packages are supplied with HP laser drivers, you could use them with the Ektaplus printer.*

**One day my prints will come**

I cannot print out full colour pictures using Canvas, Hyperpaint and other art packages on my Citizen Swift 9 colour printer. How can I get colour printouts?

**Richard Murrell, Hants**

*stf: Because each art package uses a different printer driver, your easiest option is to buy Flexidump Plus*

*(£39.95) from Care Electronics (☎ 0923 894064). This program enables you to produce full colour screendumps.*

**Apples and pairs**

How am I supposed to connect my Apple Personal Laserwriter NT printer to my 520 STFM?

**Andrew Castles, Belfast**

*stf: You don't – Apple Laser printers are actually designed specifically for use with the Apple Macintosh range of machines. The Mac has got its own type of printer output port which is not supported on other machines.*

**Draft quality only**

How do I make my Amstrad LQ3500di 24-pin printer run from my STFM? It only prints in draft quality and I don't know how to change to LQ output.

**David Holmes, West Sussex**

*stf: You do not say what software you want to use the printer with. A general rule is to select Epson 24-pin printer drivers from the program you are using.*

*Alternatively, you could use the Twin Peaks printer Accessory from the ST Club (☎ 0602 410241) on disk DMG.23 (£1.45). This enables you to send codes to your printer to turn on and off the functions you require.*

**German printer output**

I have recently bought an ST system and a Star LC-10 colour printer and am pleased with the performance of both. However, I cannot get the printer to output German characters with umlauts and so on. I have done a printer self-test and fiddled with the DIP switches and the characters are in the printout. How can I get at them?

**Nigel Deacat, Surrey**

*stf: What you need to do is select the German character set by means of the DIP switches in the printer, or by sending a series of codes from the ST to set the printer to the German set. If you look at the appendix of your LC-10 manual, you should find a section on the foreign character sets and the appropriate DIP switch settings and Escape Codes. There should also be a table to let you know which keys to hit to get the new characters. The best method of sending printer codes is via a PD printer setup utility program. Two good programs available from the ST Club (☎ 0602 410241) are Twin Peaks (Disk DMG.23) and PRT.SET (Disk UTI.127), £1.45 each. Alternatively, you could edit the printer driver file for 1st Word Plus to produce a custom driver.*

**WARNING: Remember to always use a backup copy of any files you wish to edit.**



# ST ANSWERS PROGRAMMING

## Which BASIC?

I would like to start programming with my STFM. Which BASIC language would be best for writing simple games?

**A Noakes, West Bromwich**

*stf: STOS is the language you require. As well as being a very good implementation of BASIC for the ST, it is oriented towards graphics and sound commands. One of the advantages of STOS is that new commands can be added to the language by means of add-on modules called Extensions, the most recent of these being STOS 3D. Coupled with the compiler to create standalone programs, STOS should provide all the features you need to produce games. Many utilities have also been written in STOS and can be found in the Public Domain. You can get hold of it from STF Cover Disk 37 or from Mandarin on 0625 859333 for £29.99.*

## It's full of stars

Is it possible to have different layers of scrolling in STOS Basic, so you could create effects like parallax stars?

**K Cadogan, Leyton**

*stf: Yes, it is possible to have parallax scrolling within a STOS Basic program, although it wouldn't be very fast. You would achieve this by using the SCREEN\$ command, which automatically overlays the source image in a string with the destination screen. Look up this command in the STOS manual for an explanation of how to use it.*

## Casting for a type

I am trying to find some quick method for finding out what machine a STOS program is running on, so I can identify STEs and change some program routines accordingly. I know that the ROM version number is

stored in BCD format in the two bytes at address \$fc0002 but I cannot get STOS to DEEK above \$400000. This is apparently the highest RAM address. Attempting to DEEK any higher generates a bus error. Is there any way to DEEK the ROM?

**Paul Vincent, Cardiff**

*stf: With the STE STOS Extension STF gave you on Cover Disk 32, you can find out whether your program is running on the STE or not. You say you can't DEEK above \$400000. It is actually possible to address above \$400000 if the address exists, although if you access these addresses directly your program might not be compatible with future machines, and it would have been easier to go through a system trap.*

## Sample this

Please could you tell me if there is any way I can play samples in STOS Basic programs? The sampler I use saves samples with the .SAM file extension.

**Andrew Lear, Cheshire**

*stf: If you have a sampler and you wish to play samples back within a STOS program you should check the sampler's manual thoroughly or check if there is a document file on the disk with the word STOS as part of the file name. Most samplers are provided with playback routines for all the popular programming languages, including STOS. You do not indicate which sampler you have, although both the Mastersound and the STOS Maestro samplers save files with the .SAM extension.*

*On Cover Disk 29 we included the Sconvert program, which can convert sound samples between different formats.*

## Please delete me

How can I delete a command or an entire line within



STOS? When I have finished writing a game I always find I have made a mistake with some lines.

**Darren Vine, Devon**

*stf: If you wish to delete a command from within a line all you have to do is LIST the line in question, like this:*

```
LIST 20 <ENTER>
```

*Now by using the cursor keys move the flashing cursor over the command and press the <Delete> key to delete each character of the word. Then press <Enter> to register the line.*

*If you wish to remove a line from a program then simply type in the number of the line you wish to delete and then press the <Enter> key:*

```
20 <ENTER>
```

### Trapped

I've tried using the TRAP #6 floating point extension library to create moving images of fractals, but I don't know whether the descriptions in the manual are relevant to this latest version of STOS 1.62. Mandarin couldn't tell me and even though I seem to have got TRAP #6 working – not crashing – I don't understand the result I am getting because it seems to be in some special format.

**Simon Alexander, Brixton**

*stf: The manual is not relevant to STOS 1.62 – nor to any version of STOS because the TRAP #6 and TRAP #4 routines were removed before STOS was released because they slowed STOS down.*

### Memory

Is there any way I can reserve more memory for the sprite bank (1)? I am writing a game with a great deal of animation and cannot define enough animation frames with the standard bank size. The program only allows me 66 frames of 32 x 32 pixels or 17 frames of 64 x 64 pixels. All frames must be available at once without loading and saving memory banks.

**Lee Davison, Essex**

*stf: You are probably going to be unable to have that many animation frames, although you could try this: load your sprites and then save them using the BSAVE command. Clear memory and then reserve a bank with the amount of memory you require for the sprite file. Then try loading the sprite bank into it using the BLOAD command.*

### Another old version

I have the STOS Game Maker's Manual, and on page 21

there is a Sprite Experimenter program. I have typed in the listing only to find that when I run it there is a movement declaration error in line 70. Could you please help? I have written to the author of the book and received no reply.

**J Goodman, Plymouth**

*stf: The sprite program does work, but you need to type in the parameters for horizontal and vertical movement in exactly the same way as you would for using the MOVE command in a program.*

### The big screen

**Paul Rose** from **Surrey** would like to know how some PD demos manage to fill the entire screen.

*stf: The ST normally runs at 50Hz but can be switched to 60Hz, resulting in a larger screen. This is the nearly famous 50-60Hz toggle, and can be seen in Jeff Minter's shoot-'em-up Llamatron. Just press <P> to pause the game, then <H> to see the toggle. This is how it's done:*

```
move.l    #0, -(sp)
move.w    #$20, -(sp)
trap #1
addq.l    #6, sp

move.w    #37, -(sp)
trap #14
addq.l    #2, sp
```

```
bchg #1, $ff820a
```

```
done      move.l    #0, -(sp)
           move.w    #$20, -(sp)
           trap #1
           addq.l    #6, sp
```

### Control codes

How do you print the control characters 0 to 31 on-screen via the GEM BIOS or BDOS calls?

**Don Felton, Cambridgeshire**

*stf: You cannot print these characters using BIOS calls. You need to use the VDI routine v\_gtext. The BIOS uses these characters to send the cursor to the next line and other such tricks. The difference can be seen in the following GFA Basic routine, which uses BIOS for its PRINT commands and VDI for TEXT.*

*Note that the symbol ␣ means do not type a line return yet – the line of listing just wouldn't fit in our columns.*

```
FOR x%=0 TO 32
```

```
PRINT AT(1,1);"this "CHR$(x%);"is control.␣
code no.";x%
```





```

~INP (2)
NEXT x%
CLS
FOR x%=0 TO 32
  PRINT AT(1,1);"this on the other hand.
    is Character no.";x%
  TEXT 40,14,CHR$(x%)
~INP (2)
NEXT x%

```

### Write on top

I have written a program to reduce the size of files, but when the program overwrites the old file its size remains the same. Why isn't the file size updated?

**Andrew Benn, Lincs**

*stf: Use the BIOS routine Fcreate instead of Fopen when you come to overwrite the file:*

```

clr.w-(sp)
move.l    filename,-(sp)
move.w    #$3C,-(sp)
trap #1
addq.l    #8,sp
DATA
filename dc.b    "text.doc"

```

*This reduces the existing file's size to zero and opens it, so don't try to open it again. Be careful with this, though – you may lose data if you crash your ST.*

### By your command

I am presently using STOS 1.62 on an STE and find that when I use the Move command – to move a sprite, for instance – I cannot use a letter for the speed variable. This makes programming very awkward if I want to change the direction and speed of a sprite consistently. For example:

```
move x 1,"(5,5,0)"
```

If I could do the latter, it would be a little better. Do you know whether this is possible on a later version of STOS?

**Mr V McClure, Devon**

*stf: It's not possible to do this on any version of STOS Basic and it's unlikely to feature in any versions of STOS. You can, however, simulate it with a variable, by using the Str\$ command in this way:*

```
a$=str$(a) : move x 1,"(+a$+,5,0)"
```

*This is just an extremely basic example – if you use the string commands carefully, you should be able to get it*

*running fairly quickly.*

### Sounds fine to me

Can you get disks full of sound effects for use with STOS without buying STOS Maestro? If so, where can I get them? Also, how can I get rid of the menu bar from the top of the screen?

**Tim Plant, Halifax**

*stf: The best place to find sampled sound effects is in PD libraries – see STF's directory on page 83. One of the best PD libraries for obtaining STOS Maestro samples is Goodman's PDL (☎ 0782 335650), which is also the official STOS library. To get rid of the menu bar at the top of the screen, use the Key Off command, and recall the bar with Key On.*

### Tracker (booma booma choom)

I am thinking of writing a kHz tracker/sampler program for my STE. How can I direct a sample through channels one to eight, to make it an eight channel sequencer? Is there a way in STOS of getting eight samples playing through the DMA at once?

**Michael Bartlett, Kent**

*stf: This is not possible from within STOS itself – you need to learn assembly language and study the way that the STE's DMA works. A good place to start doing this is to look at Atari's DocSupport Two Kit – New Machine Programming Guides. It costs £29.99 from the Atari (UK) Spares Administrator on ☎ 0753 533344.*

### 68000 references

**Matthew Gates of Derby** would like a list of 68000 assembler books. Unfortunately, many are no longer available but STE information can be found from PD libraries – try MT Software ☎ 0983 756056, or the ST Club ☎ 0602 410241. *Introducing Atari ST Machine Code* is available, however, by R Pearson and S Hodgson. It comes with disk containing text editor, assembler, linker, resource construction kit, AES, VDI BIOS, GEMDOS, libraries, and all source code. It's published by zzSoft ☎ 0254 762965 and costs £20. ISBN: 1-873423-01-2.

### Klicketty clack

**David Bennett of Eastbourne** wants to know how to turn off the keyclick in **GFA Basic v3**.

*stf: Easy one, that...*

```
SPOKE &H484,PEEK(&H484) AND NOT 1
```

*turns the click off and...*

```
SPOKE &H484,PEEK(&H484) OR 1
```



turns it back on.

## Books on GFA Basic programming

If you are learning GFA Basic v3 from scratch, any book on v2 can get you started. Computer Bookshops (☎ 021 706 1250) stock a wide range of programming books and GFA Data Media (☎ 0734 794941) have more advanced books for both v2 and v3 users

## Demo making

**S Widdrington** in **Peterborough**, along with many other budding demo makers, wants to know how to create a program that appears automatically on boot-up which displays a picture, (a *Degas* P11), with scrolling text at the bottom and a menu which would enable you to load programs by pressing a single key.

*stf:* You can do this with GFA Basic but there are limitations. The problem is not so much with the language but with the way the ST works. When you switch on your ST a number of things happen, one of which is the checking for the existence of an AUTO folder. If there is one then any executable files (.PRGs) found in it are run in the order they were placed there. Therefore, if we place a compiled .PRG file in an AUTO folder, it runs automatically, solving the load on boot-up problem. However, all this happens before GEM is installed – without it all GEM functions are disabled. AUTO folder programs only use the basic operating system and are called TOS files.

Demo writers writing in assembly solve the problem of the mouse being disabled by writing and installing their own routines. All is not lost, you can still load graphics to the screen, print text, use the keyboard and execute disk files. If you want to auto-run programs that need the GEM mouse routines then you must let GEM load and use a program called Startgem (included with Superboot 7.4 on STF Cover Disk 36) in the AUTO folder which will run a specified GEM program.

Assuming that you have decided to use the AUTO folder method, your program can have a picture in an `INLINE`, `BMOVE`ing it to the screen area when required, set the colour palette, and print text messages to the screen. The keyboard can be scanned and programs launched with the `EXEC 0` command when the correct key is pressed. On exiting from the TOS program you return back to the menu screen.

The example file `BAZMENU.GFA` (and `.LST` source)

on Cover Disk 38 is a simple example of this method, but differs from most menus in that the same file works in any AUTO folder on any disk – it automatically looks on the disk to see what .PRG files are there before creating the menu list. But, as mentioned before, GEM is not installed so any programs launched which need a mouse won't work.

## Lockup

**Andy Gray** from **Birmingham** wants to know how to get his ST to default to caps lock on so all his typing is in capitals, and also how to input a single key.

*stf:* The caps lock problem can be solved in one of two ways. The first is to use the `XBIOS()` call at the start of your program to switch caps lock on, and `XBIOS()` to switch it off. The drawback of this method is that you have to use the `XBIOS` call to switch caps lock on or off every time you want to change to upper or lower case letters.

Alternatively, you could use the `UCASE$` function. For example, if instead of `INPUT A$` you used `INPUT UCASE$(A$)` and you enter "my name is fred," then it is converted to upper case automatically and stored in `A$` as "MY NAME IS FRED." To input a single character use `INKEY$` so that the program does not stop for the input, and immediately after the `INKEY$` line put an `IF...THEN` loop. For example:

```
INPUT A$
IF A$="s"
    INC Speed%
    ' Put what you want to happen when you press
    ' the s key on these lines, as they will be
    ' ignored when other keys are pressed.
ENDIF
' continue with your program here if s is not
pressed.
```

## STOS Tip

**K P Ware-Lane** of **High Wycombe** has found a way of auto-running STOS Basic programs when you load up STOS. First, change the name of the .BAS file you wish to run automatically to `AUTOEXEC.BAS` and copy it to your backup language disk. When you next boot the STOS disk, the file you have renamed will load and run. This would be ideal for creating a password protection system for your STOS language disk.



# ST ANSWERS SOUND

## Live and direct

After reading about Hands On MIDI software in *STF* 30 I gave it a try and got excellent results. Is there any device which can reproduce my sequences "live" so as not to abuse my ST on the road?

**Gordon Currie, Glasgow**

*stf:* Dedicated MIDI File Players do exist – the first was Elka's CR-99. A recent one is Roland's SB-55 Sound Brush – it's designed to enable songs created on home sequencing setups to be easily converted for live or studio use, and comes with a remote control. Try your local hi-tech music shop, or contact Roland on ☎ 0792 310247.

## Wherefore art thou?

Where can I get my hands on the sequencing software Steinberg's Pro 24 v3, since no one seems to sell it any more?

**Bill Moulford, Oxon**

*stf:* Pro-24 has been discontinued for some time, but it was getting a bit long in the tooth anyway. However, if you are still determined to get hold of it, try the classifieds in the hi-tech music mags, otherwise go for a more up to date alternative such as Steinberg's Cubeat (£295 Evenlode Soundworks ☎ 0993 898484) or Gajits' Sequencer One Plus (£129.95 ☎ 061 236 2515) – see the review of this in issue 39. Check out the Buyer's Guide on page 147 for details of other sequencers that we have reviewed.

Incidentally, all Steinberg products that are still available are being distributed by Harman Audio, call ☎ 0753 576991 for information.

## Digital to analog

Can I record music I make on my 520 STFM using Sequencer One onto an audio cassette without using

MIDI?

**Cathy Rogan, West Yorkshire**

*stf:* If you're not using MIDI, you must be using sampled sounds. The only way of getting these sounds out of your STFM other than through the monitor speaker is by using extra hardware. The Stereo Playback cartridge (£29.95 Microdeal ☎ 0726 68020) can do this. Unfortunately, you won't get far with Sequencer One, but upgrade to Sequencer One Plus (£129.99 Gajits ☎ 061 236 2515) and you can address the cartridge directly. STE owners needn't bother – there's a pair of audio connection sockets on the back of the machine.

## Technic-al problem

1. When I use Sequencer One with my Technics KN800 and I press Stop during a song, my Technics no longer sounds unless I switch it off and back on. How can I cure this?

2. Is there an 8-channel tracker for the STE?

**Jonathan Rose, Dorset**

*stf:* Your first problem is quite common. It stems from the fact that there are numerous different types of MIDI message which may be transmitted when the Stop button is pressed, and keyboards vary in how many of these messages they can handle. Unfortunately, you normally just have to live with this difficulty but check the following things first:

(a) Look under your Options menu and check that Sync Send is switched off.

(b) Also under MIDI Options, if the Mode Messages are set to Send All Keys on all channels, try switching them to All Notes Off.

And in response to your second query – the simple answer is no. The ST plays a maximum of four samples at a time. Where stereo output is available (as on the



*STE) this amounts to two samples for each output (two Left and two Right), otherwise the four samples are heard in mono.*

### Master control

I'm going to buy a Roland PC-200 Keyboard Controller to use with *Sequencer One*. Could I use *Sequencer One's* samples to play back tunes entered on the controller? If so, what would the results be like compared to those if I also had a sound module?

**Matthew Trowell, Middlesex**

*stf: You can use the PC-200 to control Sequencer One's samples, but the results would be improved with a sound module, both in terms of having the extra sounds and getting the superior sound quality that the module would have. You may want to consider getting a multi-timbral keyboard, thus effectively combining the keyboard controller and sound module in one unit, and possibly saving money.*

### Me and my piano...

I have a Technics PX44 piano and an STE. My piano has six on-board piano sounds. I'm looking for synth and organ sounds, but the sampled sounds with *Sequencer One* only sound effective across about two octaves and are of poor quality. Is there any cheap way in which I can use STE's or the Technics' sound chip to provide quality sounds for my piano?

**Richard Wall, Kent**

*stf: It is sometimes possible to add extra sounds to an instrument, and some keyboards' sounds can be edited via MIDI using patch editing software. However, your keyboard is designed to produce piano sounds, so it can't be expected to behave like an organ or a synth without some pretty major hardware modifications.*

*As for using the STE's sound chip – you're unlikely to get the kind of sounds you're after, so if sampled sound from your STE is not of sufficiently high quality for your needs and you're on a tight budget, your best bet is to look for a second-hand MIDI instrument to add to your setup. There are some on page 52 that you could look at to see the sort of thing you should be aiming for.*

### Just a few questions

I am thinking of getting Stereo Master and Zi-Fi speakers for use with my STE.

1. Do I need any extra peripherals to run and use Stereo Master?
2. Can I produce samples like the ones on STF Cover Disk 31?
3. Can I use Stereo Master without MIDI support?
4. Do the Zi-Fi speakers work with all software packages

(games) or just with music programs?

5. Can I record the output of the ST onto cassette?

6. Where can I buy Stereo Master and Zi-Fi?

**Phillip Eccott, Bristol**

*stf: 1. No, Stereo Master is self-contained, with software, a cartridge and a 3.5mm stereo jack lead to connect to your input source.*

*2. Yes, you can.*

*3. Stereo Master can be used without any MIDI instruments connected. MIDI support is an extra feature of the package.*

*4. Yes, the Zi-Fi works with games because all of the STE's sound output is routed through the stereo phono sockets.*

*5. You can use a phono lead to connect your STE's phono sockets to the AUX inputs or CD inputs of a hi-fi system and then use the tape deck to record as usual.*

*Stereo Master is available from Microdeal (☎ 0726 68020) at £39.95. Zi-Fi is also £39.95 from Evesham Micros ☎ 0386 765500.*

### It doesn't add up

I use a Kawai K1-r module with my 1040 STE. I am currently working on an editor for it, but have come across a Checksum problem with its System Exclusive Specification. The booklet states that the "Checksum value (s87) is the sum of A5H and s0 to s86 and bit 7 must be clear." I cannot figure out how to work it out. I have tried summing all of the values and adding A5H, but it usually works out to be about 4,000 and the checksum can only have values up to 127! How do I do it?

**Ben Hall, Kent**

*stf: Let's start with a quick look at System Exclusive. When MIDI was created, the area concerning movement of memory parameters, which are exclusive to each synth, was left intentionally open. All that is necessary is that the first byte is an \$F0 (the "\$" shows that the number is in hexadecimal, or base 16), the last byte is an \$F7 and the second byte is the manufacturer's ID number, allocated by the bodies which regulate MIDI. All values in between the first and last byte have to be less than \$F7 because MIDI data bytes only have seven data bits available – but apart from that, anything goes.*

*System Exclusive (SysEx) is used for two main purposes: to transfer a synth's memory to another synth of the same type or to a computer editor/librarian; and to carry out parameter changes. The first category can involve the transfer of many kilobytes of data, so many manufacturers use a checksum for security of data. This is a number which is tacked on to the end of that data just before the \$F7.*

*For example, let's say that the sum of all data bytes to be transferred is \$452C. Ignore all but the two least*



significant figures (\$2C) and work out what needs to be added to this to make it up to \$80; in this case, that would be \$54, so \$54 is the checksum. If the last two bytes exceed \$80, then subtract them from \$100 instead. If you add together all data bytes and the checksum, the least significant seven bits must all be zero – in other words, the number ends as either \$.....80 or \$.....00. The synth sums all of the numbers when they are re-transmitted to it, works out its own checksum, and ensures that its version agrees with the one it receives. If it doesn't, there has been an error and the transfer is usually aborted.

Unfortunately, the situation with the Kawai K1 is rather more complicated. For each single patch, there are 87 parameters, numbered s0 to s86. These are added together to give what must be a sizeable number. Let's say that a particular set of values gives you \$C73. Kawai use a "magic number" approach: add \$A5 to \$C73 to get \$D18, discard all but the last two bytes to leave \$18 and that is the checksum. Should the final value you get be greater than \$80, simply subtract \$80 from it to always end up with a checksum less than, or equal to, \$7F.

Confusing? Certainly is. The other problem with working with Kawai SysEx is that fact that you have to ensure that any response to a Kawai Acknowledgment message is sent within 30 milliseconds or else you get timed out – the synth simply freezes and sits there rather dumbly. Good luck!

### Mastersound to Tracker conversion tip

Here's a tip to convert Mastersound samples to TCB Tracker format from **Alex Nimmo** of **Tunbridge Wells**.

1. Choose the section of the sample to save in Mastersound.
2. Use <Control>-S to unsign the sample.
3. Save as a \*.SAM file, then exit to the Desktop.
4. Rename the sample with an .SPL filename extension using the Show Info option from the File menu on the Desktop.

The file can now be loaded into TCB Tracker and used as an instrument.

### PSS-790 queries

I have a Yamaha PSS-790 keyboard. What are the advantages of upgrading the ROM? Also, if the two highest notes are pressed on the keyboard, a sine wave sound is produced and all song data is lost. Why?

**J White, Herts**

What is the difference between the Yamaha PSS-790 and PSS-795? I use Cubase and a Yamaha PSS-790 and want to know why, when I record something on the PSS then send it to the sequencer, the sound number gets changed.

**R Marsden, West Yorkshire**

stf: The changes to the PSS-790 are as follows:

MIDI In is no longer routed to MIDI Out – this used to cause a MIDI loop and many problems when recording with an external sequencer on an ST. The accompaniment section of the PSS-790 now accepts note information over MIDI from another keyboard or sequencer. Because the accompaniment always plays at full volume, there is a velocity boost feature which equalises the level of the melody to the backing track. Reception of a MIDI Start or Stop command from an external sequencer now sets the rhythm section into play – previously it only operated the internal sequencer. However, this means that if your sequencer outputs a MIDI Start command when you hit "play," the rhythm section is always started. The way around this is to select track one of the PSS-790's sequencer, press "Record" then "Stop" and leave this track active. When the PSS-790 receives a MIDI Start message, it thinks that the internal sequencer is active and starts playing it, resulting in absolute silence!

The PSS-795 is identical to the PSS-790 except that it has all the above features as standard, and also responds to MIDI Sustain commands received from another keyboard or external sequencer.

As for the two highest notes giving a sine wave sound and all song data being lost, if you held down these notes while you turned on the power to the PSS-790, you have put it into "self-test mode," which also initialises the internal memory, leading to the loss of all data. If this occurs when you simply hit the top two notes, it sounds as if your PSS-790 is faulty.

The PSS-790 has 50 styles, each of which sets up the "voices" or sounds for each of the orchestration instruments – these are on MIDI channels 10 to 16. If you are recording on an external sequencer, MIDI Program Change commands are sent at the start of the recording. On playback, these are sent back to the PSS-790, which then selects the correct instruments. If you look at the recorded data on Cubase using the Grid Edit, you should see these program changes. From here, you can alter these as you wish, but be careful – the voice numbers shown on the front panel of the PSS-790 do not match up with the MIDI Program Changes. Have a look at page 38 in the PSS-790 manual for a list of these.

### STE Tracker problems

I have a 520 STE and I have problems when replaying samples via the STE option in TCB Tracker. The sound buzzes and crackles, and sometimes I just get a buzzing and no sample at all. The sample then plays OK after I restart it. Why does this happen? Is it true that the STE has eight-channel digital PCM stereo sound? I have been told that it is really the old sound chip that's giving six channels and the DMA sound chip giving two channels.



If this is correct, then I am a slightly annoyed because it was the sound improvement that made me want to upgrade my machine to the STE from the older STFM.

**Gary Marsh, Reading**

*stf: We have been unable to duplicate your crackling problems using TCB Tracker on our STEs. It is most likely that you have bad or corrupted samples or a hardware problem with your machine. Try using the software on a friend's STE. If that has no problems with the output, then it would indicate that you have a hardware problem, and you need to take your machine to be tested. If your STE is still under guarantee then return it to the supplier for repair.*

*The STE does have eight-channel PCM stereo sound which is generated completely separately from the Yamaha sound chip's output.*

#### **A few more bits required**

I own an 8-bit sampler, but I would like to upgrade to a 16-bit one. Which is the best buy? Sound quality rather than features is the most important thing.

**Tony Bennett, London**

*stf: The Pro-Series 16-bit Sampler (£350.00 from Audio Visual Research ☎ 0582 457348) earned a FORMAT Gold rating of 94% in STF 25. The package compares favourably with professional hardware but is a fraction of the cost and can sample at several rates up to 44.1kHz, which gives you CD-quality samples. You need 1MByte of memory in your machine to use the package to its full capability, although it can run on a 520 ST, and also supports the STE's extended audio capabilities. At present there is nothing else on the market that offers 16-bit sampling for the ST.*

#### **Come blow your horn**

Is it still possible to obtain the Casio Digital Horn and can it be connected to the STE?

**A Harland, North Humberside**

*stf: The Casio Digital Horn is a MIDI controller operated by lip pressure – it resembles a miniature sax, but is made of silver-coloured plastic. This is no longer manufactured, so your best bet is to look in music magazines or to telephone music shops to see if they have any left in stock. It connects to the MIDI In port of any of the ST range and can be used to input MIDI information to any ST sequencer in the same way as a keyboard is used.*

#### **So exclusive you can't use it**

I have recently purchased a secondhand Casio HT-3000 MIDI keyboard. Are there any PD patch programs, or can I adapt existing programs such as DX or CZ patch?

**Paul Hodgskin, Herts**

*stf: MIDI synths use a method called System Exclusive (SysEx) to transfer the parameters for their sounds to another synth of the same type or to a computer librarian. Unfortunately, the HT-3000 neither transmits nor receives SysEx, so librarian and editing type facilities are not possible.*

#### **Drums out**

I am using a Yamaha RX21 drum machine with Sequencer One on a 1040 STE. I can produce drum sounds using the Step Entry screen and the mouse, but I can't use the drum machine to write patterns by pressing the pads – nothing registers on the STE's screen.

**Garry Hewitt, Bedfordshire**

*stf: The RX21 only receives MIDI note information – pressing the pads does not transmit MIDI notes, so you cannot use it as a sound module. You are either going to have to put up with inputting notes on the Step Entry screen, or buy a cheap MIDI keyboard and input the drum information from there.*

#### **MIDI connector wanted**

I am looking for a brain to MIDI converter to speed up the input to my Mega ST. Any suggestions that do not include a lobotomy?

**Big George Webley, Bucks**

*stf: It depends entirely on your brain capacity – if you are running on less than 1MByte, then it is impossible to link your brain to your ST via a MIDI cable.*

#### **Programming music**

I am a dedicated ST owner and I am currently learning to play the keyboard, so I obviously have an interest in creating music for the ST. I own a 520 STFM and STOS. Can you tell me what music packages are compatible with STOS? Is Quartet, and if so does it create music using notation and samples? Also what other extras do you recommend like memory, Playback or other hardware or software?

