Price: £2.50

ST APPLICATIONS

The Magazine for Users of Atari ST, STE, Falcon and TT Computers — *Issue No. 43, July 1994*

THIS MONTH

Reviews

- SAMS Report
- Bubblejet Printers
- Harlekin 3
- Easy Stitch
- Falcon Audio Plus

Articles

- Jeremy Hughes Interview
- Beyond GFA
- Atari's Portables

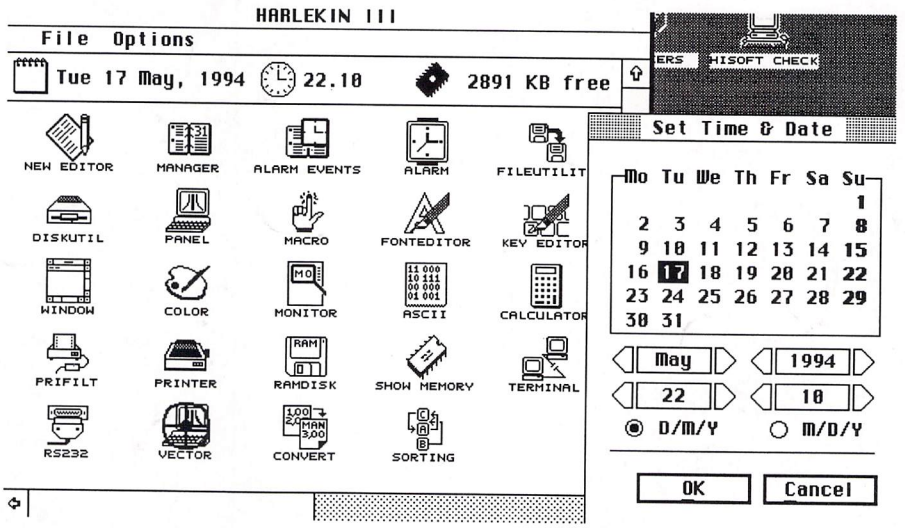
Regulars

- News
- Shareware Column
- Programmers' Forum
- Beginners' Forum
- Going On-Line
- Desktop Discussions
- Forum
- Grafix Arts

Bubblejets

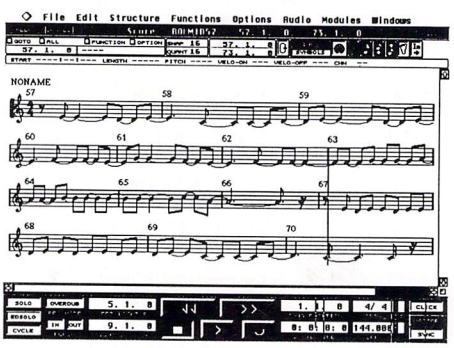
If you are still using a dot matrix with your ST but are thinking of joining the ever-growing band of inkjet owners, Peter Crush has been testing three of the smaller and lighter models now available: the Brother HJ100i, the Epson Stylus 800 and Hewlett Packard's Portable DeskJet.

Harlekin 3



Bill Blackledge is a committed fan of the multiple desk accessory Harlekin and in this issue he outlines the new features of the latest version Harlekin 3 and the uses to which they can be put.

The MIDI program Pro 24 has been refined and generally improved over the years since its first release, but the latest version is a mutant, says Piper in his review of Steinberg's Falcon Audio Plus. It is no longer just a MIDI program; now it turns your ST into a tape machine.



FALCON APPLICATIONS

- ☐ **Falcon News**
- ☐ **Falcon Forum**

Plus:

Falcon Audio Plus

Printed in the U.K.

Post Office: Non-deliverable copies should be returned to The ST Club, 7 Musters Road, West Bridgford, Nottingham NG2 7PP.

Imagecopy 3

The essential image utility

New features:

❒ New image formats. In addition to the large number of previously available formats, Imagecopy 3 can read and write the following file types:

* New read formats: Calamus Raster Graphic (CRG), Deluxe Paint ST, Doodle/PIC, JFIF (JPEG), Portable Bitmap, Pictor (PC Paint), PixArt, Prism Paint, RSC image, True Paint, compressed Windows Bitmap.