**M Shepherd, Co Durham**

*stf: Most commercial music packages are compatible with STOS, although you're likely to have to load their machine code playback routines into a STOS program bank. You can create music in Quartet using notation and samples. Quartet comes with a large selection of sampled instrument sounds. If you wanted to sample your own sounds – voices, say – you'd have to buy your own sampler. The most useful extra would be a hard drive – extra memory is invaluable for storing those samples, which can rapidly get much bigger than you expect.*





# ST ANSWERS ST PROBLEMS

## DOSsing about

I own a copy of the PC emulator PC Ditto, which you reviewed in *STF* 25. I am having problems obtaining a copy of MS-DOS which runs on this setup. I understand that the distributor was a company called Robtek in Isleworth but they are no longer there. I have tried three computer shops and not one could help me – even Microsoft themselves can only suggest MS DOS 5, which I believe will not run. Anyhow, it costs £50 – more than the emulator is itself worth.

**Pete Turner, Surrey**

*stf: The easiest way to get hold of an older version of MS DOS would be to place an advert in a magazine with a second-hand software section. Be sure to state that you require 3.5 inch disks in double-density format and how much you are willing to pay. Versions 3.3 and 4.1 of MS DOS are both compatible with PC Ditto and you should be able to get them for around £20.*

## A ghost of a chance

I have run a virus test and it has told me that my ST has the Ghost Virus. How can I get this out of my machine?

**Alex Jacottet, Oxford**

*stf: It is important to realise that a virus cannot survive in your machine after it is switched off and left off for at least 30 seconds. A virus cannot damage your machine in any way or lurk about under the keyboard. It is just a program. The best way to ensure that a virus doesn't get into your system in the first place is to buy PD software only from reputable libraries and to check every disk you receive with a good virus killer such as The Ultimate Virus Killer (£9.99) from Douglas Communications (☎ 061 456 9587). Remember that viruses cannot copy themselves to write-protected disks, so always keep the write-protect tab open unless you really need*

*to write data to disk.*

**IMPORTANT WARNING:** *Never use a virus killer on a commercial games disk. Most virus killers cannot recognise the special bootsectors on games disks and think there's a virus present when there isn't. You have been warned!*

## TOS aversion therapy

I have the medium resolution bug in my machine's TOS – the copyright message says 1985, 86, 87, 88, 89. What other bugs am I likely to discover?

**P Lambert, BFPO-58**

*stf: There are very few problems with your version of TOS – v1.6 – that have not had patches produced for them. You can get these patches, Poolfix 3 and Cache TTP for £1.45 from the ST Club ☎ 0602 410241.*

## Quiet machine

I recently bought an STE from Britain and it seems to work fine apart from the fact that there is no sound apart from a slight buzzing when I use it with the TV. Have you any ideas about what I could do?

**A M C Husain, Nigeria**

*stf: Either your TV needs to be tuned in slightly to match the ST modulator output precisely, or the modulator is faulty. Try connecting the STE phono sound outputs to a stereo system to see if sound is actually being produced by your machine. Try and locate a professional computer repair centre and see if they can help you.*

## Keyboard chaos

My STE's keys only work intermittently – sometimes they produce the wrong characters or nothing at all. What could be wrong with it?

**Peter Briggs, Lancs**



*stf: It sounds as if you have a faulty keyboard. Either take your machine to a local computer repair shop or contact Ladbroke Computing International on ☎ 0772 203166 – they offer a comprehensive repair service.*

### **Emulating resolutions**

I have a PD program to enable me to run high resolution programs on a colour TV?

**Caser Rasool, Dundee**

*stf: What you want is the Mono Emulator v5.0. It is available from the ST Club (☎ 0602 410241) on disk UT1.41 and costs £1.45.*

### **Port problems**

The joystick port on my STE doesn't work properly – sometimes I can't direct the joystick as I want to, but at other times it's OK. I have the same problem with all the joysticks I've tried.

**Matthew Fyles, Cheshire**

*stf: The problem you have is very common and is relatively simple to fix. The joystick and mouse sockets are not fixed in any way apart from the actual connections to the keyboard, so constant plugging and unplugging of the joystick and mouse gradually break these connections. A local computer shop which provides a repair service can help you out, if not, contact Ladbroke Computing International on ☎ 0772 203166, they offer a quotation service for £15.*

*In future use a joystick extension lead (£4.70 from We Serve ☎ 0705 325354) to prevent wear and tear on the mouse and joystick ports.*

### **Emulating Rita**

I am beginning to appreciate my ST's musical potential but I only have a colour monitor. Should I get a SM144 or a mono emulator to use professional MIDI software?

**Gregor MacDonald, Kincardinshire**

*stf: If you are going to use the ST seriously for musical applications then you need a high resolution monitor. Although the Moriarty Monulator (£14.95 Goodman's PDL ☎ 0782 335650) is an excellent mono emulation program for occasional high resolution use, it is not really suitable for sustained use. Evesham Micros (☎ 0386 765500) can supply the SM144 for £119.95.*

### **Other mono monitors**

What other high resolution monitors are available for the ST apart from the SM144?

**Kris Brunt, Bristol**

*stf: No other monitor can really beat the SM144 for high resolution display. HCS supply colour Multisync moni-*

*tors for £280 and the Multirez adaptor for £44.99. Multirez enables you to use your ST with any multisync monitor. HCS can also supply the SM144 for £115. Contact HCS on ☎ 081 777 0751. Check out the Buyer's Guide on page 147 for details of other monitors.*

### **Mega problems**

I have a Mega 2 STE with TOS v2.05 UK supplied. Would it make any difference to the machine if I updated to TOS v2.06?

**K A Ballard, Leicester**

*stf: You can get TOS 2.06 ROMs for £60 from Compo Software (☎ 0480 891819). As with all updates to operating systems the newer version is an improvement over the previous version, but installing new ROMs would not adversely affect your machine in any way. The major changes to TOS v2.06 are that high density disks are now supported and that several routines have been enhanced.*

### **That's Snap**

How do you use *That's Snap*? I have tried using it with *Neochrome*, *Canvas* and *The Artist*. I boot up with *That's Snap* and run the graphics package, but when I save the screen to the buffer and exit from the program, the buffer is cleared as well.

**Ian Richardson, Cheshire**

*stf: If you are using That's Snap from within a program with no menu bar, press <Alternate>, right shift and <Help> together to take a "snapshot" of the screen. Exit from the program and select That's Snap from the Desk menu. You are asked whether to use the current screen or the buffer – select the buffer. The screen you have saved is displayed, then you simply use the cursor to cut out the area you wish to save as an .IMG file.*

### **Ghost writer**

While typing into my ST using *Write On*, it sometimes continues typing automatically. Sometimes I cannot write anything at all and I have to switch off my machine and start again. Why is this?

**L Murphy, London SE12**

*stf: Is it typing full sentences or just repeating a letter continuously? If it is just a single letter being repeated then you either have keys which are sticking or a joystick with auto-fire switched on, which confuses the keyboard processor. If your machine is typing sentences, paragraphs and chapters, you should get it exorcised by the relevant authorities.*

### **Memory loss**

Is it true that STfMs with SIMMs upgrades access the



RAM slower than those with ordinary DIP style memory chip upgrades?

**P Morgan, Mid-Glamorgan**

*stf: No, this is not true at all. SIMMs modules have "ordinary" memory chips mounted on them which are slower than other upgrades. All STs with 2MBytes of RAM run with memory access times of 150ns (nanoseconds which is one thousand millionth of a second) while those with 4MBytes of RAM run at 120ns regardless of the speed of the chips.*

#### **What TOS is in...**

How do I find out what version of TOS my STE has?

**R Christie, Perth**

*stf: If you have an STE, you have either TOS 1.6 or 1.62 – versions of TOS before this cannot handle the STE's new hardware. You need Quick Index from the Quick Utilities disk to tell you your version of TOS and to analyse your system's performance. Quick Utilities is on disk UTI.60 from the ST Club (☎ 0602 410241) for £1.45.*

#### **Old machine**

I have found that some commercial software does not work with my machine – a 1040 STF dated 1987. Is there a valid reason for this? According to a PD utility, I have TOS 48.64 installed.

**Dave Barraclough, Gloucester**

*stf: TOS what? Sling away that PD utility, Atari have not got past TOS 4.00 yet – let alone TOS 48.64. The problem with your machine may simply be that it is old – some of the older disk drives cannot cope with the extended disk formats that are common today.*

#### **That's not the blues**

When I use the control panel the blue slider has no effect on the palette boxes, so I don't have any blue colours in my games.

**Geoff Nunney, Worcester**

*stf: If you are using a TV via the RF (aerial) lead then you have a problem with your machine. However, if you are using a monitor or a TV with a SCART connection, then you probably have nothing more than a loose connection in the lead which a local TV repair shop can fix. If it is not the lead, return your ST to the supplier if it is still under guarantee. If it is out of guarantee, then contact WTS Electronics on ☎ 0582 491949 who offer a diagnostic service for £15.*

#### **That well known bug**

When I save the Desktop in medium resolution, my 1040 STE always re-boots in low resolution. Icons appear in

low resolution but in the new positions.

**Beverly Josh, Kent**

*stf: This is the infamous TOS v1.6 bug. It can be fixed by putting a patch program in the AUTO folder of the boot disk. The patch program to fix this is called Med Res Fix and was on Cover Disk 14. It is also available from all the bigger PD libraries, see our directory on page 83.*

#### **Too much memory**

I am upgrading my STE to 2MBytes of RAM. What do I do with the four 256K SIMMs I take out – throw them away?

**Malcolm Hutcheon, Aberdeen**

*stf: Try advertising them in a weekly computer advertisement magazine – you should be able to get at least £5 each for them.*

#### **Stereo Master**

Is there any way that I can use the special effects section of Stereo Master other than in real-time mode? I would like to be able to save the effects as samples.

**A M Jacklin, Lancs**

*stf: The only way you can do this is to connect your STE output to a tape deck, record the special effects and then sample from the tape you have made. Simple.*

#### **Zap, crackle and pop**

When I switch on my ST there is a loud crackling noise. What is it and can it damage my ST?

**Richard Johnston, Glasgow**

*stf: The crackle is caused by the power supply switch sparking and should not cause any problems with your machine. Operate the switch cleanly and quickly to minimise the effect.*

#### **Cannot see inside folders**

I am having trouble loading Tiny format pictures into Easy Text. Every time I use the Import Clip Art option, the folder containing the files appears to be empty. When I open the folders from the Desktop, the files are there, as they are when I use a file conversion program.

**R Pearson, Lancs**

*stf: The Tiny format pictures need to be converted to IMG files before you can load them into Easy Text – that's what your file conversion utility is for. Easy Text cannot "see" the picture files because it is looking for an .IMG file extension.*

#### **Flickery picture**

I have just bought a Philips CM8833 Mk2 monitor and



the picture flickers very badly – it's worse than the TV!

**Kenneth Ritch, Orkney Isles**

*stf: If the monitor is as bad as you describe, then either the lead or the monitor is faulty. Return it to the supplier for repair or replacement.*

### Upgrading RAM

If I upgrade my 520 STE to 2MBytes of RAM using the Xtra RAM STE board, what is involved in upgrading to 4MBytes at a later date? Can I legally sell my 0.5MByte of memory to my friend so he can upgrade his STE to 1MByte?

**A R Aedy, Huddersfield**

*stf: You do not need special upgrade boards for the STE, just the SIMMs. Buy yourself two 1MByte SIMMs (about £30 each) and slot them in the same sockets as the two 256K SIMMs that are already in your machine. Later you can add two more 1MByte SIMMs to give you a 4MByte machine.*

*It is perfectly legal to sell your SIMMs to your friend – as long as your machine is not stolen.*

### Do-it-yourself STE

Is it possible to add extra chips to a 520 STFM to convert it into an STE? Which ones do I have to replace?

**A Wilcox, Coventry**

*stf: It's not worth your while to do this – it's cheaper to buy a new STE than to buy the parts to build one out of an STFM.*

### Damaged disks

When I put a disk in drive A I sometimes get the "Drive A is not responding" error message. After I get this message I can never access the disk again. Why does this message occur – is the disk damaged before the error message and is the disk affected by the error message?

**Beverly Josh, Kent**

*stf: The message occurs because the disk is already damaged, the message does not affect the disk.*

### Vortex 386SX

What do you think of the Vortex ATonce 386SX board for the STE and Mega STE? Would I be able to run the PC programs MS DOS 5, Lotus, Minitab, Emacs and Unix?

**William A Cox, Kent**

*stf: The Vortex ATonce 386SX is an excellent PC emulator (see review STF 38) and enables all the software you mention to operate without any problems. To get the full benefit of MS DOS 5, you really need a hard drive*

*and 4MBytes of RAM installed. The Vortex 386SX costs £330 from HCS (☎ 081 777 0751).*

### Whatever you do, don't...

1. ...plug anything into your machine while it is switched on – this can cause damage to both your machine and the peripherals.
2. ...unplug anything from your machine while it is switched on for exactly the same reason. A bit of care can save an expensive repair bill.
3. ...keep books or manuals on top of the case – this reduces air flow and can cause overheating.
4. ...poke anything into the disk drive slot – if the heads get damaged then your drive is ruined.
5. ...put the disk in the wrong way round. Forcing a disk in the wrong way up can damage the drive.
6. ...switch on all peripherals after you switch on your machine – current surges can damage input and output devices.
7. ...switch off your ST before you turn off the hard drive. Random data on the ACSI/DMA/SCSI buses can damage data on a hard drive and may implement write, erase and format commands accidentally.
8. ...spill liquid onto your ST – they can kill it stone dead. If the worst should happen, turn off your machine at once. You will need to take or send your machine to a repair centre to be tested, cleaned or repaired.
9. ...go without a surge protected mains plug. This protects your ST from voltage spikes and surges on the mains supply which causes data loss and crashes. Maplins (☎ 0702 554161) can supply one for £12.95, part number KU20W.
10. ...open your machine unless you know exactly what you are doing. Apart from voiding your guarantee, you can damage the machine.

### Oh no, it's the TOS errors!

Would you be so kind as to enlighten me on the TOS errors? I am sick of getting interesting but totally useless messages on my ST when I try to use it.

**M E Baines, Kent**

*stf: Here is the full list of TOS errors:*

TOS Error Number	Meaning
1.....	General error
2.....	Drive not ready
3.....	Unknown command
4.....	CRC error – disk checksum wrong
5.....	Bad request
6.....	Seek error – track not found
7.....	Unknown media – bootsector wrong



- 8.....Sector not found
- 9.....Out of paper
- 10.....Write fault
- 11.....Read fault
- 12.....General error 12
- 13.....Disk write-protected
- 14.....Media change detected
- 15.....Unknown device
- 16.....Bad sector (verify)
- 17.....Insert other disk (request)
- 32.....Invalid function number
- 33.....File not found
- 34.....Path not found
- 35.....Too many open files
- 36.....Access denied
- 37.....Invalid handle
- 39.....Out of memory
- 40.....Invalid memory  
block address
- 46.....Invalid drive specification
- 49.....No more files
- 64.....GEMDOS range error  
- seek wrong?
- 65.....GEMDOS internal error
- 66.....Invalid executable  
file format
- 67.....Memory block growth  
failure

### Speed freak

I am thinking of getting an accelerator board for my machine – can you recommend one?

**David Woerndl, Haywards Heath**

*stf: There are several accelerator boards available for STs. System Solutions (☎ 0753 832212) can provide a range of boards with speeds from 16MHz to a whopping 50MHz (see the Soup Up feature in STF 36, page 30). The Turbo 20/16 costs £129.99 and provides a 16MHz 68000 processor and a replacement operating system called EOS. This runs at about twice the normal processing speed of a normal ST. Silica Systems (☎ 081 309 1111) can provide the ICD AdSpeed ST for £198.95, this is also a 16MHz 68000 board and almost doubles the speed of programs.*

### Blind (up)date

I am thinking of upgrading to a Mega STE or TT from my 1040 STE, mainly to use “serious software” such as DTP and word processing packages, but also for games. What are the maximum memory capacities of the Mega and TT and what software compatibility problems are there?

**Kevin Scott, Newcastle-upon-Tyne**

*stf: The maximum memory capacity on the Mega STE is 4MBytes, the same as the STE. The TT has a memory capacity of 28MBytes using special memory boards – although these can be rather expensive. All correctly written STFM and STE “serious” desktop publishing and word processing software should run without any problems on both the Mega STE and the TT.*

*Some programs may need to have the clock speed switched to 8MHz on the Mega STE (GFA Raytrace from STF 35, for example) to run correctly. Most games do not run on the TT at all, and about 30% of older games tested on the Mega STE failed to run in our tests.*

### Removals

What is the effect on my ST of removing the spring clip from the MMU and removing the top cover of the video shifter case?

**M Watmore, Surrey**

*stf: The clips were designed to hold the chip in its socket and to act as a heat sink – a radiator of excess heat generated by the chip. Removing it does not have adverse affect on your ST. The shield box for the video shifter is to comply with American FCC regulations on radio interference. It does not make any difference to your machine if you remove the lid of the video shifter box.*

### Multiple selection tip

Keeping the right mouse button pressed while at the Desktop enables files to be selected with the left button from any window – not just the top one.

**Ben Turner, Herts**

### Changing name tips

If you have an older version of TOS and cannot change the name of a folder, simply drag the folder to make a copy. The ST prompts you for a new name for the copy. Afterwards, simply delete the old folder.

**Pete Brooks, Bristol**

### Disabled

To disable a Desk Accessory, simply use the Show Info option from the File menu to change the last letter of the filename to X – in other words, ACX instead of ACC.

**Neil Pye, Bristol**

### Five Mega STE and TOS 2.06 tipettes

**1.** Using TOS 2.06 in an STE you can open disk icons by pressing <Alternate> and the disk letter, so, for example, pressing <Alternate> and <D> opens drive D.

**2.** You can update the Desktop window with the contents of a different drive by pressing <Control> and the drive letter. Pressing <Control> and <A> changes the directory to that of drive A, no matter what drive window



was previously open.

**3.** Pressing <Alternate> and <1> changes from medium to low resolution on a colour monitor. Pressing <Alternate> and <2> changes the resolution from low to medium.

**4.** Pressing the up and down cursor arrow keys scrolls the contents of a Desktop window up or down to select files.

**5.** If you scroll a Desktop window after selecting a file, the file stays selected for file manipulation purposes even if it is scrolled out of the window.

**Regan McNeil, Washington**

### **Sloow boot**

On my STE it takes about 15 seconds before the machine starts to read the disk when it boots up. It only used to take about three seconds for my old STFM to start booting. Can I avoid this?

**Steven Campbell, Glasgow**

*stf: Your ST checks to see if there is a disk in the floppy drive and then checks to see if there is a hard drive or any other DMA device connected. Unfortunately there is nothing that you can do to bypass this process.*

### **Master and hold**

I thought that the STE had improved Format and Copy functions, but they seem to be no different on my new machine than on my old STFM. How have the functions changed?

**Brian Hughes, Basildon**

*stf: The old versions of the functions required four disk swaps to copy a single file between two disks on a single drive system. The new version only requires two disk swaps, which speeds up copying operations.*

### **Which slot?**

I am going to upgrade my 520 STE to 2MBytes of RAM but I am not sure about which slots to put my new 1MByte SIMMs in. Can you tell me where they go?

**John Masterman, Cleveland**

*stf: When you're upgrading a 0.5MByte STE to 2MBytes of RAM, you simply remove the two SIMMs that are already in your machine and replace them with the two new 1MByte SIMMs. Looking from the front towards the rear of your machine, the first and third SIMMs make up bank 0 and the second and fourth SIMMs make up bank 1.*

### **Upgrade?**

I have a 520 STFM and am thinking of upgrading to 1MByte or 2MBytes of RAM. I am worried that I will keep having to add more and more things to my STFM in the

future to keep it up to date. Should I sell my STFM and get an STE?

**E O'Connor, Essex**

*stf: It is quite cheap to buy a new STE and extremely simple to upgrade the RAM by adding extra SIMMs. More and more games software is likely to rely on the extra hardware built into the STE for graphics and sound generation and the STFM is unable to duplicate these hardware features. The STE is also easier to upgrade in other ways such as hardware accelerators, graphics cards and new versions of TOS. If you want a machine that is easier to upgrade, get an STE.*

*Don't forget the new Falcon, though, if you want a machine that's got capabilities unsurpassed by other brands of micro at a comparable price.*

### **AUTO folder**

I would like to know how to put an ordinary text file into an AUTO folder so it comes up on-screen when I load it.

**Andrew Donald, Merseyside**

*stf: Unfortunately you can't display text files in this way. When you switch on your ST, one of the first things it does is look inside the AUTO folder, if there is one, and execute any files with a .PRG extension that it finds there. It ignores anything else that might be there. You would need to write a program yourself that loads the file and displays it.*

### **Had an IDE**

I have been offered the chance to buy an IDE Smart Drive. Is this compatible with my STE?

**Richard Single, West Midlands**

*stf: No, it is not compatible with your machine because it is designed for use with PC compatible machines.*

### **What's the delay?**

If you have problems auto-booting your hard drive, upgrade to TOS v2.06. When v2.06 starts up the system, it uses an automatic built-in delay of over one minute so that the hard drive can get up to speed before booting. It ends the need for delay programs to be run from floppy disk. Why does TOS v2.06 have this delay on booting?

**Kevin Creasey, Leicester**

*stf: This is to enable networked machines to be "found" by the file server - the machine controlling a network. File servers are renowned for being very slow to link to terminals.*

### **Filth and corruption**

I recently used a PC emulator program on my 1040 STE to load Wordstar Express. When I tried to install the pro-





gram on my Mega File 30 hard drive, it corrupted the whole thing, I lost all my files and had to re-format it. Are all PC programs likely to do this?

**Daniel Davies, Gwynedd**

*stf: Most PC emulators enable you to assign one partition of your hard drive as a PC partition. This is because ST and PC hard drive partitions use different formats, so the PC emulator cannot read or write to an ST format partition. Check your emulator's documentation for details on assigning a PC partition.*

#### **File copying made easy**

I have a 1040 STF but I have a couple of problems.

**1.** After I've copied a file by dragging it onto an icon, when I try to access the new file I get the error message "Stop - TOS error no 35." What have I done wrong?

**2.** When I return to the original disk, although the file is still showing up as present I get the error message "This application cannot find the file/folder you are trying to access." Has the fact that I'm using a black and white TV any bearing on this?

**3.** I've been given a copy of a word processing program called *Pen-Pal*. I was told it was compatible with my ST even though it was for an Amiga (horror) machine, but it's obviously not - I cannot access it on my machine. I have been told I can transfer it to the ST using *Fastcopy 3* - what is this and how do I do it?

**4.** I believe there is an Atari Manual 2. I find the Atari manual useless, so would it be any use getting that?

**Elaine Foskett, Staffs**

*stf: 1. The TOS Error 35 message is an odd one. Its official designation is "too many files open," but you tend to get this error message when attempting to read corrupted files. You don't say whether you're dragging the file to a disk icon, a folder icon, or something else. These two are the only icons you can drag files to - you cannot drag files to program or data files. Try opening a window to drag files to rather than dragging to icons. Use the View menu on the Desktop to show programs and files as text instead of icons - this gives you much more information about the files.*

*2. You are probably getting this error message either because the file has been corrupted or the ST has not read the disk's directory. To read the directory of a new disk when you have inserted one, simply press the <Esc> key at the left end of the top row of keys. Using a black and white TV has no effect on the operation of your machine.*

*3. Fastcopy Professional is an excellent PD utility for copying and formatting disks, but it's not going to help here. Amiga games machine programs cannot run on any ST and cannot be transferred to an ST unless they're rewritten. You can get the utility from the ST*

*Club on  $\pi$  0602 410241.*

**4.** The Second Manual to the Atari ST is also available from the ST Club, price £7.95. It is aimed specifically at beginners and is highly informative.

#### **Spectrum emulation**

I have heard that there are Spectrum emulators available from Public Domain libraries. Is there any equipment which can transfer data from Spectrum tapes to ST disks? Where can I get an emulator?

**Damian Carder, Sheffield**

*stf: At the moment there is no hardware available to transfer programs from the Spectrum to the ST. A very good emulator is available from Riverdene PDL ( $\pi$  0734 452416) on disk 957 (£2).*

#### **Serial problems**

I am having difficulties using the RS232 port to drive an input/output module. The Atari manual states that pin 6 is not connected on the ST, but other documents dealing with RS232 say that pin 6 is normally DSR (Data Set Ready). Is pin 6 on my machine connected or not? I have also seen references to RS232 and RS232C - is there a difference between the two?

**Arthur Ott, Essex**

*stf: No, pin 6 is not used on ST serial ports. To all intents and purposes there is no difference between RS232 and RS232C - anything marked RS232-compatible should work with your machine.*

#### **Still single after all these years**

I have an STFM with a single-sided disk drive. I have been using the B-Boot program from *ST FORMAT* Cover Disk 5, but this does not work with new games - my machine reads drive B for a few seconds before reverting to drive A and crashing. What is the best way for me to modify my machine to be able to run my new games?

**Phillip Orrell, Shropshire**

*stf: The best thing for you to do is replace your internal drive with a double-sided model. Although this sounds like a drastic solution, more and more software is now being released on double-sided disks only - including ST *FORMAT* Cover Disks. Internal drive upgrades are now very affordable, costing little more than some games: Power Computing ( $\pi$  0234 843388) can supply a double-sided internal drive (part no PC7201) for just £35. Full instructions on replacing your internal drive are on page 98.*

#### **Bomb-bastically good**

I have had "bombs" appear on my machine several times while playing games or running other software.



What do the bombs mean?  
**Ivan Green, Cornwall**

*stf: If bombs appear it means you've crashed. The number of bombs is meant to give you an indication of where the error lies. And here are those bomb errors in full:*

- 2 bombs Bus error, peek or poke possibly wrong*
- 3 bombs Address error, Odd word address, possibly at Dpoke, Dpeek, Lpoke or Lpeek*
- 4 bombs Illegal instruction executed in machine code*
- 5 bombs Divide by zero in 68000 machine code*
- 6 bombs CHK exception: 68000 interrupted by CHK*
- 7 bombs TRAPV exception: 68000 interrupted by TRAPV*
- 8 bombs Privilege violation by 68000 machine code*
- 9 bombs Trace exception*

#### **Failing memory**

I have a second-hand 520 STM which has been upgraded to 1MByte of memory with the extra RAM chips mounted piggyback on top of the originals. Unfortunately the upgrade seems to be incomplete because I cannot run programs that need more than 512K or install a large RAMdisk. Can you help?

**Nick Zywicki, Middlesex**

*stf: Your machine needs to be checked by a competent engineer to ensure that the upgrade has been installed correctly. If there is nowhere suitable near where you live, then contact WTS Electronics (☎ 0582 491949), who offer a very good diagnostic and repair service for STs.*

#### **File problems**

How on earth do I get a file out of a folder?

**Daryl Lay, Suffolk**

*stf: We assume that you are using a one floppy drive system. Double-click on the Drive A icon so that a window opens showing the contents of the disk in the drive. Now double-click on the Drive A icon again to open another window showing the same disk. It is best if you display the files as Text by selecting the Show as Text option from the View menu. Re-size the windows into two columns and in one of them open the folder you wish to move the file from.*

*Click on the file you wish to move and keep the mouse button held down. Drag the file across into the other window, ensuring that you don't place it over a folder, and then release the mouse button. The file is now copied to the root directory of the disk.*

*Instead of opening two windows, you could drag the file to the Drive A icon, which has the same result. If you have an STE or an older machine with TOS 1.4 you can move the file rather than copy it by pressing the*

*<Control> key while you drag the file within a window. See ST Answers in STF 35 for details of copying files to a separate disk on a one-drive system.*

#### **Badged machine**

I have upgraded my STE to 2MBytes of memory. Where can I get a "2080 STE" badge to replace my 1040 STE badge? I called Atari but they could not help.

**Terry Holt, Hants**

*stf: Unfortunately Atari never produced any STEs with more than 1MByte of RAM, so the badges for a 2080 STE and a 4160 STE were never produced. Silica Systems (☎ 081 309 1111) can provide replacement badges for old machines – call them for details of availability.*

#### **Cleaning woman!**

Is it necessary to clean the heads of my floppy drives regularly by using a head cleaning disk?

**W Hart, Mid-Glamorgan**

*stf: Opinion varies on this subject. The manufacturers of the cleaning disks recommend that you use them on a regular basis (well, they would, etc etc), but we were unable to find anyone who has actually used the things. If you have no problems with your drives then there is no need to introduce any foreign materials into the drives.*

#### **Scroll on**

When I "show" a document from the Desktop in either medium or low resolution I seem to lose lines of text when I scroll the screen. I have a 520 STE.

**Kevin Garrad, Avon**

*stf: This problem occurs on the STE or on machines with TOS 1.4 if the screen is scrolled by pressing the left mouse button. This scrolls the screen up by 27 lines instead of 25 lines. If you press <Space> to scroll the screen it performs the scroll correctly.*

#### **Corruption**

Some of my games have become corrupted. It seems that something has destroyed the bootsectors of *F-19* and *Rainbow Islands*. Can you tell me of any PD software that can repair the bootsectors on these disks and could you supply the address of MicroProse Simulations?

**Laurence Withers, Reading**

*stf: Both the games you mention can have their bootsectors repaired by the Ultimate Virus Killer. Remember to always keep games disks write-protected to prevent them being accidentally erased or infected by a virus, and never use a virus killer to check new games for viruses – it can destroy them as effectively as a virus*



can. MicroProse are at Unit 1, Hampton Road Industrial Estate, Tetbury Glos GL8 8LD ☎ 0666 504326.