* New write formats: Deluxe Paint, GIF, IFF, JFIF (JPEG), PCX, Prism Paint, Targa monochrome/palette-colour, TIFF LZW-compressed, Windows Bitmap, XIMG true-colour.

JPEG compression offers a dramatic reduction in the file size of true-colour images.

❒ Improved user interface, with hierarchical menus and extensive menu/dialog shortcuts. Configurable single-key menu shortcuts.

❒ Improved conversion option, with the ability to convert image colour depth as well as image format.

❒ Batch processing: Imagecopy 3 can view, print, or convert batches of images. A log-file option allows you to leave it to work unattended.

❒ Slide show option: create and display slide shows in any video mode (mono/colour/true-colour).

❒ Print catalogue option: catalogue your image collection in mono or colour, with up to 40 or more images on a page.

❒ Improved colour reduction, including adaptive palette matching for high-quality reproduction of 256-colour or true-colour images on 16-colour or 256-colour systems.

❒ Improved dithering: Imagecopy 3 offers a choice of five random dithering options. Ordered colour dithering allows 256-colour and true-colour images to be displayed quickly on 16-colour and 256-colour systems.

❒ Greyscale option for viewing and converting images.

❒ Print-quality option: draft/normal or draft/normal/best on all printers. Best-quality print improves the print quality from dot-matrix printers with worn ribbons.

❒ Increased range of halftone filters.

❒ Crazy Dots compatibility.

❒ Multiple file-loading with the Selectric file selector.

❒ Falcon overscan: Imagecopy automatically uses Falcon overscan for full screen viewing on non-VGA monitors.

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Nottingham
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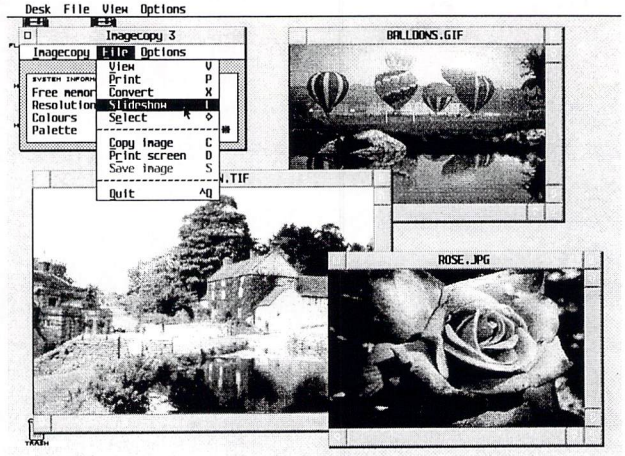

Price:

£29.95, Available now.

Upgrades:

There are preferential rates for upgrading before the end of July 1994.

XICD	Upgrade D:	from Imagecopy 1.xx:	£20.00
XICE	Upgrade E:	from Imagecopy 1.5x:	£15.00
XICF	Upgrade F:	from Imagecopy 2.xx:	£10.00

Add £2.95 to these upgrade prices after August 1st 1994. Overseas postage group I - see page 56. You must return your old Imagecopy master disk(s) to qualify; upgrades include a new 96-page perfect bound manual.

Imagecopy 2

Image utility for Atari ST/TT/Falcon computers

Copy images from screen in any ST/TT/Falcon video mode. Images can be copied by pressing Alt-Help, and a flexible rubber-banding system allows images to be selected with a fine degree of accuracy.

Display images in any ST/TT/Falcon video mode. Colour--mapping and dithering is used to display images in video modes which contain fewer colours. Several images may be displayed simultaneously in GEM-window or full-screen display modes.