### Memory problems

I have an STE upgraded to 1MByte. A short while after I've switched on, vertical white lines appear on the screen, evenly spaced across the display. This often happens after changing resolutions. What can be causing this?

**A Derbyshire, Cheshire**

*stf: Take the lid off your machine and check that the SIMMs memory boards are firmly in place. Sometimes the new SIMMs are not completely pushed into their sockets. Quite a bit of pressure is needed to seat them so that they click in.*

**WARNING:** Always make sure that your machine is unplugged before opening it and always observe static electricity precautions before handling computer chips. Wear an anti-static wrist band or earth yourself by touching a water pipe or a metal window frame to dissipate any static charge which may have built up in your body. Be aware also that you might void your guarantee by opening your machine if it is less than one year old.

### Bit of a bomber

Occasionally when I switch from medium to low resolution my machine bombs out. What could be causing this?

**Keith Walker, West Lothian**

*stf: You may have memory-resident programs which object to the change in resolution from medium to low, or the Desk Accessories may not have enough RAM available to reload correctly. (Desk Accessories re-initialise upon a resolution change.) The memory clean-up routines often cause this problem when changing resolutions. Format separate disks to boot in low and medium resolutions and re-boot instead of changing resolution.*

### Internal injury

I have started having trouble with my internal disk drive. I am getting messages that the disk is write-protected when it is not. If I eject the disk and re-insert it, it sometimes works OK. This is happening more and more often. Please advise me – there are not many ST repair centres in Finland.

**Juha Toivanen, Finland**

*stf: There may be a bad connection to your drive which is causing an intermittent fault, or it could be the drive itself. See if you can find a local computer shop or PC repair centre to have a look at the drive – they don't have to be ST experts, because 3.5 inch disk drives for*

*PCs are practically identical to the ST's. They should be able to sort out this problem for you.*

### Where's my rainbow symbol?

In *ST FORMAT* 29 you said TOS 1.4 could be recognised by the rainbow symbol in the corner of the Desktop. I have used the *ST Type* program that you gave away on Cover Disk 23 and it tells me that I have TOS 1.4, yet I have no rainbow symbol anywhere on my Desktop. I am worried that I might have a faulty machine.

**Paul Hayes, Co Wicklow, Ireland**

*stf: Don't worry about it, Paul. You'll find the rainbow symbol in the Desktop Info alert box. You can see this from the Desktop by moving the mouse pointer to the Desk menu and selecting the Desktop Info option. An alert box opens up, showing the Atari copyright message and the Atari Fuji symbol with colours scrolling through it, giving rise to the nickname "Rainbow TOS."*

### Geriatric ST problem

I have an old STFM and I am having trouble with almost all of my connectors. My monitor port, my mouse and joystick ports and the external drive port are all knackered. I cannot get a picture and my external drive does not work unless I wiggle the lead about. I can do some soldering, so can you please give me some hints on repairing my connectors?

**Simon Bates, Tyne and Wear**

*stf: It is not advisable to try repairs yourself because you may cause more damage to your machine if you are not 100% sure of what you are doing. Take your ST to your nearest repair shop – or if there is nowhere local, then try Evesham Micros (☎ 0386 765500), who offer a fixed repair rate of £65. It sounds like you'll be getting your money's worth!*

### Blit it

I have an STFM with TOS 1.2 and I'd like to know if it is worth buying a blitter chip to install into it. If so, how much do they cost, are they easy to install and where can I get one from?

**D Jolley, Wigan**

*stf: Whether you can fit a blitter into your machine or not depends entirely on the layout of the motherboard: some STs have the holes for the blitter socket, some have a socket already fitted, some have the holes but they are filled with solder and some boards have no holes at all.*

*Unless you are very good at soldering, it is not really a DIY job – it should really be done in a workshop. If you install a blitter in an STFM, it is a good idea to upgrade to TOS 1.4 at the same time because there are also*



*some problems with the blitter running under TOS 1.2 – pixels tend to be “left behind” on-screen when you move the mouse pointer and when you close windows. System Solutions (☎ 071 252 7775) can supply a blitter and socket kit for £29.95, and can also install it for you for a fee of around £20, depending on how difficult the layout of the motherboard makes the task.*

**PC meeces**

Can I use an Elonex PC mouse with my ST? Are Atari going to bring out an STE upgrade to change the processor speed to 16MHz?

**Nadeem Walayat, Sheffield**

*stf: The Elonex mouse does not work with the ST because they have different pin connections. Atari have no plans to introduce a 16MHz upgrade for the STE.*

**Image conversion**

Is there a program that converts high resolution .IMG files to medium resolution .IMG files? If so, where can I get it from?

**Steven McIntosh, Dundee**

*stf: Hyperpaint (£21.99 Silica ☎ 081 809 1111) loads high resolution .IMG pictures while running in medium resolution. If the file is then saved, it is then a medium resolution .IMG file, suitable for use with 1st Word Plus and other programs which run in medium res.*

**Hot stuff**

After I have been using my STFM for about an hour, the disk drive starts to make funny noises when I try and access a disk. If I cool the power supply with a fan, it starts working again. What do you think the problem is?

**Tahmur Huq, London**

*stf: Your power supply sounds as if it must be getting far too hot if cooling it solves the problem. The components in your machine work perfectly well within a certain temperature range, but if they get too hot, they fail. Take your machine to a local computer repair centre or contact WTS Electronics (☎ 0582 941949), who can do a diagnostic check on your machine for £15.*

**What a turn off!**

Occasionally my machine turns itself off for no apparent reason. It is in its own power socket with nothing else connected – what could be the problem?

**Don Markwick, Eastbourne**

*stf: It sounds unlikely that it's the mains supply. It could be a fault with your machine's power supply unit, a problem with your machine which causes warm resets, or maybe just a loose connection. If your machine is still*

*under guarantee, return it. If not, then either try your local computer shop or contact Silica on ☎ 081 309 1111 – they provide an excellent repair service.*

**Second drive worries**

How do you install a second drive on the Desktop. Will I still get the message “Insert Disk B into Drive A” or is it all taken care of automatically?

**Jefferson Humber, Isle of Wight**

*stf: GEM always shows two disk drive icons on the Desktop even if there is only one drive connected. Once the external drive is connected, access it by clicking on the Drive B icon on the Desktop – there is no need to install the drive. Your machine detects when a second drive is connected and directs all disk accesses to it.*

**Cost of comms**

How much does it cost to run a modem? Is it the same rate as a normal telephone call? Is it cheaper after 6pm and at weekends?

**Daryl Lay, Suffolk**

*stf: Once you have paid for the modem and your comms software, all further charges are made at BT's normal rates because the modem is plugged into a standard telephone socket. Some services such as CIX and CompuServe, however, charge you for time on-line to the service, and payment is usually made quarterly for actual time on-line plus a standing charge.*

**Monitor matters**

I have an STFM which I use for word processing with a TV or an old Philips green screen monitor. Text in medium res is blurred although the machine is good for other applications and games. Can I improve the text quality or do I need to get a better quality monitor – if so, which monitor do you recommend?

**Jamie Brown, Edinburgh**

*stf: Using a TV or the Philips composite video green monitor is not ideal for text or DTP applications and there is no way to improve the output quality. You can either get a colour monitor, which is adequate for word processing, or a high res mono monitor which is better suited for DTP work. The Philips CM8833 Mk 2 colour monitor costs £215 from Swift Micros (☎ 0582 476257). The Atari SM144 14 inch mono monitor can be obtained from Evesham Micros (☎ 0386 765500) for £119.95.*

**DIY monitor fix?**

**1.** I am having problems with my Philips CM8833 monitor – it makes a high-pitched whine when displaying pictures from my ST. It stops for a while when I bang the left-hand side of the monitor but starts again soon after-



wards. How can I cure this before I crack the case?

**2.** I am also having terrible problems with my Desktop. I keep getting multiple identical windows with the following displayed in the path line at the top: "A:\ 02 27 09," instead of "A:\\*.\*. " I can find nothing wrong with my DESKTOP.INF files on the affected disks, although I have edited the resolution byte and I am using the medium res fix program. Can you help out?

**Ben Irwin, Sheffield**

*stf: 1. The monitor needs to be taken to an engineer to be serviced. Don't bang the side of it any more – you are likely to make things worse.*

*2. To solve your Desktop problem, erase all your DESKTOP.INF files from your boot disks. Reset your machine and set up your Desktop from scratch again, and once you're satisfied with it use the Save Desktop option. If you are using the medium resolution fix program, there is no need to edit your DESKTOP.INF file at all – you get a medium res Desktop automatically. Editing any file can cause problems and destroy data if you are not 100% sure of what you are doing.*

#### **Modulator search**

I have a 1040 STF with mono monitor. Do you know where I can get a modulator to connect my machine to the TV?

**R Marshall, West Midlands**

*stf: Silica Systems (☎ 081 309 1111) offer an internal modulator upgrade service to 520 STs and 520 or 1040 STFs for £45, including fitting. Call Silica to check for availability.*

#### **Which pitch?**

I am going to get a colour monitor for my machine, having stuck with a TV for the last five years. I have narrowed my choice down to the Phillips CM8833 Mark 2, the Atari 1435 (which is a Philips CM8833 Mark 2) or the Protar Vista C14M (which is a Philips CM8833 Mark 2). It looks as though I will get the Philips whatever I decide.

However I believe that the monitor has a dot pitch (dot size) of 0.42mm whereas top quality colour VGA monitors have a dot pitch of 0.28mm, giving a sharper image. Can I use VGA monitors to produce a better image?

**Ian Lyall, Aberdeenshire**

*stf: No, you cannot use a VGA (Video Graphics Array) monitor with an ST. They are designed for use with the high res output of PC-compatible VGA graphics cards, which is usually 640 x 480 pixels, and although this is practically the same as the ST's high res mode of 640 x 400 pixels they are not compatible. The ST's low res colour resolution is based on the CGA (Colour Graphics*

*Adaptor) standard of 340 x 200 pixels. When a PC-compatible with VGA colour graphics runs a CGA colour game it emulates a CGA display, resulting in the same picture quality as you would get on a CGA monitor.*

#### **Monitor mayhem**

I have an opportunity to purchase a Fujitsu M3 503B monitor. Can I use it with my STE? If so where can I purchase a cable?

**Jim Rodger, Stowmarket**

*stf: Without more details of the monitor we cannot give precise details on connection. If the monitor is an RGB type then it may work with your machine. Generally PC monitors cannot be used with an ST or STE without internal modifications to the monitor. There are hundreds of different brands of PC monitor available, and each one is likely to require different modifications. That said, any competent TV service engineer should be able to connect the two. Contact Meedmore (☎ 051 5212202) and give them full details of your monitor – they are lead specialists and should be able to offer a solution.*

#### **Split personality**

I have bought a lead to connect my Hewlett Packard colour monitor to my STFM. All the colours are OK in both medium and low resolution but the icons appear down the middle of the screen and the picture runs off the right-hand side of the screen and reappears on the left-hand side. Does this mean I cannot use this monitor?

**Frank Cullen, Sussex**

*stf: It sounds as though the horizontal sync needs adjusting – that is if it is connected at all! Lug the monitor and your ST to a TV repair shop and they should be able to sort it out for you.*

#### **Colourless display**

I have a Mega STE which gives a strange display when connected to my Ferguson TX TV/Monitor using the RGB input. Only about five different colours are displayed on screen. The lead I am using was originally supplied for the Philips CM8833 Mk 1 monitor. Have you any idea what could be wrong?

**David Wagner, Lanarkshire**

*stf: It sounds like you are only getting two of the three colour signals on-screen. The SCART connections for both monitors should be the same, so it is likely that one of the colour conductors is disconnected. Check the lead at both ends and make sure that all conductors are securely soldered in place. If they are, then either get the lead checked at a TV repair shop or contact lead specialists Meedmore (☎ 051 521 2202), give them full details of your monitor and they'll sort it out for you.*





# REFERENCE





# JARGON BUSTERS

If you're confused about any techie term in the world of ST computing, this is the place to be. Words in bold are explained in their own entry.

**A**ccessory: Small program which stays resident in **memory** and can be called up at any instance by clicking on its name in the desk menu. Accessories have an **.ACC extension** and can only be installed when your ST is first turned on.

**Aftertouch** (music): See **pressure sensitivity**.

**Alert boxes**: Your ST warns you that certain operations, like **formatting** a disk or erasing **files**, can be dangerous to data. A **dialog box** pops up with an alert message which you must read and acknowledge (usually by **clicking** on "OK") before proceeding.

**Analog to Digital Converter (ADC)** (music): Device for converting sound from a microphone or line-input into a machine readable form, after which it is known as a **sample**.

**Animation**: Flicking very quickly between successive **frames** gives the effect of movement.

**ANSI** (comms): American National Standards Institute. An American standards setting body. Determines which **bit** patterns relate to which **ASCII** character.

**Anti-aliasing**: Graphic displays with a relatively **low resolution**, such as the ST's, cause problems when you try to display diagonal lines. Instead of appearing smooth, the line is broken into a series of steps because there just aren't enough **pixels** to convincingly form a line – a process called aliasing. The problem may be lessened by shading the boundaries between the two contrasting colours with many shades of a suitable colour, giving a more gradual transition between the areas and smoothing out the line – anti-aliasing.

**Application**: Little-used alternative name for "program," so-called because you apply your ST to the task in hand. Also the form you use to beg for a job.

**ASCII**: Acronym for American Standard Code for Information Interchange which is the standard method for sending data from computer to computer. Every character and punctuation mark has a unique code number.

**Aspect ratio** (graphics – **raytracing**): Because programs can produce pictures with varying horizontal and vertical sizes, you need to tell the ratio between these sizes so the picture doesn't look squashed. This is the aspect ratio.

**AUTO folder**: Any program that has a **.PRG extension** and doesn't require the use of **GEM** (that is, **windows** and **icons**) can be placed in a **folder** called AUTO. The contents of the AUTO folder are automatically executed when you switch on and insert the relevant disk.

**Auto answer** (comms): A facility built into up-to-date **modems**, so the **modem** can operate unattended, enabling it to receive calls. Abbreviated to AA in some **modems**.

**Auto baud** (comms): If a **modem** has this facility, it can detect the appropriate **baud rate** of the remote computer calling you and set itself up accordingly.

**Auto dial** (comms): **modems** with this facility can send pulses or tones down a phone line for you. Simply type the number into your comms package and it does the rest.

**Auto-boot**: See **Boot**.

**Auto-hyphenation feature (DTP)**: a dictionary of common long words and acceptable hyphen breaks, so that when you flow text into narrow columns the words are automatically hyphenated.

**B**ABT: The British Approvals Board for Telecommunications. It is legal to connect only **modems** bearing the BABT logo to Telecom phone lines.

**BASIC**: Acronym for Beginners' All-Purpose Symbolic Instruction Code, which is the most popular and easiest to learn programming language for newcomers to the ST.

**Baud rate**: Pronounced "board," the speed in **bits** per second (bps) that your ST sends data from its serial port – a connector at the back that you use mainly to connect **modems**. All transmissions over telephone lines conform to a standard baud rate of either 300, 1200, 2400 or 9600 baud.



**BBS:** Abbreviation for **bulletin board**.

**Bee icon:** The ST changes the mouse pointer to a bee when it's busy doing something you can't interrupt, like loading data from a disk.

**Binary file:** Non-text **files**, such as programs or graphics, are binary **files**.

**BIOS** (programming): Basic Input/Output program – handles, for instance, screen output and keyboard input.

**Bit images:** **Files** made up of actual screen data – that is, dots.

**Bit:** The smallest unit of computer data. Eight bits make a **byte**, four bits make a **nibble** (no, really). See also **Kilobyte**, **MByte**.

**Bitmaps** (graphics): Blocks of **pixels** with a colour for each **pixel**. Literally a map of all the **bits** (pixels) and their colours. All hand-drawn images are bitmaps.

**Boot:** You boot your ST by (a) turning on the power or (b) pressing the **reset switch** when you have a disk in the drive. The ST reads the first part of the disk (the **bootsector**) and then displays the **Desktop**. The **bootsector** can be set to **auto-boot** a specific program, which runs immediately upon booting with no input required from you. Most games load like this. Also what you wear on your feet in the winter.

**Bootsector virus:** A **virus** that loads into memory when you **boot** from an infected disk.

**BPS** (comms): Acronym for Bits Per Second – another term for transmission speeds. See **baud**.

**Bug:** An error in a program, which may make it crash. Also a pathetic **joystick**.

**Bullet** (DTP): A symbol used to emphasise a sentence or paragraph.

**Bulletin board** (comms): A public access board, containing files and information, usually run by hobbyists.

**Byte:** Computer memory is organised into groups of eight data **bits**, called **bytes** – short for “by eight.” (see **Nibble**).

**Carrier tone** (comms): This is the unpleasant high pitched squeal which tells your ST that the remote computer is ready to transmit data down the line.

**Cartridge:** Cartridges plug into the port on the side of the ST and often contain a program on a chip, which loads instantly since it does not require the use of the **disk drive** and uses none of your ST's **RAM**.

**CCITT** (comms): The European communications standard, as opposed to Bell which is used in America.

**Cel** (graphics): Another name for an art package brush. The term originally came from the cartoon biz, where artists paint cartoon figures on top of clear celluloid film, which is then laid on top of a background.

**Cell** (spreadsheets): An individual pigeon hole within a **spreadsheet**, containing a number, title or formula.

**Centred text** (DTP): Line or block of text positioned between left and right margins.

**Channel** (music): **MIDI** has 16 channels – it can communicate with 16 instruments at once, if necessary, rather like number lines available in a telephone system.

**Multi-timbral** instruments can respond on more than one channel at a time, so, for example, you could choose a piano sound for channel one, a bass for channel two and so on. By using software to switch between channels, you can select different sounds.

**Checksum** (comms): This is a verification method for making sure that data is transmitted in its correct form.

**Chorus** (music): An optional special effect found on some keyboards and **sound modules** which enriches the quality of a sound.

**Click:** You perform a click by positioning your mouse pointer on an **icon** on-screen and quickly pressing and then releasing a mouse button once.

**Clip-art** (graphics): Originally images clipped out from magazines and pasted onto new documents. On your ST, clip-art is digital images ready to be used in **DTP** or graphics work. There are disks full of the stuff available from PD libraries – see the PD directory on page 83.

**Close box:** The small box at the upper left-hand corner of a **window**, used to close an active **window** – that is, the one you're working in.

**Cold start:** Rebooting your ST by turning it off, leaving it for 30 seconds and then turning it on again with the power switch. This is the only way to get rid of **viruses** in memory. See **Warm Start**

**Colour palette:** The ST has the capability to display 512



different colours (STEs can show 4,096), of which 16 can be on-screen at once. This current set of 16 colours is called the colour palette.

**Column guides** (DTP): series of dotted lines appearing on-screen to indicate column edges.

**Conferencing** (comms): The electronic version of a face to face meeting.

**Control panel:** The **Desk Accessory** that came with your ST. When loaded, it enables you to change all sorts of system-wide settings, like the keyboard repeat speed and whether you want the keys to beep each time they're pressed.

**CPU:** Acronym for Central Processing Unit – the chip inside the ST that handles the main processing tasks.

**Crash:** What happens when your ST goes wrong for some reason: a badly-written program, a **data file** is missing, or something similar. Sometimes the ST displays a number of bombs which can help programmers find the problem, but usually the ST just freezes and does nothing, forcing you to reboot.

**CRC** (comms): acronym for Cyclic Redundancy Check – a very widely used method of detecting data transmission errors.

**Cropping** (DTP): Trimming an image to alter the content or to get it to fit a set **frame** size.

**CTS** (comms): An RS-232 signal line. Short for Clear To Send.

**Cursor:** The marker (usually a rectangular black shape) that shows where the next character you type will appear. Also the Art Editor on deadline day.

**Cut and paste** (graphics): To delimit an area of the screen and copy it to a temporary storage area before using it somewhere else, perhaps more than once.

**Cylinder** (hard drives): A collection of **tracks** in the same position on both sides of all **platters** on the **hard drive**. Typically there are about 500 cylinders to a **hard drive**.

**D** **ata file:** Used by programs to store information they need to run, such as text or graphic data, or by programmers to store user instructions.

The data file **icon** is like a sheet of paper with one corner folded over.

**Database:** The ST equivalent of a card index or filing system used to hold information in a pre-defined form.

**DCD** (comms): An **RS232** signal line. Short for Data Carrier Detect. This means your **modem** is in communication with the host computer.

**Density** (hard drives): There are two varieties of density on a **hard drive**, MFM (Modified Frequency Modulation) and RLL (Run Length Limited). MFM enables **hard drives** to have 17 512 **byte** sectors per **track**. RLL enables drives to be **formatted** to 25 512 **bytes** per **track**. RLL is dearer than MFM and quicker. It can handle greater amounts of data.

**Depth cueing:** Mainly used for 3D graphics, this is a technique of shading parts of an object intended to appear farther away with darker shades, reinforcing the impression of image.

**Desk Accessory:** Accessories are programs with a file name ending in .ACC. Stored in the **root directory** of a disk, these are automatically loaded into the ST's memory on **booting**. They can then be run at will by selecting the relevant name from the **GEM** Desk menu, at the top left of the **Desktop**. You can have a maximum of six loaded at once. Also that stupid little executive toy you keep on your desk and which everyone else hates.

**Desktop:** See **GEM Desktop**.

**Dialog box:** Messages your ST displays, informing you of the effects of some operation or other. You're also given a number of options, one of which you must select to remove the dialog box from the screen.

**Digital effects/filtering/processing** (music): Effects are things like echo, delay and reverberation – they can give a **sample** more atmosphere. Music software creates effects inside your ST by performing calculations on the numerical sound data. Digital filtering refers to advanced tone control options of samples. Digital effects, digital filtering and sample editing are all forms of digital processing.

**Digital to Analog Converter (DAC)** (music): the reverse of an **ADC**, this converts a **sample** back into a signal suitable for a loudspeaker.

**Disk Drive:** Your ST's main storage device. It uses this to read from the **floppy disk** and write data to it. On **bootup**, the ST displays a **floppy disk icon** on the **Desktop** for each **disk drive** you have connected.

**DiskCopy:** The ST's copy program. Move floppy disk



**Icon A** on top of Floppy Disk **Icon B** and it attempts to make an exact copy of the source disk, but it's not infallible. For example, it can't copy non-standard disks (like the *STF* Cover Disk).

**Dithered mode** (graphics): Most **scanners** have a dithered mode which uses patterns of dots to represent shades of colour. Gives a more realistic result when scanning photographs, the only downside being slightly less detail.

**Dithering** (graphics): A technique of mixing two colours in a chessboard **pixel** pattern. The colours don't literally mix, in the way that paints do on a palette, but they effectively blend visually, producing what looks like a third colour, halfway in tone between the two original shades. This is the usual way to produce what looks like more than the standard number of colours. Also hesitating when you can't make a decision.

**DOS**: Disk Operating System, but used to signify the whole gamut of an operating system.

**Double-click**: Two quick **clicks** on the left mouse button. Double-clicking opens files, runs programs and enters **folders** and disks. The speed of a double-click can be set with the **Control Panel**.

**Download** (comms): To transfer a **file** from the remote computer to your ST. See **Upload**.

**Dragging**: The method for moving **icons** around the **Desktop**. Point at the chosen object, press the left mouse button and hold it down. The object selected should turn into an outlined ghost-image which moves around the screen at the same time as you move the **mouse**. Let go of the mouse button to deposit the **icon** in its new position.

**Drum edit** (music): Found on many **sequencers**. A way of making and editing drum patterns on-screen using a method similar to that found on the LCD displays of good drum machines.

**DTP**: Acronym for desktop publishing, the high-tech method of creating newspapers, magazines and books using computers for typesetting and printing.

**DTR** (comms): Data Terminal Ready. Means both the computer and the **modem** are ready to transmit.

**Duplex** (comms): Either full or half. If you are sending at half duplex, you can send only one way at a time. Full duplex means both your ST and host computer can talk at the same time.

**Electronic Mail (E-Mail)** (comms): This involves sending and receiving messages for a remote user. You can read these on-line or **download** them for later use. In an office, E-Mail can cause great hilarity if you have it and great irritation if you don't.

**Extension**: the last three letters of a file name which come after the full stop to identify the sort of program the data file was created with.

**Field** (databases): A single item of information in a record – such as a name or one line of an address from an address list.

**File**: A chunk of information stored on disk. Could be a program, data for a program, an instruction document or any other collection of storable information.

**File copy**: To copy individual **files** from a **window** to a disk or from a **window** to another **window**. You copy a **file icon** to its new home by **dragging** it.

**File-locking** (networking): A software method of stopping one terminal accessing a **file** being amended by another terminal.

**File name**: A file name can be up to eight characters long and has an optional extension three characters long.

**Fileserver** (networking): An ST which controls the operation of the **network** such as drive accesses, printing and so on. A dedicated fileserver devotes all its time to **network** tasks. Non-dedicated file servers can be used for other tasks while the **network** is in operation.

**Filing** (programming): There are two types: **stack** filing and random access filing. The **stack** system is easier to use, but the latter gives you more flexibility.

**Filter** (databases): A condition applied to the records within a **database**, restricting those that are available for display or printing.

**Floppy Disk**: The actual storage medium where data is kept. Made of a similar material to audio tape, but it's flat, round and – er, floppy. Kept safe inside a plastic sleeve, which you insert into a **disk drive**.

**Folder**: The ST's name for a directory. You can store many (usually related) **files** inside a folder and move them all around at once by moving just the folder **icon**. To access a **file** which is inside a folder, simply **double-click** on the folder **icon** to open it up. Folders can also appear inside other folders, up to eight deep.





**Font:** A set of printing or display characters of a particular type, size and style. The default font is the one used to display everything on-screen. Some programs enable you to load and use other fonts.

**Format:** You prepare a blank disk to take data by formatting it. The ST checks the disk and arranges the internal structure of the disk so you can use it. Formatting erases all data which is on the disk in the first place, so use it with care.

In graphics, it is the way that pictures are stored in files. Different art packages save images using different methods of compression or special header information which indicates the art package used to create the image. Finally it is the second half of the name of the best ST magazine in the world.

**Four colour separations (DTP):** To include colour photographs, **scans** or graphics in pages, you need to create four separate pages or sheets of film with the magenta, cyan, yellow and black components of the image.

**Frame: Animation** sequences are made up of a series of frames which are **sprites** differing slightly from each other.

In graphics, a defined area on a page which encloses a piece of text or a graphic. Some **DTP** packages enforce the use of frames more strictly than others.

**Frame-rate (graphics – animation):** The number of still pictures per second. Normal TV pictures are transmitted at 25 **frames** per second, but animation only needs to be at about 10 **frames** per second to fool the eye into thinking things are moving.

**Full box:** This gadget (top right corner of a **window**) opens the currently active **window** up to its maximum size (usually the full screen) to enable you to see many more **files** than you'd see with a small **window**. Clicking it again returns the **window** to its previous size.

**Function keys:** The topmost row of keys on the ST keyboard, marked F1 to F10. These can have a multitude of different functions (or none at all), depending on what the particular program you're running uses them for. Many serious programs use them to do repetitive tasks at the touch of one key.

**Gateway (comms):** A link between two services. Prestel has a gateway to Telecom Gold enabling a Prestel subscriber to send **E-Mail** via Telecom Gold.

**GDOS:** Graphical Device Operating System, the part of

the ST's operating system that deals with the handling of **bitmapped** screen and printer **fonts**.

**GEM:** Acronym for Graphics Environment Manager. This program is the part of the ST's operating system which handles all the **windows**, **icons**, and graphics functions used on the **Desktop**.

**GEM Desktop:** The "file management" screen which includes (at least) two **floppy disk icons**, the **menu bar** and the **trash icon**. You get this when the ST **boots** as normal, before running any programs. From here, you can select various functions (such as running a program) and any **Desk Accessories** you have loaded.

**Ghost:** An outline of an **icon**, **file** or **window** which shows the current position of that item as it is **dragged** around to a new location on the **Desktop**. Also a nasty ST **virus** which flips the up and down axis of your **mouse**, so it operates backwards.

**Gradient or shaded fill (graphics):** Using a range of similar shades to produce a smooth transition from one colour to another. More effective with displays using 512 colours or more.

**Graphic text:** Relies on the graphic abilities of your printer to draw a page rather than using your printer's own set of internal **fonts**, so you can use more **fonts**.

**Graphics editor (DTP):** Paint package built into a desktop publishing package.

**Graphics import (word processing):** The ability to import pictures into word processed documents.

**Greyscales (graphics):** A mono picture is made up from two colours – black and white. A greyscale picture is made up from shades of grey. On an STFM, you have eight shades, and on an STE 16 shades. Once a pic is converted into greyscales, you can start adding colour.

**Grouping (DTP):** The ability to group together items so that you can move them as one unit within a document.

**Hard disk or hard drive:** Another storage medium, this time with a non-removable magnetic surface. It's much faster than a **floppy disk** and can hold a lot more data.

**Hayes compatible (comms):** An industry standard. You can control a Hayes compatible **modem** via software running on your ST.

**Head (hard drives):** Drive head, like the stylus on the



record player. Records and reads information on a **platter**. There can be more than one head on a **drive**, typically with one head per **platter**. The head floats a thousandth of a millimetre above the surface of the **platter** and records data by re-aligning magnetic particles on the surface. Clever, that.

**Headers and footers** (DTP): Strips of repeated text along the top and bottom of pages.

**Hexadecimal** (programming): Base 16 method of counting, favoured by assembly language programmers – the usual method of counting is base 10. If you want to appear knowledgeable about assembly language, you should make lots of “hex” jokes.

**Hidden line removal** (graphics): Graphics may be displayed in two ways – as completely transparent objects so that you can see every line used in their construction, or as solid objects showing only those lines that would be visible in real life. The process of removing the parts that you can't see is called hidden line removal or depth sorting. It is very processor intensive and can often take a very long time.

**High resolution**: One of three video display modes available on the ST. High resolution consists of 640 dots horizontally by 400 dots vertically and is black and white only. You need a high resolution monochrome monitor to use this mode.

**Host** (comms): The remote computer your ST is talking to.

**Hot-spot**: One corner of a series of **bitmaps** which form a sequence. Each **bitmap** has its own hot-spot which is placed in the same position as the previous **bitmap's** hot-spot, but on the next blank **frame**. It's rather like an imaginary hole-punch which stops **sprites** from jumping or sliding all over the place. You don't actually see any hot-spots because they're deleted later.

**Icon**: A small picture on the **Desktop**, representing an item such as a disk, **file** or **folder**. You select **files** and operate programs by clicking on the appropriate icon. Also used in some programs and games so you can give commands or make selections.

**Image processing** (graphics): Applying mathematical algorithms to **bits** and **bytes** that make up a picture, so you can sharpen up colours, soften the image and apply special effects such as “watercolour,” outline and so on.

**Import** (DTP): Process of loading text or graphics produced by other programs.

**Indent** (DTP): Setting in of text from the left margin to show the start of a paragraph, section break or quotation.

**Index**: A list of the contents of a specified field in each of the records of a **database**, kept to enable quick searching and sorting of the records. Also the name given to the finger two-finger typists use, the other being a thumb.

**Information Line**: The line at the top of a **window** which shows how many **bytes** are used and how many items there are.

**Input/Output (I/O)**: The name for the communications process that occurs when your ST talks to its **disk drives**, printers, and so on. Input is data that comes into the ST, from a **floppy disk**, for example. Output is the reverse – for instance, data sent out to the screen or a printer.

**Interface**: A hardware connection that enables your ST to communicate with a peripheral device. Could be a printer cable, or a hard drive connection, for example.

**Jaggies** (graphics): Common term for lines that display aliasing – see **anti-aliasing**.

**Joystick**: Device that you plug into your ST to control many games. Also... er, perhaps not.

**Justify** (DTP): Short for “fully justified” meaning text aligned at both ends of each line.

**Kermit** (comms): This is a file transfer program from the Public Domain. Most commercial services and **bulletin boards** support the package.

**Kerning** (DTP): The space between characters in text.

**Kilobyte** (K): 1,024 **bytes** (not 1,000 **bytes**, because it's binary for 210).

**Label**: A marker defining a specific place in a program.

**Laser printer**: A laser printer by Hewlett Packard, or a clone of it, which incorporates a simple page description language called PCL.

**Layout** (DTP): Arrangement of text and graphics on a page.



**Leading (DTP):** The distance between the baseline of a line of text and the baseline of the one below it. It is measured in "points" and, if it is too small, the lines of text are squeezed together and look congested. All **DTP** programs enable you to adjust leading to your taste. You pronounce it "ledding." The leading on this text is ten points.

**Line inputs/outputs (music):** Hardware ports for sending and receiving "line level" audio signals. Distinct from "mike level" inputs which deal with the weaker signals produced by microphones.

**Line noise (comms):** If a phone line is weak, the computer's signal is interfered with. As a result, spurious characters appear on-screen. These are only a problem when they occur during transmission or reception.

**Link virus:** These viruses attach themselves to programs and infect your ST when you run them.

**Log off (comms):** To end a session with a remote computer.

**Log on (comms):** This initiates a session with a remote computer. You enter identification numbers and passwords at this point.

**Longword (programming) :** Four **bytes**.

**Loop:** See Loop. (Ho ho ho)

**Low Resolution:** This is another of the ST's video display modes. Low resolution has a display size of 320 horizontal dots by 200 vertical dots and can display 16 colours on-screen at once. If you have a **high resolution** monitor, you cannot access low resolution mode.

**Machine Language:** The sequence of numbers to which everything (**BASIC** programs, resource files and so on) is eventually translated so the **CPU** can understand them.

**Mail merger (word processing):** Facility enabling you to make up a standard letter leaving blanks where person-specific data is to be inserted. Then, by giving each data a name like "surname" you can read this data from another file and run off form letters.

**Mailbox (comms):** Host computers which offer **E-Mail** allot you a mailbox – rather like a **folder** in your ST's memory – into which goes all your mail from other users.

**Mask (programming):** Every **sprite** or **frame** that is to

be placed over another **sprite** or a background should have a mask to prevent the background from being blanked out around the **sprite**. The mask is identical to the **sprite** but is one colour, namely colour zero.

**Master page (DTP):** A special page incorporating **layout** features and text which automatically repeats through a complete document.

**Medium resolution:** Another of the ST's three video display modes. Medium resolution has a display size of 640 horizontal dots and 200 vertical dots and can display four colours on-screen at once. Medium resolution cannot be accessed on a **high resolution** monitor.

**Megabyte (M, MByte):** 1,024 **Kilobytes** (see Kilobytes, Bytes).

**Memory cards (music):** Credit card lookalikes to house new data for a **synth** or tone module – usually sets of new voices or patterns in the case of drum machines.

**Memory:** The chips inside the ST which store data and programs. There are two types: **RAM** (Random Access Memory) which can be written to but loses its data when you turn off the power; and **ROM** (Read Only Memory), where the main operating system is kept, which retains its data without power, but cannot be written to.

Memory is also, er, um, what is it now? Er. Never mind.

**Menu bar:** The bar at the top of the **GEM Desktop**. When you start up, it displays the Desk, File, View and Options menu titles. Other applications may have different headings.

**MIDI (music):** Acronym for Musical Instrument Digital Interface. This is a code enabling **synthesizers** to talk to each other and to computers. Good music software enables you to make music without having to worry about the complexities of different MIDI data types.

**MIPS:** Acronym for Millions of Instructions Per Second. Used when you're talking about processor speeds. For example, a standard ST runs at a quarter of a MIP and the Falcon runs at 3.84 MIPS – that's about 16 times as fast, so it's well worth getting one.

**MMU:** The Memory Management Unit – the chip which controls the running of **RAM** inside your ST.

**Modem:** Short for **MOD**ulator/**DEM**odulator. A device which enables you to connect your ST to a telephone line and thereby communicate with other remote computers and **bulletin boards**.



**Monitor:** A device like a TV set, but without the ability to receive TV transmissions. You plug it into the monitor socket on the ST which sends pure video signals straight to the screen, for a better, clearer picture. **High res** monitors are monochrome and can only use the ST's **high resolution** mode.

**Monochrome:** Single colour – in ST terms, monochrome is used to refer to the **high res** black and white display only.

**Mouse:** The device which moves the pointer around on-screen. You slide it around on a flat surface and the small rubber ball inside picks up the movement and relays it back to your ST, which updates the pointer's position on-screen. A mouse has two buttons on the top for selecting files and operating programs by **clicking**.

**Move Bar:** The bar at the top of a **window**, just above the Information Line. You click on this bar to drag the whole **window** around the **Desktop**. Also what you do when you're chucked out of the pub.

**Multi-timbral instrument:** These instruments can make more than one type of sound at the same time. The number of parts multi-timbral is the number of different types of sound that it can play simultaneously.

**Nibble:** Four **bits**, or half a **byte**, hence the name.

**Node/terminal** (networking): Slave computer attached to the **fileserver** used by network users to access **peripherals** and data on the net.

**Noise generator:** The ST sound chip's noise generator makes a sound a bit like what you get when the TV goes wrong. Very useful for creating your own simulations of TVs going wrong.

**On-line** (comms): The period during which your ST communicates with a remote computer.

**Operating system:** The ST's internal routines, like disk formatting, sending characters to the screen and so on. Held in the ST's **ROM**.

**Outliner** (word processing): Structured writing tools to enable you to plan long documents properly.

**Palette** (graphics): Your ST can display 16 colours in **low resolution** – this range of colours is your palette. Each of these colours is

chosen from a range of possible colours – 512 on an STFM and 4,096 on an STE.

**Palette switching** (graphics): Technique used to give more than the "legal" number of colours on-screen at once. It involves changing the **palette** of part of the picture as the electron gun (the mechanism that actually displays the picture in the monitor or TV) physically moves down the display, so that the display contains more colours. Requires very accurate timing and is too processor intensive for much except backgrounds.

**Parallel interface:** A standard interface for connecting your ST to a printer. It's the one marked "Printer" on the back of your ST.

**Parity check** (comms): A widely-used error detection method. The system can detect single **bit** errors, but can't handle pairs of wrong **bits**.

**Partition:** **Hard disks** are sub-divided into smaller sections called partitions. To the ST, each partition looks like a separate **disk drive**, but they are actually part of the same drive.

**Patch** (music): Any particular sound on a **synthesizer**. Derived from early synths, when, to create a sound, you had to connect wires into an electronic **patchbay**.

**Pattern mapping** (graphics): Applying a given two-dimensional pattern, such as a chessboard check-square design, to a 3D object like a sphere, so the object is wrapped in the pattern and the pattern conforms to the perspective of the object.

**PCB:** Acronym for Printed Circuit Board, which all the chips and components of the ST are soldered onto. Also PolyChlorinated Biphenyl, a nasty gas pumped into the atmosphere when you burn toxic waste.

**Peripheral:** Any device which can be connected to your ST, like a **monitor**, **printer**, **disk drive**, etc.

**Phong shading** (graphics): An advanced shading technique to smooth the join between two edges of adjoining polygons in a 3D shape to make it look less sharp and more rounded, giving it the impression of a more realistic object.

**Piano-roll editing** (music): A feature of any decent **sequencer**, although it's probably known as something else, like Key Edit or Grid Edit. This form of editing is easy to understand and use – even if you're not a musician – it's like a graph, with a piano keyboard displayed along one axis and time along the other. Notes are rep-



resented by little rectangles or sometimes other shapes which can be clicked on and generally messed about with.

**Pitch** (music): The pitch of a musical note is how high it is – moving up the scale is the same as increasing the pitch, and vice versa. The pitch of a sampled note is changed by varying the sample playback rate, and is usually handled by the software.

**Pixels**: The dots which make up the ST's video display. The name comes from "picture elements."

**Platter**: Magnetic surface on a **hard drive** on which data is recorded. This rotates at around 3,600RPM, (revolutions per minute) compared with about 300 RPM for a **floppy**. Also what you get your dinner on.

**Point size** (DTP): The old typographical measurement units used in the decimal days. There are 72 points to one inch, so 12 point text – the commonly used size for printers and typewriters – is one-sixth of an inch high. This text is eight points high.

**Pointer**: The arrow which you move around the **Desktop** to select **files** and operate programs.

**Polyphony** (music): The polyphony of an instrument is the number of notes it can play at the same time, whether or not they use the same sound. This is not to be confused with multi-timbrality, which is to do with types of sound.

For example, a 16 note polyphonic, eight-part **multi-timbral keyboard** could play a note consisting of 16 notes all using one sound, or it could play single notes and chords using several different types of sound at the same time, provided no more than eight types of sound are used simultaneously, and the total number of notes does not exceed 16.

**PostScript** (DTP): A page description language used to produce text and graphics at any size.

**Preset sounds** (music): These are sounds on a **synthesizer** that are already made for you and can be accessed just by pressing a button. Most of the cheaper keyboards consist of preset sounds only, and don't enable you to create original sounds of your own.

**Pressure sensitivity** (music): On some keyboards you can register changes in the amount of pressure you apply to a key which you're holding down. Pushing on the key makes the sound get louder or change in other ways. This is also referred to as **aftertouch**. See also **touch sensitivity**.

**Printer driver**: A utility which converts all those bold, justified and italic commands in a document into something that can be recognised by your **printer**.

**Printer**: A device to provide you with a hard copy of text or graphics created on your ST which is of sufficiently high quality for you to make your own professional-looking publications.

**Program file**: A **file** which contains an **application**. Program file **icons** in a **Desktop window** are boxes with a shaded top edge.

**Protocol** (comms): To get two computers to talk to each other, you have to set them up in a similar way. The most common protocol is **RS-232** setting: eight data bits, no parity, one stop bit.

**Quantize** (music): The term used for when a sequencer moves notes to the nearest particular note value you have selected. If you select the wrong note value to quantize to, the music does not end up sounding the way you intended.

**RAM Speed**: This indicates how fast the **RAM** operates and is measured in nanoseconds (thousand-millionths of seconds). The faster the speed the better and the more expensive. Anything faster than 100ns (that is, with a smaller number) is suitable for the ST.

**RAM, ROM**: See **Memory**.

**RAMdisk**: A program that sets aside a part of **memory** and enables you to use it as a very fast **disk drive**. Very helpful for single drive owners who get tired of disk swapping, since it enables you to perform copy operations in two quick moves, but everything in the RAMdisk is lost when you turn off your ST.

**Raytracing** (graphics): A way of colouring and shading 3D scenes by tracing the rays of light that would fall onto the objects from the light source and setting the colours appropriately.

This process gives extremely realistic results with shadows, reflections and refractions, but it has to be repeated for each **pixel**, taking immense amounts of time to produce even one **frame** and requiring many different shades to work effectively.

**Record** (databases): All the information relevant to a particular person or book within a **database**, like a single card in a card index.

**Register**: A particular location in your ST's memory.



**Render** (graphics): In the context of **raytracing**, rendering is the procedure telling the program to process an input file so you can display the picture.

**Reset button:** The small, spring-loaded, grey button at the back of your ST. Press this and the system re-boots (see **Boot**) and forgets whatever it was previously doing. This doesn't kill any internal **viruses**, though; to do that, you need to switch off the main power for at least 30 seconds.

Also what you need to do when you break the <Fire> button on your **joystick**.

**Resolution:** See the fuller explanations under **high**, **low** and **medium resolution**. Unless it's what you fail to keep after New Year's Day.

**Resource Construction Kit:** Program for constructing resource files which contain textual and graphical data – for example **icons**, menus and **dialog boxes**.

**RGB:** Acronym for Red, Green, Blue. These are the three primary colours which the ST uses to create its colour video display. Colours are specified as an RGB value. An ST has eight levels of intensity for each colour, creating 512 (8 x 8 x 8) different colours. An STE has 16 intensity levels, giving 4,096 (16 x 16 x 16) colours.

**Root directory:** Anything that is written directly onto a disk – that is, not in any **folder**. Also a very very small map which shows termite the way to the bottom bit of a tree.

**RS232:** An industry-standard interface connection for peripherals which require serial information. Serial information is sent **byte** after **byte** down the interface cable. On the ST's casing, the RS232 port is marked "**Modem**," although serial printers may also be connected here.

**RTS** (comms): An **RT232** signal, short for Request To Send.

**RXD** (comms): Abbreviated from Receive Data. This means that the host computer is sending to your ST.

**Sampling** (music): Capturing sound in a digital form for convenient playback, processing and storage. There are hardware devices available for this task, but with the right software and an add-on, your ST can be a sampler. Each block of sampled sound, whether it's a single drum or a short snip of music, is a sample. It is also used to describe each sample in the sampling process, so that a one second sample at 48kHz can be said to consist of 48,000 individual samples.

**Scaling** (DTP): Changing the size of a graphic image to fit a set **frame** size.

**Scanners** (graphics): These devices reflect light off a source picture into an array of photo-electric cells and convert the result into a digital picture. They come in many resolutions. Any printed matter can be digitised.

**Score edit** (music): A method of making adjustments to your music via traditional music notation displayed on-screen.

**Scroll bar:** One of two bars that border an active **window**. **Click** on the arrows at the ends of the bar and the information moves in that direction. The shaded portion represents information which is not currently visible on the screen. The white block shows the portion which can be seen and it can be moved with the arrows, by clicking on the shaded part or by **dragging** the block itself.

**Scroll:** To move information up, down left or right, using the slider bars at the side of the **window**.

**SCSI:** Acronym for Small Computer System Interface connects drives to your ST. Most ST **hard drives** have SCSI built into the drive, but there are kits to add an SCSI interface to a home built **hard drive**. Pronounced "scuzzi" by those who know.

**Sector: Tracks** on a standard ST disk are divided up into nine sectors each, each of which can hold 0.5K of data. These sectors and **tracks** are part of the way a disk keeps an eye on what data it has.

**Sequencers** and **sequencing** (music): Using software to string together notes or **samples** in a particular order to produce music is called sequencing. Most ST sequencers use **MIDI**, but "tracker" packages are, in effect, sample-based sequencers.

**Sequences** (programming): A series of **frames**.

**SIMM:** Single In-Line Memory Module. A circuit board containing 256K or 1MByte of memory chips. It can be plugged into sockets mounted on the circuit boards of STEs and on upgrade boards to be fitted to older STs.

**SIPs:** Single In-Line Package – a variation of the **SIMM** configuration. If a circuit board has 30 holes instead of a **SIMM** socket, a SIP socket must be used.

**16-bit:** A computer (like your ST) which can read in and write out 16 bits at a time. Consequently it runs a lot faster than 8-bit machines. Also the size of a very small Airfix model.



**Size Box:** The small box at the lower right-hand corner of a **window** which can be dragged to expand or shrink the **window**. Doing so is called "sizing."

**Source Code:** Listing of a program before it's compiled – that is, before it's converted to the **machine code** your ST reads.

**Spacebar:** The long horizontal key at the bottom of the keyboard which prints spaces when hit.

**Split speed** (comms): This is when the **baud rate** for receiving data is different from that used to send. Used to minimise on-line time mainly on systems such as Prestel where you usually receive more than you send.

**Spreadsheet:** In essence these are sheets of electronically squared paper. You can fill the squares with text numbers or the results of calculation. Most often used for forecasting and budgeting purposes.

**Sprite:** The name given to any character in a game, usually mobile, that is animated and may or may not be controlled by the player. Also a popular soft drink.

**Stack pointer** (programming): Marker which points to the most recently stacked value.

**Stack** (programming): Area used to hold program values during program execution.

**Sub-set** (databases): The records still available within a **database** once a filter has been applied.

**Synthesis** (music): Refers to any electronic sound-creation.

**Synthesizer** (music): A keyboard or module that enables you to create your own sounds, as opposed to one which relies only on preset sounds.

**Thesaurus** (word processing): Hundreds of thousands of alternatives for words that you can access from within WP programs.

**Tone dialling** (comms): A relatively new system. When you dial a number using tones, each digit has its own slightly different frequency. It is fast and offers opportunities for telephone to computer communication.

**TOS:** Acronym for The Operating System, the main program stored on **ROM** inside the ST. It controls all the ST's functions and the operation of the **disk drives**, **mouse**, **printer**, video display and so on. In short, the brain of the ST.

**Touch sensitivity** (music): A touch sensitive keyboard plays louder when you hit the keys harder. Also known as **velocity sensitive** because it is actually the speed at which the key is pressed that determines the loudness of the note.

**Track:** A circular path on a **hard** or **floppy disk**, which contains several sectors. The data on the disk is arranged into tracks like those on a record, so they can be read or written quickly.

In music, the number of tracks a **sequencer** has does not affect the number of **channels** available over **MIDI**, which is always 16.

**Transparent colour** (graphics): In animation, one colour is set aside as transparent, though it may actually be a true shade. The ST knows which colour you chose as transparent and lets the background show through wherever it's displayed. This is used to create the effect of **cels**, where irregularly-shaped **bitmaps** do not fill a neat rectangle. The outsides of the **bitmap** are filled with the transparent colour to enable the image to be moved around without showing the rectangular block which actually contains it.

**TRAP** (programming): A call to one of the operating system's built-in routines, for example, printing a character to screen.

**Trash:** The **GEM Desktop icon** which is used to delete **files** or **folders** from a disk. Once placed on the trash icon, data is erased permanently.

**Tween** (graphics): Short for "in-between." To make an animated sequence, the ST is given information about the start and end positions of a brush, and it works out the in-between positions. The process is known as "tweening" and came originally from the cartoon film industry where junior or "tweening" artists would do the same job on cartoon characters drawn by the top artists.

**TXD** (comms): Short for Transmit Data. This indicates that your ST is sending information.

**Typography** (DTP): The study of type and its use on the page. It covers the design of **fonts**, their styles, spacing and positioning on the page.

**Upload** (comms): To transfer a file from your ST to the host computer. See **Download**.

**V.21** (comms): The **CCITT** standard for data transfer at 300 bits per second (bps) in both directions.





**V.22 bis** (comms): The **CCITT** standard for data transfer at 2,400 bps in both directions.

**V.22** (comms): The **CCITT** standard for data transfer at 1,200 bps in both directions.

**V.23** (comms): The **CCITT** standard for data transfer at 75 bps in one direction and 1,200 bps in the other.

**V.42** (comms): The **CCITT** standard for data transfer at 4,800 bps and beyond.

**Vector** (graphics): An image described mathematically by the lines and vertices that make it up – also known as scaleable or outline **fonts**.

**Video Shifter Chip**: This chip converts information from the ST's video **RAM** into signals readable on a monitor.

**Virus**: A nasty little program which is stored in the boot-sector (see **Boot**) of a disk. These viruses usually damage the data on your disks or temporarily change the way your ST operates (see **Ghost**, for instance). It's hidden, so you can't readily find it, and it runs when you boot from that disk. It lies in memory and can copy itself to other disks' **bootsectors** if not discovered and eradicated using a virus killer program.

**Warm start**: Rebooting your ST by pressing the **reset switch**. This does not clear the machine completely, so it doesn't remove any memory-resident **viruses**. Also supposedly what you get when you eat a certain brand of hot oat cereal in the morning. See **Cold Start**.

**WIMP**: Acronym for **Windows, Icons, Mice** and Pull-down menus. term for any interface that uses these elements. Also known as GUI – Graphical User Interface.

**Window**: The area that appears when you **double-click** on a disk and which is used to display **files** and **folders**. You may have up to four windows on the **Desktop** screen at once. Also the large glass object that stops your room being really dark all day.

**Wireframe** (graphics): The simplest representation of a 3D object, made up of lines showing the objects edges as if the object were actually made of a wireframe.

**Word** (programming): Two **bytes**.

**Worksheet** (spreadsheets): The matrix of cells containing numbers and formulae on which a spreadsheet program performs calculations.

**Wraparound** (DTP): Process of getting text to sit around outline of regular (such as text boxes) and irregular (such as pictures) objects.

**Write-protect**: You do this if you want to prevent a disk from being written to by the **disk drive**. Every **floppy disk** has a small tab in the corner; set it so that you can see through the hole in the disk's cover. When the tab is in this position, no data (or **viruses**) can be written to the disk.

**WYSIWYG** (DTP): Acronym for What You See Is What You Get. Since screen **fonts** rarely correspond exactly with the printer fonts differences in **resolution** between these devices, very few **DTP** programs give you true WYSIWYG. To really see the results you have to print them.

**X-Modem** (comms): A file transfer **protocol** widely used by both **bulletin boards** and commercial on-line services.

**XBIOS** (programming): Extended **BIOS** – part of the ST's operating system.

**Y-Modem** (comms): Faster than **X-Modem** and more reliable.

**Z-buffering** (graphics): Part of the technique used to decide which lines should be displayed during the **hidden line removal**.

**Z-Modem** (comms): Fastest file transfer **protocol** yet – but not very well supported by host computers.



# BUYER'S GUIDE

*Over the next few pages are mini reviews of everything that has ever been reviewed in ST FORMAT that you can still get hold of. While efforts have been made to ensure that the information is up to date – you should treat this as a guide only since things in the ST industry*

*are constantly changing – you never know, it could be to your advantage because prices are constantly coming down so you could end up paying less than you expected! Where there is more than one issue reference, the first is the most comprehensive.*

## ART AND GRAPHICS

With a palette of 512 colours on the ST and a palette of 4,096 on the STE, it's not surprising that the number of art packages around has boomed since the first days of the ST. All the packages here, except *Retouche*, come with the basic tools – different brush sizes, an airbrush tool, cutting, pasting and magnification. If you've got an STE, try to make sure your art program supports the extra colours.

**Art Master ST** £29.95  
Laser ☎ 0579 82462  
An easy to use drawing program offering support for the colours of the STE. Enables you to wrap blocks around user-defined shapes and has the other usual functions.  
Reviewed: 35 STF Rating: **76%**

**Canvas** Cover Disks 30, 34  
Microdeal ☎ 0726 68020  
A fully featured graphics package with support for the STE's enhanced graphics capabilities. A clever 3D modelling section enables you to create 3D shapes and use them in your own pictures.  
Reviewed: 9 STF Rating: **94%**

**Cyber Paint 2** £58.70  
Electric Distribution ☎ 0480 496666  
A drawing package with all the features of other graphics packages. Includes a unique animation section enabling you to define the start and end of an animation and then leave your ST to work out the intermediary frames.  
Reviewed: 24, 30 STF Rating: **88%**

**Cyber Studio** £58.70  
Electric Distribution ☎ 0480 496666  
A 3D modelling studio comprising a set of programs

enabling you to create 3D objects and then illuminate them from a variety of angles and in different shades.

Reviewed: 30 STF Rating: **79%**

**Degas Elite** £25.99  
Electronic Arts ☎ 0753 549442  
One of the original ST graphics packages and still highly praised. A good budget package with all you need to create standard pictures. No support for the enhanced palette of the STE.  
Reviewed: 30 STF Rating: **90%**

**Deluxe Paint** £59.99  
Electronic Arts ☎ 0753 549442  
Has all you need to create pictures but it's not as straightforward to use as packages like *Degas Elite* because of the awkward layout of its menus. Limited animation techniques are possible and has some interesting techniques like Bezier curves and stencilling. Support for all the STE's 4,096 colours. Special effects can help produce Impressionist or Cubist atmospheres.  
Reviewed: 15, 19, 24, 30 STF Rating: **88%**

**GFA Draft Plus 3.0** Cover Disk 34  
GFA £100 ☎ 0734 794941  
A sophisticated 2D drafting package to help you plan everything from a spacecraft to the look of your bedroom.  
Reviewed: 19 STF Rating: **90%**

**GFA Raytrace** Cover Disk 6, 35  
GFA ☎ 0734 794941  
Do you want to give your pictures a new realism? The technique of raytracing enables you to simulate the effect of light hitting solid surfaces. It's this technique which is used to generate shiny balls in many PD demos.  
Reviewed: 3 STF Rating: **78%**



### Outline Art

£176.25

Halco

☎ 0734 441525

If you want to get the best out of *Calamus*, the DTP program, *O Line* enables you to generate fancy logos by manipulating existing fonts and pics to give curved and 3D type effects. V2 of *Outline Art* is out for the new colour *Calamus SL* program.

Reviewed: 6

STF Rating: **95%**

### Paintpot

£14.95

Switchsoft

☎ 0325 464423

This must be one of the easiest-to-use art programs for the ST. Although it lacks any animation features, it has a few unique capabilities and it is STE compatible.

Reviewed: 9, 35

STF Rating: **72%**

### Quantum Paint 2

£14.99

Power

☎ 0234 843388

Using some very clever techniques, this drawing program enables you to have up to 4,096 colours in your pictures. Unfortunately, it's slow and difficult to use.

Reviewed: 4

STF Rating: **79%**

### Retouche

£175.00

CopyCare

☎ 081 686 8121

A retouching program for use with scanned images. Instead of the usual drawing tools, you have functions like charcoal, brush and water which act as they do in real life. Block, zoom and masking functions can be used to alter areas of the image. High res only.

Reviewed: 21, 30

STF Rating: **81%**

### Trip-A-Tron

£20.00

Llamasoft

☎ 0734 814478

Not an art program in the traditional sense, but it certainly enables you to create some mind-teasing kaleidoscopic patterns. Using its own programming language, you can create cosmic colourful creations.

Reviewed: 24

STF Rating: **91%**

## BUSINESS

**Business programs – sometimes known as productivity software – include spreadsheets, databases and accounts programs. Spreadsheets are used to analyse information. They're particularly useful for assessing the results of questionnaires or performing "what-if" tests on your budget.**

**Instead of analysing, databases store information like people's names and addresses. Many video libraries use databases to store information about the videos rented by people.**

**Accounts packages are used to keep track of income and expenditure. A good accounting package can also keep track of your VAT demands.**

### Adimens

£121.30

Kuma

☎ 081 309 1111

A very powerful relational database. It's very straightforward and logical to use.

Reviewed: 28

STF Rating: **70%**

### Cashbook Combination

£79.99

Digita

☎ 0395 270273

Enables you to balance your books to trial balance stage and to keep track of profits and loss and your bank transactions. Balance sheets can be created.

Reviewed: 28

STF Rating: **80%**

### DGBase

£49.99

Digita

☎ 0395 270273

Useful only if you have fairly modest database requirements. Designed to be useable with other Digita business packages. Only 64 fields of 255 characters can be used.

Reviewed: 28, 31

STF Rating: **71%**

### Home Accounts 2

£54.99

Digita

☎ 0395 270273

Aimed at the home user, this accounts package enables you to keep track of your incomings and outgoings. Vastly improved from *Home Accounts 1* and far easier to use, as well as being presented very attractively.

Reviewed: 28, 31

STF Rating: **90%**

### Informer 2

£56.74

Soft-Aware

☎ 0101 714 9828409

This American program is a fairly easy-to-use database; you can incorporate graphics in the form of *Degas* pics, but there are plenty of cheaper home grown alternatives.

Reviewed: 23

STF Rating: **79%**

### K-Spread 4

£136.30

Kuma

☎ 0734 844335

This popular spreadsheet comes with all you'd expect from a high-end package – including an enormous, but very helpful, manual. Graphics can be imported into documents and a vast range of statistical and trigonometrical functions can be applied to your information.