Print images and screen dumps in black and white or colour on a wide range of printers, including 9-pin and 24-pin dot-matrix printers, Bubblejet printers, Deskjet, and Laserjet printers. Imagecopy 2 offers print-scaling, variable-sized halftones for realistic colour depth, and comprehensive colour controls, and is able to print images containing up to 16.7 million different colours (24-bit true-colour). Print-colour options include: monochrome, CMY colour, CMYK colour, CMY separation, and CMYK separation. Colour separation modes can be used to print full-colour images on a monochrome printer.

Convert images between different formats (see below).

Extensive range of image formats: Imagecopy reads the following formats: TIFF, Targa, IMG, extended IMG, DEGAS, Neochrome, Art Director, Tiny, GIF, Spectrum, IFF/Deluxe Paint, Windows bitmap, OS/2 bitmap, PC Paintbrush (PCX), and Macpaint. Images can be saved in the following formats: TIFF, Targa, extended IMG, DEGAS, and RSC. TIFF support includes baseline TIFF apart from Huffman compression (uncommon), common extensions such as LZW compression, and the ability to read non-standard TIFF images produced by ST programs such as Retouche.

Can be used as a print program with paint programs like Degas, HyperPaint, True Paint and PixArt.

User-friendly GEM interface, including window menu bar, pop-up menus, colour sliders. Can be used as an accessory or stand-alone program.

£19.95

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Contributions

The articles in *ST Applications* are written by users for users. Everyone reading this magazine will have something to contribute; even if you do not feel able to do a full-length review or article there is the Forum section for short hints, tips and questions. If you are interested in writing for *ST Applications* - regularly or irregularly - please write for a copy of our terms and conditions. We always do our best to reward quality work with appropriate remuneration.

HiSoft Latest

HiSoft have just released Diamond Back 3 at a cost of £49.95. This latest version features a brand new interface specifically designed with ease of use in mind. Its new features include support for Syquest and floptical drives as well as SCSI tape drives. Hard drive backups can be performed in the background and backup logfiles make partial restoration easy. Diamond Back 3 is compatible with all Atari computers and is available now. Users of earlier versions should contact HiSoft for details of upgrade policy.

Other HiSoft products which are completed and just waiting for the return of the manuals are Twist 2 and Papyrus, both of which should be on sale as you read this. Master Phone, Ofir Gal's voice mail system for the Falcon, is nearing completion as is True Image. More news on these two as we get it. For further details on any of the above, contact ***HiSoft***, The Old School, Greenfield, Bedford MK45 5DE; Tel: 0525 718181; Fax: 0525 713716.

Atari News

Jaguar - Slow But Sure!

SDL have finally received a batch of around 1700 Jaguars which they have flown in from The States. The bad news is that the cost of buying one has temporarily risen to £249 in order to cover the freight costs. SDL will be receiving further supplies by sea and expect the retail price to settle back down to £229 upon delivery of their next consignment.

Some details on UK distribution are now beginning to emerge. Atari recently announced that SDL are to be joined by another major distributor, *ZCL*, within a matter of weeks. Rumbelows will also be supplying the Jaguar in their Games Arena stores as soon as stocks arrive. Also joining the line-up are several mail order catalogues who who intend to sell the console in their Autumn editions. It is expected that a number of the major High Street chain stores will stock the Jaguar in due course, but it is unlikely that they will want to get involved at this early stage when stock levels cannot be guaranteed.

Atari have confirmed that the SDL consignment signalled the start of regular supplies coming into the UK and that wider distribution would be achieved by September. This still means that you are likely to experience problems obtaining a Jaguar in the short term but there does now seem to be light at the end of the tunnel... finally!

Jaguar Technology Licensed For PC!

Atari have exclusively licensed Jaguar technology to ***Sigma Designs*** for use with their ***Reel-Magic™*** full motion video cards for the PC. Reel-Magic is an MPEG controller which supports full motion video playback on the PC. MPEG (developed by the Moving Picture Experts Group) is a development of the JPEG file compression techniques adapted for use with animation rather than stills. The current hardware supports full screen full motion video with CD quality sound and is in use mainly for educational and training purposes as well as for business presentations.