Reviewed: 19, 28

STF Rating: **80%**

### LDW Power

£114.95

Silica

☎ 081 309 1111

This spreadsheet is extremely simple to use, made all the easier by a thorough manual. Can generate a range of different graphs to analyse your information.

Reviewed: 28

STF Rating: **84%**

### Mini Office Communication

£21.95

Silica

☎ 081 309 1111

This comms module facilitates the logging on to the



many on-line services – if you have a modem!  
Reviewed: 28      STF Rating: **71%**

**Personal Finance Manager Plus**      £39.95  
Michtron      ☎ 0726 68020  
Helps the home user or small business handle every accounting need and it has many useful features, see the demo on *STF* Cover Disk 18.  
Reviewed: 19, 28      STF Rating: **81%**

**Personal Tax Planner**      £49.99  
Digita      ☎ 0395 270273  
An interactive tax advisor, it asks the questions, you provide the answers. It helps with the creative filling-in of your tax return form.  
Reviewed: 28, 31      STF Rating: **74%**

**Prodata**      £99.88  
Arnor      ☎ 0733 68909  
You need 1MByte of RAM to run this powerful database program, and it's fully compatible with *Protext*. The latest v1.2 uses friendly GEM-like menus.  
Reviewed: 7, 28      STF Rating: **74%**

**ProShare ST**      £49.95  
TC Developments      ☎ 0937 591145  
A Shares database to monitor the progress of your investments, showing you that they can go down and up. Useful as a warning – if you're really lucky – or as an educational tool to show how the stock market works.  
Reviewed: 15, 28      STF Rating: **69%**

**System 3**      £59.95  
Digita      ☎ 0395 270273  
Dead easy to set up, this is ideal for the small business. It produces professional-looking invoices, statements and so on for up to 99 customer accounts.  
Reviewed: 11      STF Rating: **90%**

## DESKTOP PUBLISHING

To give your words a professional look, you need to present them in the right way. Using desktop publishing programs you can take words created in a word processor and lay them out in an eye-catching and imaginative manner. DTP programs are used to design the pages of books like these, magazines, letter headings, posters, party invitations, flyers – and more. Advanced DTP programs like *PageStream 2* can import colour screen pictures and use these in your pages. Inevitably, the quality of the printout depends on the quality of your printer. All DTP programs print using the graphics features of a printer, so for the best quality output you need an inkjet or laser printer.

**Calamus SL**      £587.50  
Halco      ☎ 0734 441525  
The long awaited colour version of *Calamus* is now available, and it improves on the capabilities of v1.09 and it supports colour separations as used for professional page layout. Very memory intensive, and a hard disk is necessary for large colour images.  
Reviewed: 37      STF Rating: **89%**

**Easy Text Plus**      £20.00  
zzSoft      ☎ 0254 672965  
The cheapest DTP program on the market. It lacks the frills of its big brothers, but is still a worthwhile introduction. A demo of *Easy Text Plus* is available from the PD, check our listing of libraries on page 83.  
Reviewed: 30, 31      STF Rating: **68%**

**Fleet Street Publisher 3**      £184.00  
Silica      ☎ 081 309 1111  
Has all the features – including picture runaround, graphics commands and image import functions – that you'd expect from a high-end desktop publishing package, though it's not easy to use. Capable of superb printing using the Ultrascript module. Overpriced.  
Reviewed: 6, 28, 30, 31      STF Rating: **76%**

**PageStream 2**      £169.00  
Silica      ☎ 081 309 1111  
The first ST DTP package to support colour pictures – this is easily the best value and most versatile package available. Picture runaround, text handling facilities and a wide range of picture formats are supported. Produces excellent output even on the lowliest dot matrix printer because of its font scaling technology.  
Reviewed: 28, 30, 31      STF Rating: **95%**

**Timeworks Publisher 2**      £129.25  
Electric Distribution      ☎ 0480 496666  
The follow-up to *Timeworks* DTP. To run text around pictures, simply define your own outline around the image and the text flows around it. No support for colour. Easy to use, good printer support. Pretty quick compared to other ST DTPs when it comes to screen redrawing.  
Reviewed: 32      STF Rating: **88%**

## EDUCATIONAL

There is a proliferation of educational software for the ST but the vast majority of it is aimed at the under 10s. Many packages, like *Fun School 4*, are, however, available for different age groups. When you're choosing software of this sort, be careful not to invest in packages which look good and intrigue your children but offer no educational benefits.



**Better Maths**

£22.95

School Software

☎ 010 35 361 41539

Ages 12 to 16. A comprehensive tutorial and testing program, but one which is too wordy and actually pretty boring. Buy it only if you're allergic to textbooks.

Reviewed: 29

STF Rating: **53%**

**Count and Add**

£25.99

Scetlander

☎ 041 357 1659

Ages 4 to 7. Focuses on how to help your child learn to count and add up. Colourful and generally friendly, good value both educationally and financially.

Reviewed: 30

STF Rating: **82%**

**Death of a President**

£4.95

Goodmans PDL

☎ 0782 335650

Ages 11 upwards. Excellent open-ended three disk learning package on the assassination of JFK, including a photographic and audiographic database as well as an adventure game. Extremely interesting.

Reviewed: 32

STF Rating: **80%**

**Donald's Alphabet Chase,**

**Goofy's Railway Express,**

**Mickey's Runaway Zoo**

£24.95 each

Nathan Software

☎ 0268 541212

Ages 2 to 5. Supposedly educational games from Disney. All come with superb Disney-style graphics but the educational problems are not exactly challenging.

Reviewed: 26

STF Rating: **58%**

**First Letters**

£7.99

Rainbow

☎ 0392 77369

Under 5s. Well thought-out and quite educational, the idea being that the child has to relate objects to their names. Needs an extra package to supplement it.

Reviewed: 28

STF Rating: **67%**

**First Maths**

£2.50

ST Club

☎ 0602 410241

Ages 4 to 6. Three games to teach addition and subtraction. Very well presented, fairly straightforward to use and based on sound educational principles.

Reviewed: 29

STF Rating: **75%**

**Fun School 4**

£24.99 each

Europress Software

☎ 051 357 2961

Packages for under 5s, 5s to 7s, and 7 to 11 year olds. Each contains six programs with topics like graphics, music and typing. Emphasis on learning through play.

Reviewed: 31

STF Rating: **91%**

**Henrietta's Book of Spells**

£24.99

Scetlander

☎ 041 357 1659

Ages 7 to 14. A well made package consisting of five

word puzzles. Parents can customise the program as well as report results. Makes learning to spell fun.

Reviewed: 28

STF Rating: **92%**

**Junior Typist**

£16.95

School Software

☎ 010 35 361 415399

Ages 4 to 10. Apart from the rather boring presentation, not a bad typing tutor with interesting activities like *Space Invaders* style typing and spelling games.

Reviewed: 30

STF Rating: **78%**

**Magic Story Book**

Cover Disk 39

£29.95

Softstuff

☎ 0732 351234

Age: pre-school up. A complete creativity package – write a story, illustrate it with animated pictures and add sound effects. A must for anyone with an ounce of creativity.

Reviewed: 28

STF Rating: **87%**

**Memory Lane**

£24.99

Ablac

☎ 0626 332233

Ages 2 to 6. Package to help children learn to discriminate between shapes through five different sorts of matching game. Needs supplementing by other maths edsoft.

Reviewed: 27

STF Rating: **64%**

**Mix and Match with Maggie**

£24.99

Scetlander

☎ 041 357 1659

Age: under 5s. A good shape recognition package containing exercises designed to develop the sort of skills you need before you can add up. Scope for parental input.

Reviewed: 34

STF Rating: **75%**

**Money Matters**

£19.99

Triple R

☎ 0742 780370

Age range: very young. Brilliant graphics and a keyboard overlay to help your offspring learn about money through three games.

Reviewed: 33

STF Rating: **52%**

**Moon Letters**

£3.95

Shoestring Software

☎ 0792 649060

Age: under 5s. A spelling game styled along the lines of a shoot-'em-up where the aliens are letters. Well worth buying.

Reviewed: 28

STF Rating: **67%**

**My Letters, Numbers and Words**

£24.99

Ablac

☎ 0626 332233

Ages 2 to 6. Helps children to start to recognise letters and numbers as well as getting them familiar with the keyboard.

Reviewed: 27

STF Rating: **67%**



**Pepe's Garden** £25.99  
Prisma ☎ 0244 326244  
Ages 3 to 7. A fun package for the lower end of the target group. Superb graphics and sound.  
Reviewed: 32 STF Rating: **72%**

**Picture Book** £19.95  
Triple R ☎ 0742 769950  
Ages 2 to 5. Consisting of four exploration games, this package is merely an appetiser.  
Reviewed: 34 STF Rating: **68%**

**Read Right Away** £14.95  
HS Software ☎ 0792 298283  
Ages 5 to 8. Not a bad reading tutor – there are good graphics and sound effects and you have a bit of control over the type of words used. Good value-for-money.  
Reviewed: 33 STF Rating: **73%**

**Robot Words** £3.95  
Shoestring ☎ 0792 649060  
Age range: very young. A high-tech version of *Hangman* which knocks spots off some commercial edsoft. Colourful with a facility to edit the word banks.  
Reviewed: 30 STF Rating: **82%**

**Shapes and Colours** £7.99  
Rainbow ☎ 0392 77369  
Age range: under 5s. A colourful and imaginative package which draws on tried and tested techniques for teaching basic maths.  
Reviewed: 29 STF Rating: **81%**

**Shoe People** £25.99  
Gremlin Graphics ☎ 0742 753423  
Ages 4 to 6. Six games to help your child with a variety of learning tasks based on sound educational principles. Interesting sound effects.  
Reviewed: 35 STF Rating: **76%**

## MUSIC

Musicians the world over use STs to create their masterpieces. As a result, there's a wide range of professional packages which have spawned a healthy selection of lower end programs ranging from sound-sampling to MIDI sequencing. To create music using MIDI, you need a MIDI device like a keyboard. These can be expensive, so low cost solutions like sound samplers and sequencers are available. They usually comprise a hardware cartridge for "grabbing" the sound and a software package to manipulate it. Besides specific music programs, there are also related programs like score-writing packages.

**Band in a Box Professional** £45.00  
Zone Distribution ☎ 071 738 5444  
This reasonably-priced sequencer program generates auto-accompaniment to match your own song creation in a range of styles and tempos. Instant karaoke!  
Reviewed: 29, 30 STF Rating: **94%**

**Creator v3.1** £330.00  
Sound Tech ☎ 0462 480000  
This top-of-the-range sequencer is not cheap, but it might be worth its weight in gold if it helped you produce a hit – many pros and studios use it.  
Reviewed: 20 STF Rating: **92%**

**Cubase** £575.00  
Harman Audio ☎ 0753 576911  
Steinberg's flagship sequencer has plenty of editing options, is powerful and highly graphic.  
Reviewed: 39 STF Rating: **91%**

**Chameleon** £89.00  
Keynote ☎ 0761 32610  
A Desk Accessory for MIDI maniacs with more than one synthesizer, this Librarian program can upload, download and store all your voice data for any make of synth.  
Reviewed: 7, 12 STF Rating: **85%**

**Concerto** £39.95  
Microdeal ☎ 0726 68020  
This combines a 24-track MIDI sequencer with a score-writing facility and STE, Mega STE and TT DMA sound sample control. Easy to get to grips with.  
Reviewed: 36 STF Rating: **87%**

**EditTrack Gold** £116.32  
Atlantic Audio ☎ 071 272 8944  
This great value sequencer is so flexible no two musicians use it in the same way. Can handle pattern-based or linear-based sequences, and has graphic editing.  
Reviewed: 30 STF Rating: **86%**

**Fractal Music Composer** £65.00  
Zone Distribution ☎ 071 7385 5444  
Fractals are mathematical formulae which can create unusual visual patterns – this program harnesses them to assist in the production of music and saves them as MIDI files from which you can replay your sounds or carry out edits.  
Reviewed: 28, 30 STF Rating: **85%**

**Freestyle Pro** £179.00  
Zone Distribution ☎ 071 738 5444  
Another auto-accompaniment sequencer like *Band In A Box*, but not as accomplished and much pricier.  
Reviewed: 30 STF Rating: **76%**



**KCS Omega** £299.00  
Zone Distribution ☎ 071 738 5444  
Renowned for its rock steady timing, this is also flexible,  
powerful and comes at a reasonable price.  
Reviewed: 39 **STF Rating: 74%**

**MIDIstudio Master** £99.99  
Ladbroke Computing ☎ 0772 203166  
A well-received challenger to the expensive sequencers,  
this has many powerful features but suffers from one or  
two annoying little glitches.  
Reviewed: 30 **STF Rating: 91%**

**MusiCAL** £29.95  
Evenlode ☎ 0993 898484  
A music teaching program that takes the student  
through a range of activities using both MIDI and the  
ST's own sound chip. Ideal for schools.  
Reviewed: 11 **STF Rating: 90%**

**Notator Alpha** £225.00  
Sound Technology ☎ 0462 480000  
The cut-down version of *Notator*, this sequencer excels  
at producing printed score sheets of your ST-created  
music.  
Reviewed: 23 **STF Rating: 85%**

**Notator SL** £550.00  
Sound Technology ☎ 0462 480000  
A multi-tasking piece of software with advanced editing  
and quantization options. Popular with professionals.  
Reviewed: 39 **STF Rating: 90%**

**Quartet** £49.95  
Microdeal ☎ 0726 68020  
The simultaneous playing of four samples is possible  
with this software. Many samples are available enabling  
you to compose songs and play them with realistic-  
sounding voices.  
Reviewed: 5 **STF Rating: 94%**

**Sequencer One Plus** £129.95  
Gajits ☎ 061 236 2515  
Has the excellent Diamond Drag note editing system and  
is perfectly suited to the home environment.  
Reviewed: 39 **STF Rating: 84%**

**SLAM Sample librarian** £89.00  
Intrinsic Technology ☎ 081 761 0178  
If you have an Akai sampler, *SLAM* makes it much easier  
for you to find anything from a sample to a single sound  
in your collection. It also enables you to print a disk label  
listing samples and even read sample data from an Akai  
disk.  
Reviewed: 34 **STF Rating: 80%**

**SMPTETrack Gold** £465.30  
Atlantic Audio ☎ 071 272 8944  
Very reliable, powerful and easy to use with plenty of  
graphics but no score editing.  
Reviewed: 39 **STF Rating: 72%**

**Trackman 2** £99.95  
Hollis Research ☎ 0481 728286  
Amazingly highly scoring sequencer, fast, powerful, yet  
easy to use and packed with features. An optional foot  
pedal helps you to control it.  
Reviewed: 22 **STF Rating: 97%**

**Virtuoso** £305.00  
Digital Muse ☎ 071 828 9462  
By not using GEM, this British sequencer achieves great  
speed of operation with fast machine code.  
Reviewed: 3 **STF Rating: 79%**

## PROGRAMMING

You're not limited to using the pretty awful *ST Basic* if you want to write a program. There are plenty of other languages out there – some are more suited for games programming whereas others are biased towards more serious applications. *GFA Basic* is a pretty good bet for the novice programmer, while if you want speed and flexibility at the expense of user friendliness, *C* is the language you want.

For programming games, *STOS* is highly recommended.

**C Interpreter** £59.95  
Hisoft ☎ 0525 718181  
An ideal introduction to C, this interpreter enables you to make changes to your programs and try them out straight away. Includes tutorials on GEM and the C language.  
Reviewed: 1

**Devpac 2** £39.95  
Hisoft ☎ 0525 718181  
Regarded as one of the most powerful assembly language development systems for the ST, *Devpac 2* comes with an integrated editor cum assembler cum debugger – and more.  
Reviewed: 30, 31 **STF Rating: 95%**

**GFA 3 Compiler** £24.99  
GFA ☎ 0734 794941  
Having written your *GFA Basic* program to run as a "standalone" program, compile it into machine code with this utility.  
Reviewed: 2 **STF Rating: 91%**





**GFA Basic v3.5** Cover Disk 35 £34.95  
GFA ☎ 0734 794941

Everything you need to write your own quality programs, including a comprehensive manual. A very fast, popular form of BASIC. A compiler to produce fast, small programs, an assembler and a raytracing application also come on the Cover Disk version.

STF Rating: **95%**

**Hisoft Basic 2** £79.95  
Hisoft ☎ 0525 718181

This version of BASIC is fully compatible with all versions of TOS and comes in the form of three disks and two enormous manuals.

Includes a compiler and a monitor program to ease the debugging of BASIC listings.

Reviewed: 36 STF Rating: **85%**

**Lattice C** £149.00  
Hisoft ☎ 0525 718181

Said to be the best version of C available on the ST, and although it is powerful, it is not an easy programming language to master.

Reviewed: 30, 31 STF Rating: **87%**

**Power Basic** £29.95  
Hisoft ☎ 0525 718181

Being a compiled language, this enables you to generate smaller, faster programs than with normal BASIC interpreters. Compatible with *ST Basic* and *FastBASIC*.

Reviewed: 30 STF Rating: **88%**

**Prospero Pascal** £102.12  
Prospero ☎ 081 741 8531

Pascal is widely taught in schools and colleges, but is not popular on the ST. This version is the best implementation of the language for the ST and comes with very good manuals.

Reviewed: 30, 31 STF Rating: **95%**

**STOS Compiler** £20.99  
Mandarin ☎ 0625 859333

Having written your *STOS* game, the compiler produces a machine code version of it enabling it to run at high speed.

Reviewed: 1

**STOS** Cover Disk 37 £29.99  
Mandarin ☎ 0625 859333

This game creator software is a specialised programming language very much like BASIC, but optimised to handle sprites and GEM functions, play music or scroll the screen with extreme ease and speed. Very well supported and deservedly popular.

Reviewed: 30, 31 STF Rating: **92%**

## UTILITIES

There are some programs you can't be without, programs which make using the ST more of a pleasure than a chore. These nifty bits of software range from useful Desk Accessories which can save time switching from program to program, to disk recovery programs – invaluable for salvaging seemingly lost data from corrupted disks. Other programs are necessities – *UVK* should be in everyone's collection, and once you've used *Neodesk 3* you'll wonder why Atari didn't do the Desktop that way to begin with.

**3D Construction Kit** £39.99  
Domark/Incentive ☎ 081 780 2222

Features a fantastic and versatile range of tools for creating 3D games of your own. Comes close to DIY Virtual Reality. Manual and VHS demo video provided, too – if you actually watch the video, you'll find this dead simple to use.

Reviewed: 24 STF Rating: **95%**

**Art Tutor** £25.00  
Castlesoft ☎ 0333 421243

An unusual package that teaches you to draw on both the ST and on paper using a workbook type manual and three disks of exercises and programs. Good results are possible if you stay the course.

Reviewed: 21 STF Rating: **73%**

**Astronomy Lab** £19.95  
ST Club ☎ 0602 410241

Study the night sky at any date in history and from any location on Earth, all on your monitor screen! A first rate program with a large manual to teach you all about astronomy. Has no competitor.

Reviewed: 9 STF Rating: **90%**

**C-Font** £9.95  
ST Club ☎ 0602 410241

Enables you to convert *Calamus* .CFN fonts to GEM format so you can use them within any GEM application. Very useful.

Reviewed: 35 STF Rating: **88%**

**CompoScript** £234.00  
Compo Software ☎ 0480 891819

A program that enables you to print PostScript files on non-PostScript printers, assuming you have at least 1MByte of RAM and a hard disk.

Reviewed: 38 STF Rating: **80%**

**DC Desktop** £20.25  
Softville ☎ 0705 266509

This "alternative" Desktop enhances and improves on



the bog-standard Atari one by enabling you to add the features you want with various modules, but it's not as good as *NeoDesk*.

Reviewed: 21

STF Rating: **71%**

**DC Utilities**

£25.00

Softville

☎ 0705 266509

This collection of nine programs is a suite of useful utilities, file compactors, RAMdisks, screen grabber and so on. Comes with a good printed manual – superior quality PD.

Reviewed: 21

STF Rating: **85%**

**Diamond Back 2**

£39.95

Hisoft

☎ 0525 718181

Probably the most comprehensive backup utility for the ST/TT range of machines, this consists of the main program, a comprehensive disk formatting program, a file finding utility and a disk cache utility.

Reviewed: 37

STF Rating: **92%**

**Edhak 2.25**

£14.99

Douglas Communications

☎ 061 456 9587

An all-purpose editor, *Edhak* enables you to edit text, data, binary files, disk selectors and RAM. Good enough for basic word processing. Indispensable for the serious ST owner.

Reviewed: 35

STF Rating: **85%**

**Fastcopy Professional**

£24.95

ST Club

☎ 0602 410241

This disk formatter and backup utility includes a manual to guide you through its extensive features. Keyboard shortcuts, virus checker and HD formatting are available.

Reviewed: 34

STF Rating: **83%**

**Flexidump Plus**

£39.95

Care/Zitasoft

☎ 0923 672102

*Flexidump* enables you to make user-defined size printer-dumps of *Degas*, *Neo* or *Tiny* pics. Very comprehensive manual via on-screen help. This version works on mono and colour printers.

Reviewed: 21

STF Rating: **84%**

**Fontkit Plus 3**

£19.95

ST Club

☎ 0602 410241

This program by Jeremy Hughes is the best all-round font editor for the ST and it's continually being improved with the addition of extra features. Load in fonts of various formats and convert, edit and adjust them to suit.

Reviewed: 20

STF Rating: **90%**

**Fontpac Plus**

£9.95

ST Club

☎ 0602 410241

An extra font – in fact, a Derwent font, which is a 45

degree (diagonally stressed) calligraphic font based on "Foundational Hand." 12 different point sizes are supplied on the disk. This font is excellent quality and is very good value with the wide range of point sizes supplied.

Reviewed: 36

STF Rating: **83%**

**Harlekin 2**

£59.95

Hisoft

☎ 0525 718181

The ultimate Desk Accessory – with this installed, you have access to many valuable utilities including a text editor, comms package, RAMdisk, macros, and a comprehensive manager/calendar module.

Reviewed: 27, 31

STF Rating: **92%**

**HPChrome**

£2.50

Caledonia PDL

☎ 0463 2257366

This program enables you to print 16 colour *Degas* or *Neochrome* pictures on Hewlett Packard's 500C or any of their mono printers. It works well and is an incredible bargain at the price – but you do have to pay an extra fiver for a registered copy with a manual.

Reviewed: 38

STF Rating: **90%**

**Imagecopy**

£9.95

ST Club

☎ 0602 410241

This utility enables you to grab images off your monitor and save them to disk, display images from disk to screen – and more. Highly recommended.

Reviewed: 33

STF Rating: **90%**

**IMprint**

£15.95/£10.95

zzSoft

☎ 0254 672965

This is a printer utility enabling you to produce quality colour or mono printouts. Happily deals with 9 or 24-pin printers and can import pics in all the popular formats. Good but basic.

Reviewed: 35

STF Rating: **66%**

**Key Master**

£6.95

The ST Club

☎ 0602 410241

A Desk Accessory to create macros so you don't have to repeatedly type in the same commands. Tends to clash with other Accessories.

Reviewed: 37

STF Rating: **75%**

**Knife ST**

£34.95

Hisoft

☎ 0525 718181

A powerful programmer's tool. Using *Knife* you can cut into the depths of your ST's disks, sectors, FATs and so on and hack around, altering and recovering data.

Reviewed: 31

STF Rating: **86%**

**Mission Control**

£20.00

GFA

☎ 0734 794941

Of interest to serious programmers, this shell program



can control and co-ordinate the various GFA language programs, launch applications and the like.  
Reviewed: 12 **STF Rating: 79%**

**Moriarty Monulator** £14.95  
Goodmans ☎ 0782 335650  
Don't buy a high resolution monitor, use this high res emulator with your monitor or TV instead. The *Monulator* doubles the height of a medium res screen giving you a clearer and faster display than Public Domain emulators.  
Reviewed: 34 **STF Rating: 82%**

**Multidesk** £29.95  
Atari Workshop ☎ 0753 832212  
Gets round the problem of only being able to have six Desk Accessories available by enabling you to load or remove up to 96 Accessories at once if you have the memory, with no re-booting necessary. Favourite Accessory setups can be saved for future use.  
Reviewed: 5, 31 **STF Rating: 80%**

**NeoDesk 3** £34.74  
Electric Distribution ☎ 0480 496666  
This truly excellent replacement Desktop utility makes the Atari GEM Desktop everything it should have been. Particularly useful for hard disk owners – multifarious features including the ability to drag files onto the Desktop for instant access, individual icons for specific programs, improved file handling, extended formatter and thousands of life enhancing improvements guaranteed to ensure your everlasting fidelity to *NeoDesk 3*.  
Reviewed: 18, 31 **STF Rating: 94%**

**NVDI** £39.95  
Atari Workshop ☎ 0753 832212  
This is a complete replacement for the ST's Virtual Device Interface routines and offers amazing speed increases in many of the GEM routines – in some cases up to ten times faster.  
Reviewed: 37 **STF Rating: 89%**

**Page Assistant** £29.95  
ST Club ☎ 0602 410241  
A Desk Accessory that provides on-line help and advice for each command of *PageStream v2.1*, providing an insight into DTP software. The ultimate "Help" option.  
Reviewed: 37 **STF Rating: 83%**

**Quick ST 3** £12.95  
ST Club ☎ 0602 410241  
*Quick ST* makes your ST run faster without having to install a blitter chip – you won't want to remove it once it's installed. The package also includes other goodies.  
Reviewed: 33 **STF Rating: 88%**

**Shoot 'em-up Construction Kit** £9.99  
Gremlin ☎ 0742 753423  
This easy-to-use games creation program enables you to make your own shoot-'em-ups, complete with sprites, music and sound effects.  
Reviewed: 4 **STF Rating: 86%**

**ST Secure** £19.99  
Ladbroke Computing ☎ 0772 203166  
A combined hardware and software system for any ST, this is simple to install – "the perfect password system for your ST."  
Reviewed: 37 **STF Rating: 88%**

**Ultimate Virus Killer v5.5** £9.99  
Douglas Communications ☎ 061 456 9587  
The latest version of this popular virus killer, *UVK* can recognise and repair over 1,000 bootsectors, 57 boot viruses and five link viruses. If it detects an infected disk you can destroy the virus and then immunise the disk. Write to PO Box 119, Stockport SK2 6HW.  
Reviewed: 34 **STF Rating: 80%**

**Universal Item Selector v3.32** £14.95  
ST Club ☎ 0602 410241  
Replace the ST fileselector with this pro version. You can change the directory line, file name extensions and file mask by clicking and dragging a name from the selector box. Indispensable.  
Reviewed: 34 **STF Rating: 90%**

**Video Titler ST v2** £34.95  
Laser Distribution ☎ 0579 82426  
Create effective title sequences for your home videos. Caters for a variety of effects including fades, wipes, dissolves, scrolls and complicated interlocking effects.  
Reviewed: 35 **STF Rating: 79%**

**Warp 9** £29.95  
System Solutions ☎ 0753 832212  
This is a screen acceleration utility compatible with all STs. Recommended – an elegant bit of programming with an easy to follow manual.  
Reviewed: 38 **STF Rating: 88%**

## WORD PROCESSORS AND EDITORS

There are probably more word processors around for the ST than any other sort of program. The one you need depends on the sort of text processing you do: if you need fast bulk text entry, *Protext* is your best bet, but for fancy fonts and WYSIWYG layout, go for *Write On* or *WordFlair*.



**Calligrapher** £99.00  
Working Title ☎ 0865 883592  
An excellent document processor, including features like a *Degas* picture processor enabling you to alter images as you import them. Good for producing the occasional special letter or notice.  
Reviewed: 22, 26, 30, 31 **STF Rating: 85%**

**First Word Plus** £81.68  
GST Software ☎ 0480 496789  
The upgrade to the PD *First Word* word processor, these have become almost the "standard" WPs for the ST. A fairly capable program, stable and well supported, but lacking some of the flashy features now found in the newer packages.  
Reviewed: 22, 31 **STF Rating: 83%**

**K-Word 2** £41.00  
Kuma ☎ 0734 844335  
One of the cheapest WPs now showing its age, but compatible with the Kuma range of business programs. Uncomplicated.  
Reviewed: 28, 31 **STF Rating: 76%**

**Protext v5.53** £152.75  
Arnor ☎ 0733 68909  
This latest upgrade adds an automatic timed save, continuous footnote numbering and multi-lingual spell-checking to its armoury, plus a stack of new features to give you more power than you will probably ever want. Superb printer support and the ability to mail merge from *Prodata* makes this a worthwhile upgrade. Not quite WYSIWYG.  
Reviewed: 36 **STF Rating: 93%**

**Redacteur 3** £119.00  
ST Club ☎ 0602 410241  
A very fast word processor from France. Incredibly powerful. It boasts lots of graphical features though it doesn't have the near DTP features of *Calligrapher*. Uses GEM and can import a wide range of pictures in all formats.  
Reviewed: 34 **STF Rating: 90%**

**Tempus 2** £39.95  
Hisoft ☎ 0525 718181  
An incredibly fast GEM based text editor, this program can work on up to four files at once, and compare them. Really of use to programmers, but contains some word processor-like features.  
Reviewed: 3 **STF Rating: 78%**

**That's Write** £99.99  
Compo ☎ 0480 891819  
Fast gaining friends, this multi-fonted word processor is

not only easy to use, but is very powerful. It can import pictures, and is capable of virtually DTP quality output.  
Reviewed: 3, 22, 31 **STF Rating: 82%**

**Word Writer** £51.39  
GST Software ☎ 0480 496789  
Related to *First Word Plus* in style and content, but includes many normally expensive options like a *The-saurus* and an *Outliner*. Imports text from other sources.  
Reviewed: 22, 31 **STF Rating: 86%**

**Wordflair** £59.95  
Hisoft ☎ 0525 718181  
A word processor with an unusual range of additional features like a database and the ability to do statistical calculations and produce charts. No spelling checker, though.  
Reviewed: 22 **STF Rating: 87%**

**Write On** Cover Disk 33  
Compo ☎ 0480 891819  
This new WP offers upmarket DTP type features at a budget price. You are not limited to one font either – several are provided and you can import others from various sources. Highly recommended.  
Reviewed: 22 **STF Rating: 90%**

## HARDWARE EMULATORS

As you know, the ST is a great machine, but occasionally through necessity you might want it to be another sort of machine entirely. Perhaps you use a PC at work and need to have one at home, too. Easy – a PC emulator tucked away inside your ST can transform it into a fairly powerful PC at much less than the cost of buying a separate machine. And with a *Spectre GCR* you can have a *Macintosh Plus* which is actually faster than the real thing for a fraction of the price.

**AT Speed C16** £249.00  
Compo ☎ 0480 891819  
First came PC Speed, then the faster AT Speed, and now AT Speed C16 gives you super-fast emulation of the IBM PC, enabling you to run the latest Windows software with aplomb. Supports all screen resolutions up to VGA and offers 640K of free RAM on a 1MByte ST.  
Reviewed: 25 **STF Rating: 82%**

**ATonce plus** £219.00  
Silica ☎ 081 309 1111  
This 16-bit 80286 emulator may require soldering into place – Silica can fit it if required. It comes with good



system software and it runs at a speedy 16MHz.  
Reviewed: 25      STF Rating: **85%**

**PC Speed**      £99.00  
Compo      ☎ 0480 891819  
This is a budget-priced PC emulator based on an NEC V30 central processing chip which is installed inside your ST. Without interfering with other upgrades, it enables the ST to run PC software. It also supports floppy and hard drives as well as the PC mouse but isn't actually very quick, though it is a good budget buy.  
Reviewed: 4, 25      STF Rating: **74%**

**Spectre GCR**      £300.00  
HCS      ☎ 081 777 0751  
Using this box of tricks – which plugs into the ST's cartridge port – your ST turns into a Mac Plus. Apple's Macintosh computers are used in the publishing and media world, and are favoured by writers and journalists because of their excellent, but expensive, software. Now all this power is available on your ST, but a minimum 4MByte of memory is recommended because of the size of Mac software. There are some problems with reading and writing to Mac disks.  
Reviewed: 25, 39      STF Rating: **92%**

**Vortex ATonce 386X**      £330.00  
HCS      ☎ 081 777 0751  
An internal plug-in PC emulator enabling an STE or a Mega STE to run 386 specific software. Simple to use and convenient to install.  
Reviewed: 38      STF Rating: **83%**

## FLOPPY DRIVES

There are many times when you need another disk drive – whether you want to backup your software or avoid tedious disk swapping in two-disk games, a second floppy drive is essential. They now come very cheaply, and plug into the back of your ST – no messing around with installation utilities required to set up a hard drive.

**CSA 354 Drive**      £69.90  
We Serve      ☎ 0705 325354  
Cumana make one of the best drives in terms of quality of build. Uses a Chinon FZ354 mechanism formatted to a maximum of 84 tracks. Heavy construction and well made, complete with moulded-on 13 amp plug. Excellent quality throughout.  
Reviewed: 28, 31      STF Rating: **90%**

**PC720P Drive**      £50.00  
Power      ☎ 0234 843388  
This external drive works smoothly and efficiently, writ-

ing to a maximum of an adequate 82 tracks. A pretty good unit if you want to alleviate all that disk swapping.  
Reviewed: 35      STF Rating: **85%**

**PL720B Drive**      £52.99  
Power      ☎ 0234 843388  
The "B" stands for Blitz. A clever drive because you can use it in three modes: on, off and Boot from Drive B. Comes with a virus blocker mode to prevent data being written to track 0 of a disk. High speed disk copying is possible. Uses an Epson SMD 300 drive mechanism and formats to 82 tracks. Ideal if you want a neat cheap drive.  
Reviewed: 28      STF Rating: **89%**

**Zydec Drive**      £54.95  
Evesham      ☎ 0386 765500  
Uses a Citizen OSDC-41C drive mechanism. Can format to 84 tracks but has a higher than average noise output. A poor quality on/off switch.  
Reviewed: 28      STF Rating: **80%**

## HARD DRIVES

If you find you're always flicking through a huge collection of floppies just to find one program, it's probably about time you invested in a hard drive. A 20MByte hard drive can store the equivalent of 22 double-sided floppy disks. The advantage is that your ST can read information from a hard drive over three times faster. Hard drives plug into the DMA port on the back of your ST. This is also the same port the Atari laser plugs into. If you intend using an Atari laser with your ST at some point, check you invest in a hard drive which comes with a throughport. Many hard drives come with a memory cache to speed up the rate at which you can read and write information.

**Atari Megafile 30**      £349.00  
Silica      ☎ 081 309 1111  
Has a short lead making it difficult to use on a 520 or 1040 ST. Only enough utilities to get you going. Very slow. Unless you're worried about compatibility, there's little to entice you to buy this outdated drive.  
Reviewed: 27      STF Rating: **60%**

**Data Pulse Plus 52MByte**      £359.98  
Ladbroke Computing      ☎ 0772 203166  
A well-constructed quiet drive which stays cool during sustained operation.  
Reviewed: 39      STF Rating: **82%**

**Gasteiner 44R removable**      £499.00  
Gasteiner      ☎ 081 365 1151  
Uses removable SyQuest cartridges each of which is



capable of storing 40MBytes of information. Drive is noisy and slow. A poor manual, but comes with helpful utilities.

Reviewed: 27

STF Rating: **73%**

**Gasteiner Mega Drive 52MByte** £309.00

Gasteiner ☎ 081 365 1151

A fast drive suited to most budgets. Comes with a good manual.

Reviewed: 39

STF Rating: **81%**

**Hunter 70MByte** £359.00

Hunter Business Systems ☎ 0382 28245

DMA throughput. A 64K cache. Drive is very fast and quiet.

Reviewed: 27

STF Rating: **52%**

**ICD Fast 52MByte** £399.95

System Solutions ☎ 0753 832212

A fast efficient quiet hard drive with valuable expansion options. System Solutions offer an excellent backup service.

Reviewed: 39

STF Rating: **87%**

**Ladbroke 52MByte** £389.99

Ladbroke Computing ☎ 0772 203166

One of the fastest drives available. ICD utilities provided and a helpful manual. 64K cache on the drive. A front-mounted power switch which could be prone to knocks.

Reviewed: 27

STF Rating: **81%**

**Mega Drive 32MByte** £269.00

Gasteiner ☎ 081 365 1151

These come in a range of capacities up to 100MBytes. Rather big and chunky, but they work well enough and are fully featured.

Reviewed: 17

STF Rating: **88%**

**Power 40MByte** £329.00

Power ☎ 0234 843388

Comes with a write-protect switch on the back, effectively preventing you from writing any information to the hard drive. Noisy. Comes with all the ICD utilities. Simple to connect up, but no way to change the DMA address.

Reviewed: 27

STF Rating: **77%**

**Power 40MByte Slimline** £329.00

Power ☎ 0234 843388

No bigger than a small floppy drive and has no throughput. Noisy. Very inflexible, but quick and cheap.

Reviewed: 27

STF Rating: **74%**

**Power 900E Data Injection 52MByte** £299.00

Power ☎ 0234 843388

Exceptionally small and quiet, as fast as much bigger

units. ICD utility software is supplied.

Reviewed: 17

STF Rating: **85%**

**Power Drive 900 40MByte** £399.00

Power ☎ 0234 843388

This older model is great value although it's not as small as the newer 900E (above), but still more compact than most.

Reviewed: 17

STF Rating: **92%**

**Progate 30** £299.99

First Choice ☎ 0532 637988

A solidly constructed reliable drive, very quiet in use and remaining cool. Competitively priced.

Reviewed: 39

STF Rating: **78%**

**Progate Series 2 100DC** £401.85

Protar ☎ 0923 254133

A fast, quiet, pleasant to use drive. Excellent value-for-money.

Reviewed: 39

STF Rating: **88%**

**Protar 50DC 20MByte** £423.50

Protar ☎ 0923 254133

Good manual. Easy installation process helped by the excellent explanations. Quiet drive. 64K cache. Auto-booting and auto-parking. Good quality manufacture. Short DMA lead provided. Two year replacement warranty.

Reviewed: 27

STF Rating: **90%**

**Protar 1244R Removable** £611.00

Protar ☎ 0923 254133

A removable drive using the SyQuest mechanism of the Gasteiner 44R. Considering the slow speed of removable hard drives, this one is actually quite fast.

Reviewed: 27

STF Rating: **79%**

**Reference 40MByte** £299.00

Evesham ☎ 0386 765500

Very poor manual, but simple to install. Has a bulky external power supply. No power switch on the drive. DMA throughput. Average speed.

Reviewed: 27

STF Rating: **73%**

**Series 900 40MByte** £339.00

Power ☎ 0234 843388

Fast and well made although the fan is not as quiet as it could be. Gets pretty warm after an hour or so.

Reviewed: 39

STF Rating: **82%**

**Vortex 40MByte** £499.00

Silica ☎ 081 309 1111

A write-protect switch to protect your information. Instead of auto-parking at power off, it auto-parks the



head after a pre-set period without activity – 15 minutes default. It also powers down the motor after about five minutes of no activity. Excellent manual. Smart case. Robust. Near silent drive. Auto-parking heads are difficult to get to grips with. Ineffective caching which is awkward to set up. Adequate performance, but expensive.

Reviewed: 27      STF Rating: **68%**

## MEMORY UPGRADES

**But do you really need extra memory? It depends on the uses you put your ST to. For playing games, you can probably get by with a basic model 520 ST, although even some games now need 1MByte of memory. But for business or serious uses like desktop publishing or music sequencing, you really need to have a bigger RAM in your ST. Assuming you already have a double-sided internal disk drive installed, a RAM upgrade should be your next priority. But is it worth going beyond 1MByte, to 2MBytes or even 4MBytes? Well, you might need to if you want to use large programs, DAs, replacement Desktops like Neo-Desk, and also hook up an Atari Laser printer, which needs a minimum of 2MBytes to control it!**

**Alfa Data 2MByte**      £149.00  
Gasteiner      ☎ 081 365 1151  
Gasteiner give a two year warranty with this neatly made board – and also offer a cheap installation service for the timid! You cannot upgrade this board any further, but if 2MBytes are enough, it might be one to consider.  
Reviewed: 25      STF Rating: **83%**

**Aries 0.5MByte**      £39.99  
Ladbroke Computing      ☎ 0772 203166  
Ideal for machines which contain the non-standard MMU chips. Should be installed professionally – Ladbroke charge £20 to fit it. A good upgrade which does the job.  
Reviewed: 35      STF Rating: **76%**

**Aries 2MByte**      £99.00/£169.00  
Ladbroke Computing      ☎ 0772 203166  
Can be expanded up to 4MByte. The RAM chips reside on a PCB only 61mm long by 51mm wide, and with a total thickness of 11mm it easily fits over the Video Shifter chip. The kit requires you to solder colour coded leads attached to the board to the ST's circuit board. Ladbroke's can fit it for a small charge.  
Reviewed: 25      STF Rating: **84%**

**Evesham 2MByte**      STE: £80.00/STFM: £99.99  
Evesham      ☎ 0386 40303  
This kit uses SIMM chips which means that expanding it to 4MByte later is merely a matter of plugging in two

small boards. The RAM board connects to the Shifter and MMU chips via the normal method, and also takes a four way lead from the point which normally powers the internal drive, with an additional lead supplied to link the board to the drive, thus restoring its supply. Jumper cables are also supplied to disable any excess RAM already on board the ST.

Reviewed: 25      STF Rating: **72%**

**Power 2/4MByte upgrade**      £99.00/£169.00  
Power      ☎ 0234 843388  
The memory is housed on a small PCB which plugs into the Video Shifter chip socket, and is linked to the MMU by the usual ribbon cable terminating in another small PCB which plugs onto the MMU chip. Jumper leads are supplied if existing memory needs to be disabled, and the instructions are clear and concise. Extra RAM can be added to make it 4MBytes.  
Reviewed: 31      STF Rating: **92%**

**X-Tra RAM**      £69.99/£159.99  
Marpet Developments      ☎ 0423 712600  
This board can be used to provide a 0.5MByte upgrade for any 520 ST, and is expandable to give a maximum memory of 2.5MBytes by changing the RAM chips. The RAM is on its own board, which connects to the MMU and Video chip via the usual two small PCBs at the end of ribbon cables. Clear instructions and a RAM testing disk are provided.  
Reviewed: 25      STF Rating: **81%**

**X-Tra RAM STE 0.5MByte**      £52.00  
Marpet Developments      ☎ 0423 712600  
This is a simple to install package with a 20 page manual, it comes with memory testing software and is highly recommended. It also includes SIP adaptors for those STEs without standard SIMM sockets.  
Reviewed: 35      STF Rating: **86%**

**X-Tra RAM ST Deluxe**      £67.99  
Marpet Developments      ☎ 0423 712600  
This enables you to upgrade pre-STE machines by installing standard SIMM memory boards. Comes with a detailed instruction book and is fully upgradeable to 4MBytes. Can be easily installed in all machines except those with oblong MMU chips.  
Reviewed: 35      STF Rating: **87%**

**Zydec 0.5MByte solderless**      £49.95  
Evesham      ☎ 0386 765500  
This kit is simple to install as long as you have socketed chips on your machine's circuit board – if you tend not to have delicate fingers for performing similar operations, this isn't for you.  
Reviewed: 35      STF Rating: **79%**





## MICE AND JOYSTICKS

The Atari mouse becomes something of a dinosaur when you see what other makes are available. They're faster, easier to hold and they even look more attractive. And, of course, you're not going to get very far playing games without a joystick of some description. These come in all sorts of styles, from the plain and useful to the weird, extravagant and completely useless. Prices vary drastically, too, and more expensive doesn't always mean better.

### Alfa Data Crystal Trackball

£34.95

Gasteiner

☎ 081 365 1102

A trackball is like an upside-down mouse. They're particularly useful if you don't have a very big desk because you keep the unit in one place and roll the ball instead.

Reviewed: 34

STF Rating: **92%**

### Alfa Data infra-red mouse

£49.95

Gasteiner

☎ 081 365 1151

This is a mouse with no tail but it does have an infra-red nose to help you control your ST. Irritating in that you have to return the mouse to its cradle to recharge it, and it's expensive compared to ordinary mice.

Reviewed: 36

STF Rating: **61%**

### Alfa Data Optical Mouse

£29.95

Gasteiner

☎ 081 365 1151

A mouse that's twice the price of an ordinary replacement for the Atari creature with sharp pointed teeth (why weren't they called squirrels, then?), but this one gives you fast, smooth and accurate operation. Handy if you work with fine detail, otherwise, don't bother.

Reviewed: 37

STF Rating: **81%**

### Golden Image Brush Mouse

£19.99

Ladbroke Computing

☎ 0772 203166

Using this chunky paintbrush styled mouse could revolutionise the way you use your art programs, as well as the results you get from them – the aim of it being to give you more control over your programs.

Reviewed: 37

STF Rating: **88%**

### Gravis Mousestick

£70.50

RC Simulations

☎ 0272 550900

This is a programmable joystick – it is more responsive than a joystick and more accurate than a mouse. Includes analog to digital convertors.

Reviewed: 24

STF Rating: **90%**

### Gravis Switch Joystick

£39.99

RC Simulations

☎ 0272 550900

This robust joystick is slightly on the expensive side – although it's probably twice as good as a standard £10

stick, it does cost four times as much! Has more features than most standard joysticks, like adjustable tension.

Reviewed: 27

STF Rating: **85%**

### Jin Mouse

£9.99

Ladbroke Computing

☎ 0772 203166

An unco-ordinated white mouse with the only advantage of being better than the Atari rodent. Oh yes, it's "economical," too.

Reviewed: 38

STF Rating: **83%**

### Mouse Tricks 2

£10.00

Jonathan Lawrence, 76 Sistova Road, London SW12 9QS  
A Desktop Accessory enabling you to set the exact speed of your mouse, set up menus so they only drop down when you click on them and define the right mouse button to act as the <Shift> key. Invaluable.

Reviewed: 34

STF Rating: **90%**

### Naksha Mouse

£28.99

Naksha

☎ 0458 74011

This 280 dpi mouse is a far better rodent than the dreadful Atari device.

Reviewed: 7, 31

STF Rating: **88%**

### Power Mouse

£14.95

Power

☎ 0234 843388

Good, cheap and rather attractive – ergonomic, too. What more do you need?

Reviewed: 31

STF Rating: **79%**

### Quickshot 3 Plus Turbo joystick

£12.91

Bondelle Europe Ltd

☎ 081 365 1993

Micro-switches and auto-fire.

Reviewed: 31

STF Rating: **77%**

### Sting-Ray joystick

£13.95

Spectravideo

☎ 081 900 0024

Unusual handheld design with micro-switches.

Reviewed: 31

STF Rating: **81%**

## MODEMS

With a modem you can get your ST to "talk" to other computers and bulletin boards over the phone lines using comms software, and upload or download files and programs. Modems offer you various levels of features and speed of use, from the simple ones that are very cheap, up to fast, expensive ones.

### 2400 modem

£149.99

Supra

☎ 081 566 6677

A bargain with the advantages of auto-dialling and auto-answer features – it is fully Hayes compatible. This



American-made modem operates at 2400 baud, and comes with a full five year guarantee.  
Reviewed: 31 *STF* Rating: **90%**

**9600 Plus** £351.33  
Supra ☎ 081 566 6677  
This latest model is the top of the range. It is a V32 9600 baud model, and is fully Hayes-compatible and has auto-dialling and auto-answering. The Supra 9600 Plus comes with a connecting lead for your ST. Just watch out that in the excitement of playing with all the features you don't run up your phone bill too much!  
Reviewed: 31 *STF* Rating: **84%**

**Best Smart One Fax Modem** £139.99  
HCS ☎ 081 777 0751  
A modem with some excellent software to ensure you can keep in touch with the rest of the world – by word as well as by picture. Well priced.  
Reviewed: 39 *STF* Rating: **82%**

**Fax modem** £299.00  
Atari Workshop ☎ 0753 832212  
What a good idea, a modem for your ST that not only enables you to do all the usual comms things, but also sends and receives faxes! Handles graphics as well as text – even screenshots. Display to screen, save to disk or print out with software provided. You may need to add your own scanner to the system to make the most of it.  
Reviewed: 31 *STF* Rating: **78%**

## MONITORS

**Monitors offer a staggering increase in picture quality over a TV display, and, of course, some software only runs on a mono monitor. For a monochrome display, you're pretty much stuck with the (admittedly good) Atari model, but for colour you can do better than that.**

**Atari SC1435 (colour)** £249.99  
Ladbroke Computing ☎ 0772 203166  
This monitor has a very strong image with good bold colours, as well as superior sound quality and an attractive tilt and turn base.  
Reviewed: 37 *STF* Rating: **90%**

**Atari SC1224 (colour)** £260.00  
Atari ☎ 0753 333441  
Although this monitor is based on the Philips' chassis, it's generally not as well regarded as the CM8833 (below). The colours are a bit dark although the picture quality is good.  
Reviewed: 31 *STF* Rating: **84%**

**Atari SM144 (mono)** £139.00  
Evesham Micros ☎ 0386 765500  
The best value mono monitor available for the ST, the SM144 has a good picture, a non-reflective screen as well as a tilt and turn base.  
Reviewed: 37 *STF* Rating: **90%**

**Eizo Flexiscan 9060S multisync** £583.33  
Atari Workshop ☎ 0753 832212  
Here you can switch between high and low res without having to change leads which is a lot of hassle. The high res display is very crisp and clear with excellent contrast and the colour display is good, too. A good replacement for both monitors, but it is a tad on the expensive side and it doesn't have any sound output.  
Reviewed: 37 *STF* Rating: **84%**

**Philips CM8833 Mk 2 (colour)** £229.99  
Philips ☎ 081 689 4444  
Philips turn these out by the million – they are attractive and well specified, and, with stereo speakers, it's just the job for your STE. Make sure you get the special monitor lead supplied.  
Reviewed: 31, 37 *STF* Rating: **80%**

**Philips Cube TV** £279.99  
Philips ☎ 081 689 4444  
Available with a 15 inch or 17 inch screen, this is a TV receiver and monitor in a cube. The quality is good enough for playing games on, but it's not brilliant for anything with text, though it's superior to an ordinary TV.  
Reviewed: 36 *STF* Rating: **76%**

**Proscreen TT** £732.00 for TT/£979.00 with card for Mega ST/STE  
Protar ☎ 0923 254133  
A big 19 inch high res monitor to use with DTP or CAD packages. To use it you need a Mega ST, a Mega STE (both with graphics cards installed) or a TT.  
Reviewed: 37 *STF* Rating: **87%**

**Protar Visto A14CM (colour)** £219.00  
Protar ☎ 0923 254133  
A reasonably good monitor with stereo speakers, "green screen" switch and earphone socket.  
Reviewed: 37 *STF* Rating: **80%**

## MUSIC

**Making music on your ST is not a cheap hobby – once you've got the software you then need to shell out for the hardware. A keyboard, perhaps – then a sound sampler or two for those tacky "Ah yeahs," some mixing equipment, a sound manipu-**



**lation package so you can muck about with the samples. It won't be until you've got all this equipment that you'll be a star (who said anything about natural talent?). Bankrupt, but a star.**

**EVS-1** £299.00  
Turnkey ☎ 071 379 5148  
This budget priced rack-mountable synth module has 100 voices built-in and you can program and load in your own, too, using the supplied software. Has an excellent range of features for the price. Takes a bit of time to get used to the sound programming pages. Sounds good, but you need a MIDI keyboard to play it.  
Reviewed: 15 **STF Rating: 88%**

**Pro-Series 12 Sound Sampler** £199.00  
AVR ☎ 0582 457348  
Aimed at the professional, this 12-bit input/output sampler sounds really good, and, despite being packed with features, it's very easy to use.  
Reviewed: 16, 30 **STF Rating: 84%**

**Pro-Series 16-bit Sampler** £350.00  
AVR ☎ 0582 457348  
The very latest 16-bit version of AVR's sound sampler, this one is the biz. You can sample at CD quality, manipulate and adjust the recordings with superb software – a deserved *FORMAT* Gold.  
Reviewed: 25 **STF Rating: 94%**

**Replay 16 Sound Sampler** £129.95  
Microdeal ☎ 0726 68020  
A cartridge and software with software rates of up to 16kHz, so it offers better than CD quality sampling and reproduction. A step forward in sampling technology.  
Reviewed: 39 **STF Rating: 92%**

**Roland CF-10 Digital Fader** £129.00  
Roland ☎ 0792 700121  
This touch sensitive ten channel MIDI mixer is designed to match other Roland modules – you can set the level, and pan from left to right for most MIDI gear.  
Reviewed: 17 **STF Rating: 86%**

**Roland CN-20 Musical Entry Pad** £129.00  
Roland ☎ 0792 700121  
Designed to complement the Digital Fader above, this is like an extra keyboard. Press small switches and nearly two octaves of these "keys" work along with a slider and octave switch to give an almost eight octave range.  
Reviewed: 17 **STF Rating: 87%**

**Stereo Master** £39.95  
Microdeal ☎ 0726 68020  
Takes samples in stereo using the two channel, 8-bit

analog to digital cartridge supplied. Samples are recorded in stereo but you can only hear stereo samples if you have an STE.

Reviewed: 34 **STF Rating: 77%**

**Stereo Playback** £29.95  
Microdeal ☎ 0726 68020  
This connects to the ST's cartridge port and delivers stereo sound via your hi-fi. Comes with demo software, including a drumbeat program.  
Reviewed: 22 **STF Rating: 82%**

**Stereo Replay** £89.95  
Microdeal ☎ 0726 68020  
A moderately priced sampler cartridge, records and plays-backs in stereo. Includes excellent software and a MIDI compatible drum program.  
Reviewed: 29 **STF Rating: 89%**

## PRINTERS

**So you've got your ST complete with word processing, graphics and desktop publishing programs, but sooner or later you're going to want to get those masterpieces you have created off the screen and on to paper. To achieve such hard copy you need a printer – the most essential hardware accessory for your ST. But buying the right one can be a daunting task, with dozens of makes on the market and each manufacturer producing many models, there are hundreds to choose between! Humble dot matrix printers are still around, but as the lasers and inkjets get cheaper, their days could be numbered.**

**B200 inkjet** £586.00  
Fujitsu Europe ☎ 081 573 4444  
A good printer with output almost equal to that of laser printers.  
Reviewed: 38 **STF Rating: 82%**

**BJ-10e** £405.00  
Canon ☎ 081 773 3173  
An innovative and exciting inkjet printer, its compactness and portability make it unique. Fast printing comparable to dot matrix speed on text. Splendid printing, solid blacks, no noise, a pleasure to use. Laser printing quality at a price you can afford!  
Reviewed: 17, 25, 31 **STF Rating: 90%**

**Deskjet 500** £583.83  
Hewlett Packard ☎ 0344 369369  
This is probably the most sensible inkjet buy for heavier use. Bigger and sturdier than the Canon BJ 10e, but about equal in print quality. The Deskjet machines are



generally better supported by ST software, and the in-built auto sheet feeding tray is a bonus.  
Reviewed: 20, 25      STF Rating: **90%**

**Deskjet 500C**      £880.00  
Hewlett Packard      ☎ 0344 369369  
Gives you proper 300dpi quality colour printing for a bit more than the price of a mono Deskjet. Not brilliantly supported by printer drivers yet which slows it down a bit. Produces more vivid and more precise colours than any dot matrix printer. Excellent in mono – faster, too.  
Reviewed: 36      STF Rating: **85%**

**DL1100 24-pin**      £351.33  
Fujitsu Europe      ☎ 081 573 4444  
This is a wide carriage printer with a small footprint that can emulate the Epson LQ2550, Epson LQ2500 and the IBM XL24 as well as running in default mode. Has a speedy ASCII output but is slower with more complex drawings.  
Reviewed: 38      STF Rating: **87%**

**HL4**      £1,173.00  
Brother      ☎ 061 330 6531  
A compact, attractive machine with a very good range of emulations, it pretends to be a HP Laserjet 2, making it compatible with most software which drives laser printers. Print quality is equal to the Atari SLM 605, but it's not as fast, especially on graphics.  
Reviewed: 25      STF Rating: **89%**

**JP-150 Inkjet**      £398.33  
Olivetti Office      ☎ 0908 690790  
Good quality printouts are possible from this inkjet printer. Simple to use but just slightly on the expensive side.  
Reviewed: 33      STF Rating: **87%**

**KX-P1123**      £240.00  
Panasonic      ☎ 0344 853915  
This is the best buy in the 24-pin group, and gives a pretty good all-round performance. This new model is fairly quiet, and is self contained – no bits and pieces to assemble like most printers. Modern styling and design make this printer an attractive option.  
Reviewed: 25, 31      STF Rating: **90%**

**KX-P4420**      £1,404.00  
Panasonic      ☎ 0344 853915  
The dearest and biggest laser on test, this is more at home in the office than the home. Although the printed results are very good, and it offers a good speed and range of fonts, the general user unfriendliness of this printer lets it down.  
Reviewed: 25      STF Rating: **80%**

**Laserjet 3P**      £1,291.00  
Hewlett Packard      ☎ 0344 369369  
An exciting machine with HP's Resolution Enhancement Technology. This uses smaller than usual dots around the outside of parts of the image being printed – thus smoothing out the curves. Output is finely detailed, giving clearly the best printed results. Although it comes with 1MByte of RAM on board, you may need more. Very easy to use, and extremely compact in size.  
Reviewed: 25, 30, 31      STF Rating: **91%**

**LC-24/LC-24 colour**      £299.00/£349.00  
Star      ☎ 0494 471111  
The 24-pin version of the LC 200, there is not a huge increase in print quality, which shows what a good machine the LC 200 (below) is. They share all the virtues of their little brother like a good range of emulations, electronic DIP switches and good standard of design. They're quieter too, but a bit on the pricey side.  
Reviewed: 17, 25      STF Rating: **80%**

**LC-200**      £304.00  
Star      ☎ 0494 471111  
From the popular Star range comes this budget priced printer with the colour option built-in. You can use a plain black ribbon cartridge if you are only printing text, or slot in the four colour one – both are supplied. Relatively simple manual to get to grips with. Futuristic styling – with rounded edges – and good design complement this machine's technical abilities. Paper handling is very good, and the control panel is simple and logical. Generally, a very pleasing all-rounder at an affordable price.  
Reviewed: 17      STF Rating: **80%**

**LQ-400**      £203.00  
Epson      ☎ 0442 61144  
Similar to the Epson LX 400 in appearance, but with a better quality of print. It's noisier than the LX 400, and to use single sheets of paper you have to remove the tractor feed. However, the quality of printed text makes this a good choice for word processing work.  
Reviewed: 25      STF Rating: **85%**

**LX-400**      £169.00  
Epson      ☎ 0442 61144  
This is nothing to get excited about – it lacks proportional spacing (the ability to space individual letters according to their true width) and has one of the noisiest screeches you're ever going to hear when it's printing.  
Reviewed: 17, 25      STF Rating: **75%**

**M-1309**      £239.00  
Brother      ☎ 061 330 6531  
An expensive, but highly specified 9-pin printer. Stylish



design, easy font selection and a wide range of emulations are on the plus side. Printed output is arguably no better than the less expensive Panasonic, so you have to decide if the extra features are worth the considerable price difference.