The incorporation of Jaguar technology will allow PC software developers to take advantage of the Jaguar's real time 3D capabilities in their software. Much more importantly though, purchasers of the Sigma card will be able to run ANY CD based Jaguar game on their PC. This obviously opens up a huge new market for Jaguar software developers. Sigma's Julien Nguyuen commented, "Jaguar's 64-bit technology will be extremely attractive to the MPC customer base of more than 10 million users. By combining Sigma's Moving Picture Experts Group technology with Atari's 3D animation, we look forward to bringing the hottest video game technology and software titles to the desktops of users worldwide." Atari's Sam Tramiel said, "Knowing there would be a great demand for Jaguar on personal computers, we designed the system to talk easily to the leading computer architectures. This has allowed us to move quickly to partner with Sigma Designs to make this happen before Christmas."

By the end of this year Sigma Designs will be shipping a single card which integrates the Jaguar's chipset with their existing Reel-Magic system. The board plugs into a VGA card using a specially designed adaptor and sends its output to a resizable window on the PC. Only Jaguar titles which are compatible with the Sigma card will be Atari approved in order to ensure cross platform compatibility. The price of the new combined MPEG/Jaguar card is expected to be under $500.

Atari Still Having Money Troubles

On the down side, Atari Corporation posted their sixth successive loss for the quarter ended 31/3/94. Sales revenue dropped by almost 20% despite Atari's claim that around 70% of their total income came from the Jaguar. The problem with the Jaguar seems to be down to inability to meet demand rather than lack of it. Atari are now obtaining the specialist components from a variety of different sources in an effort to step up production. There is also talk of a second manufacturing plant being brought into use to satisfy demand, but no official confirmation is expected before the Chicago CES.

Read_Me 1st

If your subscription to this magazine has expired with this issue, you will find a renewal form included in this mailing.

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Advertising

There is a limited amount of space for commercial advertising in each issue of *ST Applications*. Contact Nicky Wilson on 0602-455250 for further details and to request a media-pack. Subscribers can place free classified advertisements - see page 57 for details.

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12 issues :	£27.00	£37.00
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Subscription and Order form will be found on page 57.

Overseas Distribution

We no longer use Worldwide Magazines. Overseas readers and retailers should contact us for details of new distribution arrangements.

Disk Mags

These are bi-monthly compilations of the best PD software to come to our attention in the preceding couple of months - not magazines on disk. The next Disk Mag, DMG.41, will be dispatched with issue 42 of *ST Applications*.

'ALL NEW' at Gasteiner

Gasteiner Technologies have announced a 'new for old' deal on their 'All NEW GASTEINER Hard Drives' for the Atari range. If you have a working 20 Mb, 40 Mb or 50Mb hard drive, you can trade it in for a brand new 525 Mb model at a cost of just £499! This offers a saving of £149 over the normal price, making it an ideal opportunity to get that bigger hard drive you've always wanted.

If you don't already own a hard drive, the 'All NEW GASTEINER Hard Drive' range are currently being offered at very competitive prices. All drives come with a one year warranty, 5% tolerance PSU, sleeve-bearing fan, SCSI icon selector switch, front on/off switch, dual SCSI port, formatting and partitioning software and come ready to plug in and go. The range starts off with the 170 Mb model at £299 and the 270 Mb at £379. Middle of the range models consist of the 340Mb at £449 and the 540 Mb at £649. Top of the range models aimed at the professional are the 1080 Mb at £949 and the 1800 Mb at £1349. Prices quoted are for the ST and STE. TT and Falcon owners will be pleased to know that their models are all £50 cheaper! Contact *Gasteiner Technologies*, 126 Fore Street, Upper Edmonton, London N18 2AX; Tel: 081 345 6000; Fax: 081 345 6868.

A Fast Solution!