Reviewed: 25 STF Rating: 78%

**M-1324** £319.00  
Brother ☎ 061 330 6531

This 24-pin printer has electronic DIP switches and a wide selection of fonts – eight with Shadow and Outline enhancements also available for the text. This machine produces excellent graphics output, only bettered by the more expensive Citizen ProDot 24.

Reviewed: 25 STF Rating: 85%

**Paintjet printer** £975.00  
Hewlett Packard ☎ 0344 369369

An unusual and specialised printer which is widely used in the PC market to produce high quality colour graphics. Gives good quality text output, but is not widely supported by ST software.

Reviewed: 25 STF Rating: 80%

**ProDot 24** £599.00  
Citizen ☎ 0895 272621

This may be beyond the reach of many home users – being targetted at the professional/business market – but it's a good machine. It incorporates many advanced features, like a non-volatile memory enabling the storage of downloaded fonts and logos. The extra options like an auto sheet feeder and a colour conversion kit are not too expensive.

Reviewed: 25 STF Rating: 87%

**SLM 605** £821.00  
Atari ☎ 0753 533344

This replaces the older Atari SLM 804 laser printer and is smaller and a bit cheaper. On a TT with hard disk this is very fast, taking only 25 seconds to print a page of *Pro-text!* Print quality is excellent, but it only works with STs/TTs, unlike others lasers which connect to any make of computer.

Reviewed: 25, 31 STF Rating: 89%

**SQ 850** £903.00  
Epson ☎ 0442 61144

A solid but expensive well-built machine. Very fast text printing and ten different fonts, but the output looks a bit spidery. Quiet – ideal for a small office.

Reviewed: 25 STF Rating: 73%

**Starjet SJ-48** £405.00  
Star ☎ 0494 471111

A printer capable of quiet and trouble free operation,

with two print modes. There's also a good manual.

Reviewed: 39 STF Rating: 88%

**Star Laser Printer 4** £1,644  
Star ☎ 0494 471111

Simply "the best laser printer in its class in the world. Probably."

Reviewed: 39 STF Rating: 93%

**Star LC-20** £234.00  
Star ☎ 0494 471111

This 9-pin dot matrix printer is capable of Near Letter Quality results although it's a little slow. Comes with four internal fonts.

Reviewed: 34 STF Rating: 89%

**Swift 9** £239.00  
Citizen ☎ 0895 272621

Providing competition for Star is this new model which offers colour via a plug-on upgrade. Although this colour kit usually costs about £35, some dealers include it free. The general text quality is on a par with the Star LC 200, but its colour output is not quite so good. A little noisy, but switching and paper handling are good, and it's pretty fast on text.

Reviewed: 25 STF Rating: 87%

**Swift 24** £369.00  
Citizen ☎ 0895 272621

Selling for the same price as the Star 24-pin colour, this machine gives good text and graphics output, but you may have to pay extra for the colour kit. Confusing control panel switches with an unclear manual. Good specification, but not as user friendly as other colour 24-pin printers.

Reviewed: 25 STF Rating: 75%

## SCANNERS AND DIGITISERS

**You can do things the hard way and slave over your ST creating your graphics yourself. Or you can cheat and treat yourself to a scanner or digitiser. Scanners enable you to scan printed pages and convert them into images that you can use on your ST, then manipulate them in a graphics package. Digitisers enable you to trace printed images with a puck – they're not as labour-saving as scanners but they do offer potentially better results.**

**Daatascan Pro** £109.95  
Pandaal ☎ 0234 843355

This hand-held scanner is one of the fastest and easiest to use. The hardware is comfortable to hold, and the



software very direct. For the quick production of quality scanned artwork, you can't go wrong.  
Reviewed: 15      STF Rating: **93%**

**Datascan A4 Pro**      £499.95  
Pandaal      ☎ 0234 843355  
For professional use, this machine scans a full A4 page of paper. The hand scanners only cope with a picture four inches wide. A motorised sheet feeder guides the page through automatically. Excellent results – the print-outs and on-screen images are detailed and consistent.  
Reviewed: 23      STF Rating: **96%**

**Geniscan GS4500**      £129.99  
Datel      ☎ 0782 744324  
A hand scanner which has only two resolutions – 100 and 200 dpi – less than most of its competitors. Supplied with editing software and OCP Advanced Art Studio. Not STE compatible.  
Reviewed: 9      STF Rating: **82%**

**Golden Image**      £149.00  
Ladbroke Computing      ☎ 0772 203166  
This scanner offers a good opto-mechanical unit, plus outstanding scanning/editing software in the form of *Touch-Up*. A splendid buy.  
Reviewed: 18      STF Rating: **95%**

**Mark 4 Cherry Digitiser**      £534.63  
Cherry      ☎ 0582 763100  
This flat tablet takes up to an A3 size sheet of paper. Using a special pen or puck both supplied you can "trace" anything off the page into the ST. Works with any GEM software you have – great for DTP, CAD or drawing programs. An expensive, but quality device.  
Reviewed: 29      STF Rating: **88%**

## MISCELLANEOUS HARDWARE AND SOFTWARE

**There are always some, aren't there? Widgets which don't fit into any other category but deserve a mention somewhere. These gadgets aren't going to appeal to everyone but are undoubtedly useful and perhaps even invaluable for certain applications.**

**Alfa Data Clock**      £14.95  
Gasteiner      ☎ 081 365 1151  
This clock sets the date and time every time you boot up your ST, it also has a throughport so you can plug in other bits and pieces. Worthy of your time and money.  
Reviewed: 37      STF Rating: **80%**

**Astrobase**      £100.00  
Magic Space      ☎ 0252 703886  
A comprehensive chart calculator which can handle natal, transit, composite, synastry, harmonic and more. A very professional piece of software.  
Reviewed: 35      STF Rating: **90%**

**Astrobase Reportwrite**      £150.00  
Magic Space      ☎ 0252 703886  
A very well featured program including an atlas and British Summer Time checker. Produces a complete and detailed natal chart, and gives you an option to add your own interpretation.  
Reviewed: 35      STF Rating: **90%**

**Auto mouse/joystick switch**      £17.95  
Gasteiner      ☎ 081 365 1151  
A gizmo to enable you to get at the impossible-to-reach recessed mouse and joystick ports and enable you to play two player games with ease. A handy box of tricks.  
Reviewed: 36      STF Rating: **78%**

**Family Roots**      £24.95  
Floppyshop      ☎ 0224 312756  
A fully-featured genealogy program for creating comprehensive family trees. The best available.  
Reviewed: 37      STF Rating: **77%**

**Gram Slam**      US\$39.95  
Phil Comeau      ☎ 0101 613 825 6271  
A grammar checker that doesn't work very well, failing to pick up the most obvious errors and alerting you to problems that don't really exist. Good idea, though.  
Reviewed: 33      STF Rating: **46%**

**K..AT**      £69.00  
Q Logic      ☎ 0796 2001  
This is a remote control unit which can be plugged into the ST and configured via a Desk Accessory to work up to 14 different keys. Its main use is for working sequencer programs while far away from your ST – at your synth, for example. It's easy to configure, and then all you have to do is press the buttons.  
Reviewed: 29      STF Rating: **82%**

**Metapsychology**      \$21.95  
Clear Thinking      PO BOX 715,  
Ann Arbor, MI 48105 USA  
Take the American Personality Test or learn about the intricacies of metapsychology at home. Fun, that's all.  
Reviewed: 38      STF Rating: **65%**

**Met-2 Satellite Receiver**      £939.94  
ICS      ☎ 0903 731101  
A special receiver, pre-amplifier and antenna plus the



appropriate software enable you to receive, display and manipulate live weather pictures direct from the Meteosat satellite on your ST's screen.  
Reviewed: 11

**The Mojo** £10.00 (manual)/  
£13.95 (automatic)  
PD4U ☎ 0232 672338  
A mouse switcher enabling both a mouse and a joystick to be plugged into the mouse socket. Small and tidy.  
Reviewed: 37 STF Rating: **77%**

**Power Clocks** £14.95  
Power ☎ 0234 843388  
A cartridge clock that automatically sets the date and time when you boot up your ST. Contains a lithium battery supposed to last five years. Essential.  
Reviewed: 35 STF Rating: **80%**

**SIMM conversion** £119.95  
Evesham ☎ 0386 765500  
Gives any STFM the ability to use Single Inline Memory Modules, a convenient form of plug-in memory chips.  
Reviewed: 31 STF Rating: **86%**

**ST-IC** £39.95  
Romulus Data Systems, 2 Downs Grove,  
Southview Park, Basildon, Essex SS16 4QL  
A technically clever – but practically not that useful

– device which enables your ST to control all your infrared remote control units, like your TV, video, and CD player. Works, most of the time, but has problems learning commands. After that, though, it's easy. Essentially, it's a remote control for your remote control.  
Reviewed: 30 STF Rating: **61%**

**Switchsoft input/output port** £26.95  
Switchsoft ☎ 0325 464423  
This device provides an interface between your ST and external hardware devices. It is easy to set up and use with a well-explained manual.  
Reviewed: 36 STF Rating: **76%**

**Teletext Adaptor** £152.16  
Microtext ☎ 0705 595694  
Instead of watching your TV to see the CEEFAX or ORACLE, you can use this device which enables you to not only display teletext pages on your monitor, but also to save them to disk.  
Reviewed: 5 STF Rating: **81%**

**Zi-Fi amplified speakers** £39.99  
Evesham Micros ☎ 0386 765500  
A pair of eight watt speakers complete with a built-in amplifier to give you some serious noise with those sound-enhanced STE and Falcon games. Recommended.  
Reviewed: 39 STF Rating: **78%**





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Title	Original supplier	Issue	Rating				
<b>SOFTWARE</b>				Superbase Pro	Precision	28, 31	86%
				System 3	Digita	11	90%
<b>ART AND GRAPHICS</b>				<b>DESKTOP PUBLISHING</b>			
Art Master ST	Laser Distribution	35	76%	Calamus	Signa	6, 30	90%
Canvas	Microdeal	9	94%	Calamus SL	Halco	37	89%
Cyber Paint 2	Electric Dist	24, 30	88%	Easy Text Plus	zzSoft	30, 31	68%
Cyber Studio	Electric Dist	30	79%	Fleet Street	Silica	6, 28,	76%
Degas Elite	Electronic Arts	30, 34	90%	Publisher 3		30, 31	
Deluxe Paint	Electronic Arts	15, 19,	92%	Pagestream 2	Soft-Logik	28, 30, 31	95%
		24, 30, 34		Proxima	Netw'k News	6	96%
GFA Draft Plus 3.0	GFA	19	88%	Timeworks DTP	GST	28, 30, 31	72%
GFA Raytrace	GFA	3	78%	Timeworks	GST	32	88%
HyperPaint	Silica	34	75%	Publisher 2			
Image	Third Coast	10	50%	<b>EDUCATIONAL</b>			
MegaPaint 2	Silica	14, 34	93%	Answer Back Quiz	Kosmos	13	87%
Outline Art	Signa	6	95%	Better Maths	School S'ware	29	53%
Paintpot	Switchsoft	9, 35	72%	Better Spelling	School S'ware	16	30%
Quantum Paint 2	Eidersoft	4	79%	Caterpillar Spell	MB Software	17	15%
Retouche	CopyCare	21, 30, 34	81%	CH001/E	C Hack's PDL	27	67%
Spectrum 512	Silica	30	74%	Count and Add	Scetlander	30	82%
Trip-A-Tron	Llamasoft	24	91%	Death of a	Goodmans	32	80%
<b>BUSINESS</b>				President			
Adimens	Kuma	28	70%	Donald's Alphabet	Nathan S'ware	26	58%
Cashbook	Digita	28	80%	Chase, Mickey's			
Combination				Runaway Zoo,			
Cashmaster	Intraset	28	86%	Goofy's Railway			
Day by Day	Digita	28	88%	Express			
DGBase	Digita	28, 31	71%	First Letters	Rainbow	28	67%
Graphicsheet	Glentop	28, 31	76%	First Maths	ST Club	29	75%
Home Accounts 2	Digita	28, 31	90%	First Paint	Hat Software	14	89%
Hyperchart	Atari	12	90%	First Type	Hat Software	14	93%
Informer 2	Soft-Aware	23	79%	Fraction Goblins,	Coombe Valley	23	88%
K-Spread 4	Kuma	19, 28	80%	Picture Fractions,			
LDW Power	Silica	28	84%	Reasoning with Trolls			
Market Breaker	Jewsbury	15	77%	Fun School 2	Database	3	-
Mini Office	Silica	28	71%	Fun School 3	Database	15	91%
Communication				Fun School 4	Europress Software	31	91%
Mini Office Pro	Europress	28	56%	Henrietta's	Scetlander	28	92%
Personal Finance	Michtron	19, 28	81%	Book of Spells			
Manager Plus				Junior Typist	School S'ware	30	78%
Personal Tax	Digita	28, 31	74%	Kidpublisher Pro	D A Brumleve	11	95%
Planner				Kidzone	MTS (UK)	28	62%
Prodata	Arnor	7, 28	74%	Kosmos Language	Kosmos	13	80%
ProShare ST	TC Devel'ts	15, 28	69%	Tutors			
Superbase	Precision	19	91%	Learn to read	Prisma	12	93%
Personal 2				with Prof			
				Learning to Type	Hat Software	14	93%



Let's Spell Out and About	Softstuff	24	91%
Magic Maths	School S'ware	12	75%
Magic Story Book	Softstuff	28	87%
Master Time	B Ware	25	87%
Maths Blaster +	Ablac	26	91%
Maths Dragons, Cave Maze, Tidy the House	Coombe Valley	18	79%
Memory Lane	Ablac	27	64%
Mix and Match	Scetlander	26, 34	75%
Money Matters	Triple R Education	33	52%
Moon Letters	Shoestring	28	67%
My Letters, Numbers & Words	Ablac	27	67%
Nought to Nine	Hat Software	17	81%
Pepe's Garden	Prisma	32	72%
Picture Book	Triple R	34	68%
Puzzle Books 1 & 2	Soft Stuff	22	61%
Quickstart Guides	Sandon School	34	87%
Reading Pack 1 & 2	HS Software	23	89%
Read Right Away	HS Software	33	73%
Real Spelling	MB Software	17	10%
Game/ Launch Code			
Robot Words	Shoestring	30	82%
Roddy & Mastico	UBI Soft	23	68%
Shapes & Colours	Rainbow	29	81%
Shoe People	Gremlin	35	76%
ST Vocab	Academic	17	86%
The Three Bears	School S'ware	12	28%
VerbMaster	Academic	25	85%

## MUSIC

Band in a Box Professional	Zone Dist	29, 30	94%
Creator v3.1	Sound Tech	20	92%
Chameleon	Keynote	7, 12	85%
Concerto	Microdeal	36	87%
Cubase	Harman	2, 39	91%
Cubeat	Evenlode	17, 30	89%
EditTrack Gold	Atlantic Audio	30	86%
FM Melody Maker	Hybrid Arts	4	82%
Fractal Music Composer	Fractal Music	28, 30	85%
Fractal Music	Data Music	28	86%
Freestyle Pro	Zone Dist	30	76%
Genwave	Interval Music	7	90%
Grand SLAM	Intrinsic	34	80%
Hitman	Dr T	9	88%
KCS Omega	Zone Dist	39	90%
Midiman	Hollis	7	86%
MIDIstudio Master	Ladbroke	30	91%
Music Maker	Hybrid Arts	2	-
Music Publisher	Take Control	6	46%
MusiCAL	Evenlode	11	90%

Notator Alpha	Sound Tech	23	85%
Notator	Sound Tech	30	92%
Notator SL	Sound Tech	39	90%
Prodigy	Digital Muse	8	92%
Proscore	Comus	6	80%
Quartet	Microdeal	5	94%
Replay Pro	Microdeal	6	90%
Sequencer One	Gajits	8	91%
Sequencer One Plus	Gajits	39	84%
SLAM sample librarian	Intrinsic Tech	34	80%
SMPTetrack Gold	Atlantic Audio	39	72%
Super Librarian	MCMXCIX	2	-
TCB Tracker	MPH Software	16	93%
Tiger Cub	MCM	10	91%
Tiger	MCMXCIX	5	80%
Trackman 2	Hollis	22	97%
Virtuoso	Digital Muse	3, 39	79%
X-OR	MCMXCIX	5	89%

## PROGRAMMING

C Interpreter	Hisoft	17	-
Devpac 2	Hisoft	30, 31	95%
GFA 3 Compiler	GFA	2	91%
GFA Basic 3	GFA	30, 31	86%
Hisoft Basic 2	Hisoft	36	85%
Lattice C	Hisoft	30, 31	87%
Mark Williams C	Electric Dist	17	-
Power Basic	Hisoft	30	88%
Prospero C	Prospero	17	-
Prospero Pascal	Prospero	30, 31	95%
STOS Compiler	Mandarin	1	-
STOS	Mandarin	30, 31	92%

## UTILITIES

3D Constr'n Kit	Domark	24	95%
Alfa Data Clock	Gasteiner	37	80%
Art Tutor	Castlesoft	21	73%
C-Font	ST Club	35	88%
Circuit Maker 2	Iliad Software	7	47%
CompoScript	Compo	38	80%
Dash	Microdeal	5	75%
DC Desktop	Softville	21	71%
DC Utilities	Softville	21	85%
Diamond Back 2	Hisoft	37	92%
Edhak	Douglas Comms	35	85%
Family Roots	Floppyshop	37	77%
Fastcopy Professional	ST Club	34	83%
Flexidump Plus	Care/Zitasoft	21	84%
Font Editor	Signa	6	90%
Fontkit Plus 3	ST Club	20	90%
Fontpac Plus	ST Club	36	83%
GramSlam	Phil Comeau	33	46%



Harlekin	Hisoft	12	89%
Harlekin 2	Hisoft	27, 31	92%
HPChrome	Caledonia PDL	38	90%
Imagecopy	ST Club	33	90%
IMPrint	zzSoft	35	66%
Key Master	ST Club	37	75%
Knife ST	Hisoft	31	86%
Mission Control	GFA	12	79%
Monulator v1.85	Goodmans	34	82%
Mouse Tricks 2	Jonathan Lawrence	34	90%
Multidesk	Atari W'kshop	5, 31	80%
Neodesk	Electric Dist	5	87%
Neodesk 3	Electric Dist	18, 31	94%
NVDI	Atari Workshop	37	89%
Page Assistant	ST Club	37	83%
Power Clocks	Power	35	80%
Quick ST 3	ST Club	33	88%
Shoot-'em-up	Palace	4	86%
Construction Kit			
ST Secure	Ladbroke Comp	37	88%
Trimfont	ST Club	35	89%
Ultimate Virus	Douglas	36	85%
Killer v5.4			
Universal Item	ST Club	34	90%
Selector v3.32			
Video Titler v2	Laser Distribution	35	79%
Virus Killer	CRL	4	79%
Warp 9	System Solutions	38	88%

#### WORD PROCESSORS/EDITORS

Calligrapher Pro	Working Title	22, 26, 30, 31	85%
First Word Plus	GST Software	22, 31	83%
K-Word 2	Kuma	28, 31	76%
Protext 5.5	Arnor	28, 31	95%
Protext v5.53	Arnor	36	93%
Redacteur 3	ST Club	34	90%
Regent Word 2	ISM	3	89%
Script	Signa	7, 22	85%
Signum 2	Signum	22	85%
ST Word Writer	GST	22	91%
Tempus 2	Hisoft	3	78%
That's Write	Compo	3, 22, 31	82%
Word Writer ST	GST Software	31	86%
Wordflair	Hisoft	22	87%
Write On	Compo	22	90%

#### MISCELLANEOUS

Astrobase	Electric Ephemeris	12	90%
Astrobase	Magic Space	35	90%
Reportwrite			
Astrology for Beginners	Astrocalc	12	83%
Astronomy Lab	ST Club	9	90%
Metapsychology	Clear Thinking	38	65%

Tarot	Astrocalc	12	60%
That's Fun Face	Cavendish	2	-

## HARDWARE

#### EMULATORS

AT Speed C16	Compo	25	82%
ATonce/	Silica	25	85%
ATonce plus			
PC Ditto	Avant Garde	25	35%
PC Speed	Compo	4, 25	74%
Spectre GCR	Ladbroke Comp	25, 39	94%
Supercharger	Condor	7, 25	73%
Supercharger	Condor	25	92%
SC Plus 286			
Vortex ATonce			
386SX	HCS	38	83%

#### FLOPPY DRIVES

CSA 354	Cumana	28, 31	90%
Pandaal Daatadisk	Pandaal	28, 31	85%
PC720E	Power	28, 31	69%
PC 720P	Power	35	85%
PL720	Power	28	85%
PL720B	Power	28	89%
Roctec RF 302R	Ladbroke	28	78%
Zydec	Evesham	28	80%

#### HARD DRIVES

Atari Megafile 30	Silica	27	60%
Data Pulse Plus	Ladbroke Comp	39	82%
52MByte			
GAS 85MByte	Gasteiner	5	67%
Gasteiner 44R	Gasteiner	27	73%
Removable			
Gasteiner 85MByte	Gasteiner	27	77%
Hunter 70MByte	Hunter	27	52%
Business Systems			
ICD FAST	Silica	5, 17, 27	75%
Ladbroke 52MByte	Ladbroke	27	81%
ICD FAST 52MByte	System Solutions	39	87%
Mega Drive	Gasteiner	17	88%
Mega Drive	Gasteiner	39	81%
52MByte			
Megafile 44	Atari	4	82%
PC 32MByte drive	Third Coast	27	76%
ST Adaptor Kit			
Power 40MByte	Power	27	77%
Power 40MByte	Power	27	74%
Slimline			
Power 900E Data	Power	17	85%
Injection			
Power Drive 900	Power	17	92%
Power Rewritable	Power	17	93%
Optical Drive			





Progate Series 2 100DC	Protar	39	88%
Progate 30	First Choice	39	78%
Protar 40DC	Protar	27	90%
Protar 44R	Protar	27	79%
Removable			
Reference 40	Evesham	27	73%
Series 900 40MByte	Power	39	82%
Supra Drive	Third Coast	17	84%
Supradrive 40MByte	Surface UK	27	75%
Syquest	Gasteiner	17	89%
Removable Cartridge			
32MByte	Third Coast	27	69%
Vortex 40MByte	Silica	27	68%
Vortex Datajet	Silica	17	94%

### MEMORY UPGRADES

Alfa Data	Gasteiner	25	83%
Aries 0.5MByte	Ladbroke Comp	35	76%
Aries 2MByte	Ladbroke Comp	25	84%
Evesham 2MByte	Evesham	25	72%
Gigatron	Compo	25	82%
Power 2MByte	Power	25, 31	92%
0.5MByte	Third Coast	25	87%
X-Tra RAM	Frontier	25	81%
X-tra RAM	Marpet	35	86%
STE 0.5MByte	Developments		
X-tra RAM ST	Marpet	35	87%
Deluxe 0.5MByte	Developments		
Z-RAM	Third Coast	25	74%
Zydec 0.5MByte	Evesham	35	79%
solderless upgrade			

### MICE, TRACKBALLS AND JOYSTICKS

Alfa Data	Gasteiner	34	92%
Crystal Trackball			
Alfa Data infra-red mouse	Gasteiner	36	61%
Alfa Data optical mouse	Gasteiner	37	81%
Alfa Mouse/ joystick switch	Gasteiner	36	78%
Cheetah 125+ joystick	Premier	31	76%
Cordless mouse	Practical Solutions	7	-
Golden Image Brush mouse	Ladbroke Comp	37	88%
Gravis Mousestick	RC Simul'ns	24	90%
Gravis Switch joystick	RC Simul'ns	27	85%
Jin mouse	Ladbroke Comp	38	83%
Naksha mouse	Naksha	7, 31	88%
Power mouse	Power	31	79%

Quickshot 3 Plus Turbo joystick	Spectravideo	31	77%
Sting-Ray joystick	Spectravideo	31	81%

### MODEMS

2400 modem	Supra	31	90%
9600 Plus	Supra	31	84%
Fax modem	Atari W'kshop	31	78%

### MONITORS

CM8833 Mk 2	Philips	31, 37	80%
Cube TV	Philips	37	76%
Crystal Print	Qume	4	-
Eizo Flexiscan 9060S multisync	Atari Workshop	37	84%
Proscreen TT	Protar	37	87%
SC1224	Atari	31	84%
SC1435	Atari	37	90%
SM124	Atari	31	90%
SM144	Atari	37	90%
Visto A14CM	Protar	37	80%

### MUSIC

EVS-1	Sound Tech	15	88%
Master Sound	Software Horizons	1	-
Monster Stereo	MPH	22	87%
Pro-Series 12	AVR	16, 30	84%
Sound Sampler			
Pro-Series 16-bit Sampler	AVR	25	94%
Replay 8 Sound Sampler	Microdeal	18	95%
Replay 16 Sound Sampler	Microdeal	39	92%
Roland CF-10	Roland	17	86%
Digital Fader			
Roland CN-20	Roland	17	87%
Musical Entry Pad			
Sound Tools	AVR	28	82%
Stereo Master	Microdeal	34	77%
Stereo Playback	Microdeal	22	82%
Stereo Replay	Microdeal	29	89%
Studiomaster MA36	Studiomaster	2	-

### PRINTERS

B200 inkjet	Fujitsu	38	82%
BJ-10e	Canon	17, 25, 31	90%
Citizen 120-D	Citizen	17	
DeskJet 500	Hewlett Packard	20, 25	90%
Deskjet 500C	Hewlett Packard	36	85%
DL1100	Fujitsu	38	87%
wide carriage			
F-800	Kyocera	5	-
GLX600	Gestetner	5	-



HJ-100 Inkjet	Brother	33	88%
HL4	Brother	25	89%
JP-150 Inkjet	Olivetti	33	87%
KX-P1081	Panasonic	25	85%
KX-P1123	Panasonic	25, 31	90%
KX-P4420	Panasonic	25	80%
Laser Printer 8	Star	4	-
LaserJet 2	Hewlett Packard	4, 5	-
Laserjet 3P	Hewlett Packard	25, 30, 31	91%
Laserprinter	IBM	5	-
LBP-4 printer	Canon	5	-
LC-10 printer	Star	17, 25, 31	88%
LC-20 dot matrix	Star	34	89%
LC-24/LC-24s	Star	17, 25	80%
Colour printer			
LC-200	Star	17	80%
LQ-400	Epson	25	85%
LX-400	Epson	17, 25	75%
M-1309	Brother	25	78%
M-1324	Brother	25	85%
MT-81	Mannesman Tally	17	-
OP-105A	Seikosha	4	-
Paintjet printer	Hewlett Packard	25	80%
ProDot 24	Citizen	25	87%
SLM 605	Atari	25, 31	89%
SLM 804	Atari	4	-
SQ 850	Epson	25	73%
Starjet SJ-48	Star	39	88%
Star Laser Printer	Star	39	93%
Star LC	Star	34	89%
Swift 9	Citizen	25	87%
Swift 24	Citizen	25	75%

#### SCANNERS AND DIGITISERS

Daatascan	Kempston	9	90%
Daatascan Pro	Pandaal	15	93%
Daatascan A4 Pro	Pandaal	23	96%
Geniscan	Datel	9	82%
GS4500			
Golden Image	Evesham	18	95%
IMG Scan	Ladbroke	9	64%
Mark 4 Cherry	Cherry	29	88%
Digitiser			
MiGraph	Software	9	85%
Hand Scanner	Express		
Realtiser	Third Coast	7	85%

#### MISCELLANEOUS GADGETS AND GIZMOS

Eprom Blower	J E Sinclair	3	80%
GST Gold	Third Coast	5	90%
Hypercache	Third Coast	3	79%
Input/output port	Switchsoft	36	76%
K..AT	Q Logic	29	82%
Mega ST1	Atari	1	-

Met-2 Satellite Receiver	ICS	11	-
Mojo, the	PD4U	37	77%
Parsec 4768 board	Elmtech Research	2	-
Robokit	Silica Shop	5	82%
SGS Net	Bath BBS	9	95%
SIMM conversion	Evesham	31	86%
ST Host Adaptor	Third Coast	10	85%
ST-IC	Romulus	30	61%
Teletext Adaptor	Microtext	5	81%
Tweety Board	Bath Computer Shack	2	-

## GAMES

3D Pool	Mirror Image	23	87%
9 Lives	Arc	18	74%

### A

A320 Airbus	Thalion Software	36	79%
Action Pack	Action Sixteen	31	56%
Addams Family	Ocean	37	74%
Advanced Destroyer Simulator	Futura	20	79%
Adventures of Robin Hood	Millennium	29	68%
Air Bucks	Impressions	38	65%
Alcatraz	Infogrames	35	54%
Alpha Waves	Infogrames	18	83%
Altered Beast	Activision	4	82%
AMC	Dinamic	13	69%
Anarchy	Psygnosis	9	77%
Ancient Battles	Cases Computer Simul'ns	16	54%
Another World	US Gold	33	93%
Antago	Art of Dreams	14	84%
Aquanaut	Addictive	8	41%
Armada	Arc/Atari	10	91%
Armour-Geddon	Psygnosis	26	91%
Astaroth	Hewson	1	72%
Astate	New Deal	14	38%
ATF 2	Digital Integ	18	74%
Atomic Robokid	Activision	17	82%
Atomino	Psygnosis	26	74%
Atomix	Thalion/USG	13	79%
Austerlitz	Mirrorsoft	8	92%
Award Winners	Empire	36	90%
Axel's	Gremlin/Kixx	6, 22	68%
Magic Hammer			