System Solutions have announced the immediate availability of their high speed file copier *Kobold*. The program works on any ST, STE, TT or Falcon in medium resolution or better. It allows you to copy, move, rename and delete files at previously unheard of speeds (on average about ten times that of TOS!). In addition, you can change file attributes, rename files and folders and format floppy disks right up to 3.3 Mb (if you have the necessary hardware).

Kobold runs under TOS or any of the multi-tasking environments (as a PRG or an ACC) and the use of batch files allows repetitive jobs to be carried out without user intervention. In fact, by using the supplied patch program for TOS, Kobold can replace the Desktop's copy, delete and format functions so that the only difference you will notice is in the speed. In addition, it can create incremental back-ups of your hard drive in virtually no time at all because only changed files are copied. When backing up to another hard drive, a Syquest or a floptical drive, the process takes no more than a few seconds.

Kobold comes complete with an easy to use installation program and a 74 page manual at a cost of £59.95. For further details, contact *System Solutions*, The Desktop Centre, 17-19 Blackwater Street, London SE22 8RS; Tel: 081 693 3355; Fax: 081 693 6936.

HP Chrome Updated

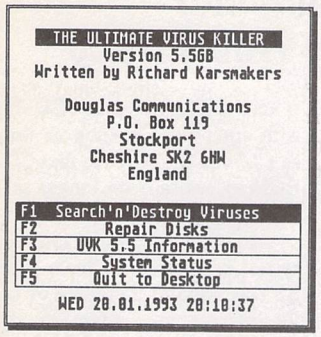
The popular Shareware program *HP Chrome* has recently been updated to v2.5. It is a major upgrade on v1.4 and now supports the printing of Spectrum 512, GIF, TIFF, IMG and RAW files in addition to the Degas, NEO and TNY support offered by its predecessor. All HP Deskjet models are supported, including mono ones provided with the appropriate colour ink cartridges.

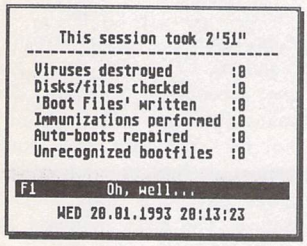
This latest version features a newly designed colour menu which allows simple adjustment of the colour rendering. Printout can be in landscape or portrait format in any one of three quality settings and at any size in any position on the page. You can also view and crop pictures in any ST resolution.

HP Chrome can communicate with GEM-View, enabling unsupported file formats to be loaded. Similarly, files may be easily identified by hooking into Bill Aycock's WHATIS accessory. HP Chrome is available from FaST Club and registration costs just £5. For further information contact *Rufus Developments*, 21 Rowlands Hill, Wimborne, Dorset BH21 2QQ.

Ultimate Virus Killer

Written by Richard Karsmakers





V6 This latest version of UVK has a new easier-to-use user interface, can run as an ACC, and recognises even more viruses and boot-sectors - including the new Bellstein virus.

We always stock the most recent version. For details of upgrades contact: Douglas Communications on 061-456-9587

Features:

* Recognises all known ST viruses, both bootsector and link viruses, and virtually all software that legitimately uses the disk boot sector.
* All data on your disks remains 100% intact!
* Immunizing of disks against all known bootsector viruses.
* Option to repair damaged or destroyed Bios Parameter Blocks.
* Option to write Anti-virus.
* Latest version recognises over 70 viruses and can repair over 710 virus damaged boot-sectors.

With this handy tool, you need not worry about viruses anymore: You can simply use it to de-infect your disks and programs, destroying the virus and leaving all other information intact.

Price: £12.95

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Subscriber Specials

Ultimate Virus Killer 6

Save £4.00

Buy this invaluable virus protection utlity for just £8.95 and save an amazing £4.00. For product specification see our advert elsewhere on this page.

High quality (65% clip) bulk disks with labels
DSDD - £3.50/10
DSHD - £4.50/10

All three offers must expire on 3rd August 1994
Look out for the next set of Subscriber Specials in issue 44

Subscriber Benefits include:

* Exclusive opportunities to make huge savings on software, accessories and hardware
* PD and Shareware disks at 20% discount, from just £1 per disk
* 12 copies of ST Applications, the best Atari magazine anywhere
* Guaranteed delivery to your door every month
* PLUS, you save £6.00 on the cover price of ST Applications

ST Applications: more to *read* than any other ST magazine!

C & P Rossiter

For the best prices on hardware and service, contact the experts.
TOS 1.4, TOS 2, Blitters, memory upgrades, repairs, hard discs, scanners etc.
Repairs start from £25 and are on a 'no-fix no-fee' basis
ST-E memory upgrades start from £18 all others available at the best price

Please phone, write or fax for a price list

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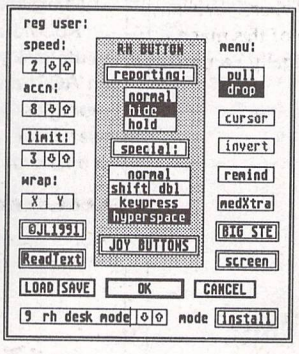
NG15 7LU
☎ (0602) 681870

Mouse Tricks 2



* Mouse Tricks combines many of the functions of existing mouse utilities in a single desk accessory and adds numerous extra functions of its own.
* Mouse Tricks can set up suitable modes of mouse behaviour for particular programs. An optional screen saver is also included.
* Mouse speed can be reduced as well as increased. This allows a cross-hair mouse add-on such as "Tracey" to trace artwork of any size.
* All the functions of Mouse Tricks can be adjusted through a set of easy to follow dialog boxes.
* As many as 20 different settings can be named and saved, and each mode can be selected via a dialog or a user selected keycode.
* Mouse Tricks keeps a list of up to 40 different programs; for each program on the list you can specify both the mode you wish to be installed when a program is run, and the maximum amount of memory initially available to that program.
* Mouse Tricks contains a text reading utility, Read Text, with which you can load, read and switch between as many as eight text files from within any program that allows access to desk accessories.
* Read Text can also be invoked by double-clicking on the desktop icon of the file you want to read, or by pressing a user defined keycode.
* Big STE is a virtual screen utility that uses the STE's video display hardware to provide instantaneous smooth scrolling around virtual large screens of any (feasible) dimensions, with the option of an interlaced display for any screens with double (or greater) the normal screen height.
* Tutorial function to help you learn to use Mouse Tricks.

just £9.95

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New: Big ST now supports TOS1.4 virtual screens, and a serial mouse driver allows the use of PC mice on the ST.

News In Brief

Spotlight Success

Spotlight '94 was held at the Novotel in London at the end of May and was an event dedicated to Atari and Amiga computers. It was jointly organised by Gasteiner Technologies and Europress Enterprise and attracted a respectable 3,200 visitors over the two days. Several exhibitors reported better sales than at the larger consumer events. No dates were given for Spotlight '95.

Summer Show Changes Name And Policy

This month's GameXchange '94 has changed its name at the eleventh hour. It will now be known as Computer Deals '94. Much of the original concept has been retained but the good news is that home computing and small business packages will also feature alongside games. Computer Deals '94 runs from 22nd to 24th July at Olympia in London. Admission costs £7 for adults and £5 for children. A family ticket costing £20 admits two adults and up to three children.

Autumn Show Reverts To Old Name

Future Computing '94, previously known as the Future Entertainment Show, has reverted to its original name in order to avoid possible confusion with News International's Live '94 which takes place during the previous month. After rather disappointing attendance figures at last year's event, Future Publishing have been forced to re-think their strategy. This year's show will be aimed more at the hobbyist than the mainstream consumer and will have special features on CD ROM, music, games and application software. The Future Entertainment Show runs from 26th to 30th October at London's Earls Court 2.