### B

Baby Jo	Loricel	30	79%
Back to the Future 2	Mirrorsoft/Imageworks	14	62%



# REFERENCE REVIEWS INDEX

Back to the Future 3	Imageworks	23	52%	Castle Warrior	Delphine	3	43%
Back to the Gold Age	UBI Soft	17	57%	Challenge Golf	On-Line	27	52%
Backgammon	Oxford	22	70%	Champion of the Raj	Mirrorsoft	25	78%
Badlands	Domark	18	72%	Champions	Krisalis	34	62%
Badlands Pete	Arc	17	32%	Championship Tie Break	Ocean	15	83%
Ball Game, The	Electronic Zoo	26	73%	Charge of the Light Brigade	Impressions	29	52%
Barbarian 2	Kixx	21	56%	Chariots of Wrath	Impressions	2	59%
Barbarian	Kixx	25	65%	Chart Attack	Gremlin	31	83%
BAT	Ubi Soft	17	92%	Chase HQ 2 - Special Criminal Investigations	Ocean	18	78%
Batman	Ocean	6	91%	Chase HQ	Ocean	7	71%
Battle Command	Ocean	19	93%	Chess Simulator	Infogrames	18	62%
Battle Master	Mirrorsoft	14	82%	Chip's Challenge	US Gold	18	82%
Battlebound	On-Line	22	72%	Chronoquest 2	Psygnosis	12	88%
Battletech	Infocom	4	72%	Chuck Rock	Core Design	23	82%
Beach Volley	Ocean	7	62%	Chuck Yeager's AFTE	Electronic Arts	17	34%
Beast Busters	Activision	30	64%	Cisco Heat	Imageworks	30	72%
Betrayal	Rainbird	22	76%	Cloud Kingdoms	GBH	27	68%
Beverly Hills Cop	Tynesoft	8	49%	Codename: Iceman	Sierra On-Line	21	77%
Billiards 2 Sim	Infogrames	26	71%	Cohort	Impressions	24	69%
Bionic Command	Kixx	25	63%	Coin Op Hits 3	US Gold	23	51%
Black Tiger	US Gold	8	70%	Colorado	Action 16	21	61%
Blasteroids	Kixx	21	62%	Colossus	Mirrorsoft	3	84%
Blinky's Scary School	Zeppelin	17	70%	Conflict Europe			
Blitzkrieg	Impressions	17	57%	Combo Racer	GBH	34	61%
Blockout	Rainbow Arts	14	72%	Conqueror	Rainbow Arts	9	91%
Blood Money	Psygnosis	2	90%	Continental Circus	Mastertronic	4, 22	60%
Bloodwych	Mirrorsoft	1	95%	Conflict	Mastertronic	18	60%
Blues Brothers	Titus	29	72%	Cool Croc Twins	Empire	38	61%
Bonanza Brothers	US Gold	35	72%	Corporation	Core Design	18	87%
Booly	Loriciel	31	34%	Cosmic Pirate	Action 16	20	80%
Boston Bomb Club	Palace	28	76%	Crackdown	US Gold	10	81%
Brain Blasters	Ubi Soft	18	88%	Crazy Cars 3	Titus	39	85%
Brat	Imageworks	22	86%	Creepy	Atlantis	26	72%
Breach 2	Impressions	14	82%	Cricket Captain	D & H Games	17	73%
Brides of Dracula	Gonzo Games	34	49%	Crime City	IF	34	62%
BSS Jane Seymour	Gremlin	16, 38	87%	Crime Does Not Pay	Titus	25	77%
Bubble +	Infogrames	12	38%	Crime Time	Starbyte	30	67%
Buffalo Bill's	Tynesoft	2	83%	Crime Wave	US Gold	20	38%
Wild West Rodeo				Cruise for a Corpse	US Gold	29	76%
Bug Bash	Big Shot	20	58%	Crystals of Arborea	Palace	22	78%
Builerland	Infogrames	24	71%	Curse of Ra	Rainbow Arts	18	83%
<b>C</b>				Curse of the Azure Bonds	US Gold/SSI	21	74%
Cadaver	Mirrorsoft	15	81%	Cyber Assault	Trojan	33	68%
California Games	Kixx	25	81%	Cyberball	Domark	12	80%
Capcom Collection	US Gold	30	54%	Cybercon 3	US Gold	22	91%
Captain Planet & the Planeteers	Mindscape	30	61%	<b>D</b>			
Captive	Mindscape	16	93%	Damocles	Novagen	13, 31	94%
Car-Vup	Core Design	18	79%	Damocles	Novagen	19	85%
Carrier Command	Mirror Image	23	91%				
Cartoon Collection	Codemasters	37	64%				
Castle Master	Incentive	10	90%				



Mission Disk				Encounter	Novagen	24	58%
Dan Dare 3	Virgin/M'tronic	12	63%	Enforcer, The	Trojan	33	78%
Dark Century	Titus	8	52%	England	Grandslam	29	56%
Dark Sky Over	Interactive	11	63%	Championship Special			
Paradise				Epic	Ocean	37	91%
Darkman	Ocean	29	61%	Escape from the	Domark	10	80%
Day of the Pharaoh	Rainbow Arts	5	63%	Planet of the Robot Monsters			
Day of the Viper	Accolade	6	80%	ESWAT	US Gold	19	31%
Days of Thunder	Mindscape	16	88%	Evolution	Nigma Adv	29	70%
Dead End	Interactive	15	65%	Exile	Audiogenic	28	92%
Deathbringer	Empire	30	72%	Exterminator	Audiogenic	19	87%
Début	Pandora	14	77%	Eye of Horus	Logotron	3	84%
Defender 2	ARC	18, 31	88%	<b>F</b>			
Demon's Tomb	Virgin/Melbourne	10	61%	F-15 Strike Eagle 2	MicroProse	26	90%
Demoniak	Palace	23	80%	F-19 Stealth Fighter	MicroProse	12, 31	96%
D/Generation	Mindscape	39	75%	F-29 Retaliator	Ocean	13	76%
Dick Tracy	Titus	20	25%	Face Off	Krisalis	29	65%
Disciples of Steel	Megasoft	33	79%	Falcon Mission	Mirrorsoft	15	70%
Discovery -	Impressions	38	55%	Disk 2			
the steps of Columbus				Famous Five	Enigma	26	61%
Dizzy Collection	Codemasters	34	71%	on a Treasure Island			
Dizzy's Excellent	Codemasters	35	82%	Fantasy World	Codemasters	34	72%
Adventures				Dizzy			
Double Dragon 2	Virgin/M'tronic	5	75%	Fascination	Digital Integration	39	78%
Double Dragon	16 Blitz Plus/ M'tronic	21	71%	Ferrari Formula	Electronic Arts	4	62%
Dr Doom's Revenge	Empire	8	29%	One			
Dragon Breed	Activision	17	68%	Feudal Lords	Impressions	23	65%
Dragon's Breath	Palace	10	92%	Fighter Command	Impressions	31	71%
Dragon's Lair 2:	Readysoft	20	58%	Final Battle	PSS	18	52%
Time Warp				Final Command	UBI Soft	12	82%
Dragon's Lair	Readysoft/Ent Int	12	43%	Final Conflict	Impressions	17	75%
Dragon's Lair:	Readysoft	31	31%	Final Fight	US Gold	29	74%
Escape from Singe's Castle				Finale Compil'n	Elite	19	65%
Dragonflight	Thalion	15	71%	Fire & Brimstone	MicroProse	11	84%
Drakkhen	Infogrames	5	79%	Fire & Forget 2	Titus	17	48%
Dreadnoughts	Turcan Research	35	79%	Fire and Ice	Renegade	38	94%
Driller	Kixx	22	91%	Fireball	MicroProse	16	70%
Duel, The:	Accolade	22	81%	Firestar	Trojan	33	55%
Test Drive 2				First Contact	MicroProse	5	58%
Dungeon Master	Mirrorsoft	31	92%	First Division	Codemasters	34	67%
Dungeons,	Atlantis	12	69%	Manager			
Amethysts, Alchemists				First Samurai	Imageworks	30, 31	79%
Dynasty Wars	US Gold	12	68%	Five Intelligent	Oxford	30	54%
<b>E</b>				Strategy Games			
E-Motion	Accolade	9	76%	Flames of Freedom	Rainbird	26	92%
Edd the Duck	Impulze	19	73%	- Midwinter 2			
Elf	Ocean	29, 31	89%	Flight of the	Mirrorsoft	27, 31	92%
Elvira	Accolade	22	80%	Intruder			
Elvira -	Flair	34	79%	Flip-It & Magnose	Imageworks	17	72%
the arcade game				Flood	Electronic Arts	13, 24	87%
Emlyn Hughes	Audiogenic	11	75%	Football Direc'r 2	D & H Games	29	43%
International Soccer				Footballer	GBH	27	67%
Enchanted Lands	Thalion	20	92%	of the Year 2			
				Forgotten Worlds	Kixx	25	71%



Formula One	MicroProse	36	81%
Grand Prix			
Fort Apache	Impressions	30	68%
Four Wheel Drive	Gremlin	33	81%
Frenetic	Core Design	26	51%
Frontline	Cases Computer Simul'ns	11	49%
Full Metal Planet	Infogrames	10	78%
Future Basketball	Hewson	16	81%
Future Wars	Palace	5	87%

## G

Galaxy Force	Activision	6	68%
Games Summer Edition	Kixx	3, 26	88%
Garfield - A Winter's Tail	Softtek	25	69%
Gauntlet 2	Kixx	21	86%
Gauntlet 3	US Gold	31	48%
Gazza 2	Empire	20	86%
Gem'x	Digital Marketing Int'l	34	64%
Gemini Wing	16 Blitz Plus	21	64%
Germ Crazy	Electronic Zoo	25	88%
Gettysburg	Arc/Atari	17	93%
Ghostbusters 2	Activision	7	62%
Ghosts 'n' Goblins	Elite	12	69%
Ghouls 'n' Ghosts	Kixx	34	44%
Ghouls 'n' Ghosts	US Gold	6	84%
Go	Oxford	22	75%
Gobliins	Dream Factory	36	87%
Godfather, the	US Gold	35	62%
Gods	Renegade	22	92%
Gold of the Aztecs	US Gold	16	71%
Golden Axe	Virgin	18	82%
Golden Eagle	Loriciel	33	61%
Gravity	Imageworks	8	93%
Gremlins 2	Elite	18	70%
Guardians	Loriciel	31	71%

## H

Hard Drivin' 2	Domark	21	81%
Hard Drivin'	Domark	6	84%
Hard Nova	Electronic Arts	30	62%
Harlequin	Gremlin	35	79%
Harley Davidson - the Road to Sturgis	Mindscape	14	76%
Hawaiian Odyssey	Sublogic	6	73%
Heimdall	Core Design	35	78%
Helter Skelter	Audiogenic	18	75%
Hero Quest	Gremlin	24	78%
Heroes	Domark	16	85%
Hill Street Blues	Krisalis	24	83%
Hitchhiker's Guide to the Galaxy	Mastertronic	30	76%

Hook	Ocean	38	79%
Horror Zombies from the Crypt	Millennium	19	74%
Hostages	Action 16	20	90%
Hound of Shadow	Electronic Arts	5	90%
Hoyle's Book of Games	Sierra On-Line	16	73%
Hunter	Activision	26	92%
Hydra	Domark	24	55%

## I

Immortal, The	Electronic Arts	16	87%
Imperium	Electronic Arts	12, 30	87%
Impossamole	Gremlin	26	68%
Impossible Mission 2	Kixx	25	80%
Indiana Jones & the Last Crusade	US Gold/Kixx	2, 29	26%
Indiana Jones - The Graphic Adventure	US Gold	4	77%
Infestation	Psygnosis	11	69%
International 3D Tennis	Palace	16	88%
International Championship Athletics	Hawk	28	49%
Int'l Ice Hockey	Impulze	23	38%
Int'l Soccer Challenge	MicroProse	15	85%
Int'l Sports Challenge	Empire	38	43%
Interphase	Mirrorsoft	4	93%
Iron Lord	Ubi Soft	7	90%
Ishar - Legend of the Fortress	Daze	37	90%
Italia '90	Code Masters	11	60%
Ivan "Ironman"	Virgin	19	68%
Stewart's Super Offroad			
Ivanhoe	Ocean	10	66%

## J

Jahangir Khan's World Championship Squash	Krisalis	24	73%
James Bond Collection	Domark	29	57%
James Pond	GBH	17, 34	82%
Jimmy White's Whirlwind Snooker	Virgin	27, 31	94%
Judge Dredd	Virgin M'tronic	19	41%
Jumping Jackson	Infogrames	6	56%
Jupiter's Masterdrive	Action Sixteen	20, 34	62%

## K

Kenny Dalglish Soccer Match	Impressions	7	32%
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Khalaan	Rainbow Arts	13	59%
Kick Off 2	Anco	14	92%
Kick Off	Anco	2	88%
Kick Off Extra Time	Anco	8	49%
Kid Gloves	GBH	10, 27	44%
Killing Cloud	Imageworks	22	93%
Killing Game Show	Psygnosis	23, 31	90%
King of Chicago	Mirrorsoft	1	61%
Klax	Domark	11	87%
Knight Force	Titus	5	70%
Nightmare	Mindscape	33	77%
Knights of the Sky	MicroProse	34	91%
Kult	Exxos	1	73%

## L

Lancaster	CRL	5	81%
Last Ninja 2	Activision	14	86%
Last Ninja 3	System 3	36	72%
Leander	Psygnosis	36	68%
Leather Goddesses of Phobos	Mastertronic	30	78%
LED Storm	Kixx	25	72%
Legend	Mindscape	36	89%
Legend of Faerghail	Rainbow Arts	17	90%
Legend of the Lost	Impressions	17	22%
Leisure Suit Larry 3	Sierra On-Line	15	61%
Lemmings	Psygnosis	24	94%
Leonardo	Ent Int	2	62%
Let Sleeping Gods Lie	Ent Int	1	72%
Licence to Kill	Domark	1	76%
Life & Death	Mindscape	26	72%
Light Corridor	Infogrames	17	82%
Line of Fire	US Gold	19	39%
Llamatron	Llamasoft	31	95%
Logical	Rainbow Arts	25	76%
Loom	Lucasfilm/US Gold	16, 30, 31	81%
Loopz	Audiogenic	16	58%
Lords of Chaos	Software Business	24	82%
Lost Patrol	Ocean	18	88%
Lost Soul	MPH Software	17	68%
Lotus Esprit Turbo Challenge	Gremlin	18	86%
Lotus Turbo Challenge 2	Gremlin	30	77%
Lure of the Temptress	Virgin	35	92%

## M

M1 Tank Platoon	MicroProse	17	84%
Magic Fly	Electronic Arts	14, 31	91%
Magic Lines	Thalion	15	47%
Magic Pockets	Renegade	27, 31	90%
Magnetic Scrolls Collection	Virgin	30, 31	81%

Manchester United	Krisalis	11	60%
Manix	Millennium	15, 33	59%
Masterblazer	Rainbow Arts	23	74%
Matrix Marauders	Psygnosis	19	73%
Maupiti Island	UBI Soft	26	79%
Maya	Action Sixteen	20	83%
Mean Streets	US Gold	16	84%
Mega Lo Mania	Mirrorsoft	27	94%
MegaTraveller 1	Empire	24	67%
Merchant Colony	Impressions	23	84%
MERCS	US Gold	25	61%
Metal Masters	Infogrames	20	88%
MicroProse Golf	MicroProse	27, 31	95%
Midnight	Ocean	13	41%

## Resistance

Midwinter	MicroProse	9	96%
MiG-29 Fulcrum	Domark	20	92%
MiG-29 - Soviet Fighter	Codemasters	18	30%
Mig-29M	Domark	29	85%
Superfulcrum			
Mighty Bombjack	Elite	21	48%
Mike Read's Computer Pop Quiz	Encore	16	71%
Mind Bender	GBH	34	72%
Monty Python	Virgin	14	84%
Moonfall	21st Century	29	24%
Moonshine Racers	Millennium	23	78%
Moonwalker	US Gold	5	84%
Multi-Player Soccer Manager	D & H Games	20	81%
Murder	US Gold	14	72%
Murders in Space	Infogrames	18	83%
Mystical	Action Sixteen	34	73%
Mystical	Infogrames	19	76%

## N

'Nam 1965-1975	Domark	23	76%
Narc	Ocean	21	64%
Narco Police	Dinamic	18	46%
Navy Moves	Electronic Arts	1	69%
Navy Seals	Ocean	25	72%
New Zealand Story	Ocean	3	78%
Night Shift	Lucasfilm	20	86%
Nightbreed	Ocean	16	58%
Ninja Collection	Ocean	35	53%
Ninja Remix	System 3	19	81%
Ninja Warriors	Virgin Games	6	69%
Nitro	Psygnosis	18	41%
North & South	Infogrames	7	58%

## O

Obitus	Psygnosis	35	61%
Official Everton Football Club	Amfas	14	57%
Intelligentsia			



Omnicon	Mirrorsoft	18	42%
Conspiracy			
Onslaught	Hewson	5	90%
Operation Stealth	US Gold	15, 31	93%
Operation Thunderbolt	Ocean	9	73%
Oriental Games	Microstyle	10	78%
Othello Killer	Ubi Soft	24	65%
Outrun Europa	US Gold	29	58%
Outrun	Kixx	21	38%
Outzone	UBI Soft	25	66%

### P

P-47 Thunderbolt	Firebird	7	67%
Pacific Islands	Empire	35	90%
Pang	Ocean	18	88%
Paradroid 90	Hewson/Activision	17	78%
Paragliding	Loriciel	33	59%
Parasol Stars	Ocean	37	91%
Paris Dakar	Tomahawk	10	32%
Passing Shot	Imageworks/ Mirrorsoft	3	71%
Phobia	Mirrorsoft	1	65%
Photon Storm	Atari/Arc	12	51%
Pick 'n' Pile	UBI Soft	17	46%
Pictionary	Domark	6	72%
Pinball Magic	Loriciel/US Gold	11	71%
Pipe Mania	Empire	9	76%
Pit-Fighter	Domark	28	65%
Player Manager	Anco	11	93%
Plotting	Ocean	16	72%
Popeye 2	Alternative	38	63%
Populous 2	Electronic Arts	30, 31	95%
Populous	Electronic Arts	30, 31	88%
Potsworth and Co	Hi-Tec software	36	75%
Powerdrift	Activision	6	83%
Powermonger	Electronic Arts	19	93%
Powermonger WW1 Edition			
Predator 2	Imageworks	23	67%
Prehistorik	Titus	25	68%
Prince of Persia	Domark	19, 31	90%
Pro Tennis Tour 2	UBI Soft	24	73%
Pro Tennis Tour	UBI Soft	5	70%
Projectyle	Electronic Arts	12, 24	91%
Prophecy 1 - the Viking Child	Wired	13	67%
Prosoccer 2190	Vulture	17	12%
Proflight	Hisoft	30	88%
Psyborg	Loriciel	36	46%
Pushover	Ocean	39	92%
Puzznic	Ocean	18	86%

### Q

Quadrel	Loriciel	23	74%
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Quartz	Firebird	2	75%
Quattro Fighters	Codemasters	36	48%
Quest for the Time Bird	Infogrames	2	78%
Question of Sport	Encore	16	70%

### R

R-Type 2	Activision	26	78%
R-Type	Activision	31	79%
Race Drivin'	Domark	34	63%
Railroad Tycoon	MicroProse	28, 31	93%
Rainbow Islands	Ocean	9	93%
Rainbow Warrior	Microstyle	4	47%
Ranarama	Players	17	75%
Ranx	Ubi Soft	17	70%
RBI 2	Domark	27	76%
Realms	Virgin	31	87%
Red Heat	Ocean	2	52%
Red Lightning	SSI	1	64%
Red Storm Rising	MicroProse	5	89%
Resolution 101	Logotron/ Millennium	11, 33	76%
Revelation	Krisalis	21	64%
Rick Dangerous 2	MicroProse	15	86%
Rick Dangerous	Kixx	34	90%
Rings of Medusa	Starbyte	8	69%
Risk	Leisure Genius	9	68%
Road Blasters	Kixx	21	43%
Robocod	Millennium	31	86%
Robocop	Ocean	2	56%
Robocop 2	Ocean	19	84%
Robocop 3	Ocean	34	94%
Robozone	Imageworks	30	54%
Rock Star	Codemasters	17	68%
Rocket Ranger	Ate My Hamster Cinemaware/ Mirrorsoft	3	73%
Rodland	Storm	29	70%
Rolling Ronny	Virgin	30	76%
Rorke's Drift	Impressions	13	46%
Rotor	Action Sixteen	20	73%
Rotox	Action Sixteen	12, 34	61%
Rugby Coach	D & H Games	30	32%
Rugby - the World Cup	Domark	31	76%

### S

Safari Guns	Infogrames	6	33%
Saint Dragon	Kixx	36	78%
Saint Dragon	Sales Curve	16	78%
Samuri - TWOTW	Impressions	36	70%
Sarakon	Virgin	28	74%
Satan	Dinamic	15	39%
Scapeghost	Level 9	6	35%
Scrabble Deluxe	Virgin	30	68%





Secret of Monkey Island	Lucasfilm/US Gold	23, 30, 31	94%	Stormlord	Hewson	6	80%
Sensible Soccer	Renegade	39	91%	Street Fighter	Kixx	25	52%
Seven Gates of Jambala	Grandslam	7	78%	Street Hockey	Gonzo Games	18	64%
Shadow Dancer	US Gold	25	67%	Strider 2	US Gold	17	79%
Shadow of the Beast	Psygnosis	17	83%	Strider	US Gold	3	92%
Shadow Sorcerer	US Gold	29	69%	Strike Fleet	Electronic Arts	30	63%
Shadow Warriors	Ocean	18	58%	STUN Runner	Domark	19	42%
Shadowlands	Domark	33	84%	Stunt Car Racer	Microstyle	4	74%
Sharkey's Moll	Zeppelin	26	39%	Subbuteo	Electronic Zoo	17	70%
Shinobi	Virgin Games	5	47%	Super Cars:	Accolade	23	70%
Shuttle	Virgin	38	78%	The Muscle Cars			
Silent Service 2	MicroProse	30	88%	Super Gridrunner	Action Sixteen	21	88%
Silkworm	16 Blitz Plus/Mastertronic	21	73%	Super League	Impressions	6	62%
Sim City	Infogrames	12, 31	92%	Soccer			
Simpsons: Bart vs the Space Mutants	Ocean	31	74%	Super Monaco GP	US Gold	21	71%
Simulcra	Microstyle	15	81%	Super Skweek	Infogrames	24	81%
Sir Fred	Action Sixteen	34	79%	Super Space Invaders	Domark	30	63%
Skate Wars	UBI Soft	16	63%	Super Wonder Boy	Activision	6	82%
Skidz	Gremlin	13	71%	Supercars 2	Gremlin	24	74%
Skull & Crossbones	Domark	24	59%	Supercars	GBH	27	74%
Sky Fox 2	Electronic Arts	1	58%	Superski 2	Microids	36	68%
Slayer	Hewson	3	54%	Supremacy	Melbourne House	18	90%
Sly Spy Secret Agent	Ocean	14	59%	Suspicious Cargo	Gremlin	31	79%
Smash TV	Ocean	31	74%	Switchblade 2	Gremlin	26	81%
Snoopy	The Edge	6	39%	Switchblade	Kixx	25	58%
Snott	Grafic Visions	26	52%	SWIV	Storm	22	78%
Soccer Glory	Tanglewood	11	29%	<b>T</b>			
Space Ace	Readysoft/Empire	10	58%	Team Suzuki	Gremlin	21	69%
Space Crusade	Gremlin	37	50%	Team Yankee	Empire	16	84%
Space Gun	Ocean	34	32%	Teenage Mutant Hero Turtles	Imageworks	19	38%
Space Harrier 2	Grandslam	9	51%	Terminator 2	Ocean	29	63%
Space Quest 3	Sierra On-Line	4	83%	Test Drive 2	Accolade	23	70%
Space Rogue	Mindscape/Origin	16	30%	Car Disk			
Special Forces	MicroProse	33	73%	Test Drive 2: Scenery Disks	Accolade	23	63%
Speedball 2	Mirrorsoft	18	88%	Tetris	Infogrames	24	69%
Spellbound	Psygnosis	17	79%	Thalion - the First Year	Thalion	23	81%
Spiderman	Empire	17	74%	Their Finest Hour - the Battle of Britain	USGold	15	91%
Spindizzy Worlds	Activision	17	91%	Theme Park	Mirrorsoft	11	80%
Sport's Best	Loriciel	38	72%	Mystery			
Spy Who Loved Me	Domark	17	80%	Thunder Blade	Kixx	21	34%
Star Command	SSI	5	37%	Thunder Burner	Loriciel	31	53%
Starblade	Simarils/Palace	12	51%	Thunderhawk	Core Design	28	91%
Starwrek	Castlesoft	7	15%	AH-73M			
Starflight	Electronic Arts	11	70%	Thunderhawk	Core Design	31	91%
Steel Empire	Millennium	36	71%	Thunderstrike	GBH	13, 34	67%
Steve Davis World Snooker	CDS Software	21	78%	Time	Empire	7	79%
Storm Master	Silmaris	33	84%	Time Machine	Activision	16	83%
Stormball	Millennium	24	71%	Tintin on the Moon	Infogrames	5	73%
				Titanic Blink	Zeppelin	31	69%



Titus the Fox	Titus	34	85%
TNT 2	Domark	34	44%
Toki	Ocean	25	78%
Tom & the Ghost	UBI Soft	25	67%
Toobin'	Domark	6	74%
Top Banana	Hex	35	48%
Torvak the Warrior	Core	17	70%
Total Recall	Ocean	20	66%
Tournament Golf	Ultimate	20	73%
Tower of Babel	MicroProse	5	94%
Toyota Celica GT Rally	GBH	18, 34	65%
Toyottes, The	Infogrames	12	81%
Treasure Island Dizzy	Codemasters	17	82%
Treasure Trap	Electronic Zoo	13	81%
Treble Champions	Challenge	14	19%
Turbo Outrun	US Gold	6	70%
Turrican 2	Rainbow Arts	20	89%
Turrican	Rainbow Arts/ Kixx	17, 31	77%
Tusker	System 3	15	51%
TV Sports Football	Mirrorsoft	4	68%
Twin World	Ubi Soft	7	69%

## U

Ultima 6	Mindscape	38	70%
Ultimate Golf	GBH	34	72%
Ultimate Ride	Mindscape	18	67%
UN Squadron	US Gold	17	46%
Universal Military Simulator 2	MicroProse	15	87%
Universe 3	Impressions	15	48%
Unreal	UBI Soft	34	59%
Untouchables	Ocean	7	81%
USS John Young	Magic Bytes	18	34%
Utopia	Gremlin	29, 31	90%
Utopia - The New Worlds	Gremlin	36	64%

## V

Vaxine	US Gold	15	84%
Vector	Impulze	18	40%
Championship Run			
Vengeance of Excalibur	Virgin	35	59%
Venus the Fly Trap	GBH	16, 34	58%
Verminator	Rainbird	2	83%
Videokid	Gremlin	35	59%
Vigilante	Kixx	21	35%
Virtual Worlds	Domark	27	78%
Viz	Virgin	21	74%
Voodoo Nightmare	GBH	17, 34	71%
Vroom	UBI Soft	29, 31	92%

## W

Warhead	Activision	11	90%
Warlock the Avenger	Millennium	22	43%
Warp	Grandslam	7	20%
Warriors of Releynel	Impressions	37	74%
Waterloo	Mirrorsoft	1	91%
Wayne Gretzky Hockey	Mirrorsoft	10	90%
Web of Terror	Impressions	16	35%
Weird Tales	Interactive Technology	15	72%
Welltris	Infogrames	19	71%
Wild Streets	Titus	8	71%
Wild Wheels	Ocean	30	67%
Wildlife	New Deal Prodns	14	21%
Windwalker	Mindscape	10	51%
Wings of Death	Thalion/Active	16	81%
Winning Team	Domark	24	56%
Winter Super Sports '92	Flair	37	71%
Wipe Out	Gonzo	13	64%
Games			
Wizkid	Ocean	37	92%
Wolfchild	Core Design	35	61%
Wolfpack	Imageworks	30	70%
Wonderland	Virgin Mastertronic	24	85%
World Championship Soccer	Elite	21	69%
World Class	Kixx	21	82%
Leaderboard			
World Class Rugby	Audiogenic	35	73%
-Five Nations Edition			
World Soccer	Zeppelin	17	66%
Wrath of the Demon	Readysoft	21	81%
Wreckers	Audiogenic	27	68%

## X

Xenon 2	Mirror Image	3, 31	90%
Xenon	16 Blitz Plus/ Mastertronic	21	70%
Xenophobe	Microstyle	5	55%

## Y

Yolanda	Millennium	14	58%
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## Z

Z-Out	Rainbow Arts	28	53%
Zombi	Ubi Soft	17	40%
Zone Warriors	Electronic Arts	28	39%



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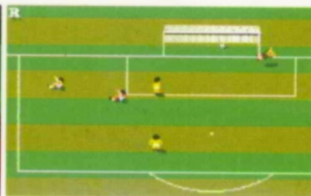
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