Two More Atari Shows

This month sees two more of the travelling Atari Shows for those of us who take computer seriously. The Bristol Atari Show will be held at the Hilton International Hotel on Saturday 30th July, and the following day the venue will be London's Novotel. Both events run from 10am to 5pm and admission costs £5, or £3 after 2pm. Children under 16 are admitted free if accompanied by an adult. Exhibitors will include Atari Workshop, Best Electronics, Merlin PD, Europress Enterprise, Compo, Titan Designs and CGS Computerbild. Several new products are expected to be ready for the event, there will be three prize draws at each venue and there's something special planned for would-be Jaguar owners!

The Samsung Amiga?

Lots of activity has been going on behind the scenes since Commodore went into voluntary liquidation at the end of April. Several possible buyers have come and gone and the situation remains unresolved as we go to print. Amstrad started off as clear favourite but little has been heard from them for some time now. Nintendo were also mentioned, but perhaps not seriously. A possible buy-out led by Commodore's Chief Executive Officer in The States was recently dismissed out of hand and bets are hinging on Japanese electronics giant Samsung buying the company lock stock and barrel. Whatever happens, it is now looking clear that the Amiga will continue and my prediction of the ST's free run in the low-end computer market was a little optimistic to say the least!

EDOS Bows Out

Support for Software On Demand's EDOS machines was withdrawn several weeks ago. It was a system whereby hundreds of titles were stored on laser disk and downloaded to tape or disk for the customer in the store. The advantage of EDOS was that retailers did not have to tie up money in stock. This allowed low volume formats to be supported cost effectively. Software On Demand blamed the demise of EDOS on lack of support from publishers and a drop in sales volume.

ELSPA Crack Down On Pornography And Piracy

The European Leisure Software Publishers Association (ELSPA) have recently spearheaded seven police raids which have led to criminal investigations into alleged conspiracies to produce and supply illegal CDs. Six people have been arrested in connection with the raids. The haul included pirated games and application software as well as hard core pornographic material.

Although the use of CD-ROM drives is just beginning to catch on as far as the Atari market is concerned, they are in widespread use on the PC and Mac. Putting software on CD used to be a fairly foolproof way of protecting it from pirates as the equipment required to duplicate CDs costs upwards of £4 million! However, a new method has been devised whereby data can be chemically written to special CDs, known as CD-Rs, with equipment costing as little as £2,500. The result is that CD-ROM software is no longer safe from piracy.

Although the pirated material seized is unlikely to have been ST related (and therefore of little interest to readers of this publication), the pornographic material could be viewed on any Atari system equipped with a standard CD-ROM drive and the appropriate software. The material we are talking about is not the 'soft porn' you would expect to find in adult magazines but of a more sinister nature. The disks involved are easily identified by their gold colour and anyone who has come across these recently or has any information regarding their continued distribution, is urged to contact ELSPA's Crime Unit on 0386 833810.

What Is A ROMDISK?

This is the name given to a new hardware device from *Silicon Systems*. It plugs into the cartridge port and behaves in much the same way as any other cartridge, except that it overcomes the usual 128k cartridge limit and holds up to 2 megabytes of programs. The ROMDISK is read only like any other cartridge, and so it is only suitable for storing programs, not data files. The advantages of the ROMDISK are three fold. You save on valuable storage space, programs load in 20% of their normal time and your data cannot accidentally be erased. In addition, special code in the ROMDISK executes before your disk drive and can check floppy disks for possible viruses before they get a chance to enter your system. Users can put their chosen software into the EPROMs using Silicon Systems' ST Eprom Programmer or can send the software on disk(s) to Silicon Systems who will blow the EPROMs for them at a cost of around £10. The 2 Meg ROMDISK (programmed) is available now at a cost of £69.95 (including the EPROMs). Additional blank ROMDISK cartridges for user programming are available at £32.95.

Also new from Silicon Systems is the Auto-mode ROMPORT Expander. This device plugs into the cartridge port and allows software which requires a 'dongle' to be run from the 2 Meg ROMDISK. The dongle plugs into the Auto-mode ROMPORT Expander and is addressed as if it were the sole item attached to the cartridge port. It is primarily intended for use with such programs as Cubase and Pro-24 which could not normally be run from the ROMDISK because there would be nowhere to plug in the dongle. The Auto-mode ROMDISK expander is available now at a cost of £59.95. For more details on either product, contact *Silicon Systems*, 144 Hampton Road West, Hamworth, Middlesex TW13 6BB; Tel: 081 898 4121.

The Spring All Micro Show and Radio Rally

After my impromptu visit to the Computer Shopper Show at the end of March, I was intrigued at the flyer that advertised the above show at the Staffordshire County Show ground. This sounded a bit more like me, lots of different obsolete computer bargains and some of the obscure hardware so beloved of radio amateurs. I was hoping to get away from the slick types of the PC marketplace, and into the realms of the enthusiast. The show ground is a mile or two out of Stafford and is, in effect, a large barn, used for agricultural shows and the premier event for those interested in old motorbikes, the Classic Bike Show. The site has plenty of parking and is pleasantly roomy.

With my £2 admission paid (£1 off with the leaflet) I could see that the large space was fully occupied with all manner of interesting kit from DIY bits and pieces to whole computer systems. The hardware side of things was biassed towards PC's and compatibles but there was plenty to interest those of us with other tastes.

Brand new 20 Mb Rodime SCSI hard drives could be had for £15 while slightly used Quantum 40 Mb drives were £50 or so.

One stall holder with a sense of humour had build an entire PC out of bare PCB's, all held together with insulating tape and string. The drives were taped on top of the power supply in true Heath Robinson fashion. For all of this apparent bodgery, the machine was actually working and displaying a nice SVGA demo on a rather second-hand looking monitor. This enterprising chap was also selling hardware to allow computers to receive satellite weather pictures transmitted by the Met Office. The gadget simply plugged into the serial port, so with a bit of programming could be made to work on an ST.

But what's all this got to do with the ST, I hear you ask. Well not much really, but I rather hoped it would. Strangely there was little or no ST specific ST stuff save for the Goodman PD library where I bought a couple of Falcon disks. 8 Bit Atari enthusiasts were however out in force, taking up four stands, each with plenty of kit and software on show.

The only ST 'bargain' I could find was an STE motherboard with no RAM for £10. It would have been OK for spares, but of doubtful use as a going concern. I was tempted, but eventually convinced myself that I didn't really want it. Elsewhere were £2.50 goodie bags which often contained a 3.5" disk drive, a joystick some motors and a host of other 'interesting' bits and pieces.

All in all the show had an enjoyable amateurish feel to it, with plenty of enthusiasts enjoying browsing through piles of obscure hardware and software. It was a shame that the ST was not well represented as this was the sort of relaxed atmosphere a good show needs. Perhaps the situation will change for the Autumn event as the venue is a very good one indeed. Perhaps the organisers of the Le'ST get Serious shows could take up some space.

I, for one, would certainly attend. I might even bring my cheque book.

Graham Curtis

Professional Publishing On Atari Systems

'Desktop Publishing For The Small Printer' from *Nexus Publishing* introduces the traditional printer to Desktop Publishing using Atari based systems. It sets out to break down the barriers which prevent the traditional printer (who still uses scissors and paste) from exploring the world of Desktop Publishing. It was written by Dave Howell, a regular contributor to ST Applications, who has been using his ST for DTP work as a service to small printers in his locality for some years.

The book is A5 in size, ringbound, runs to 152 pages and costs £14.95. It starts off with a crash course in computers and moves on to take a look at the various Atari models available along with advice on their suitability for particular tasks. It then progresses to discuss the various graphics packages available on the ST and makes recommendations based upon their suitability for the differing qualities of output which may be required. Top end and low end systems are examined along with their relative pricing and once again their suitability for the needs of different categories of printers. The book concludes with a glossary and a list of contact names and addresses.

Although 'Desktop Publishing For The Small Printer' is aimed primarily at the small printer, it contains a substantial amount of information which will also be of use to Atari owners who are new to the publishing business. An information brochure on the book is available on request. Contact *Nexus Publishing*, Flat 3, Wednesbury Road, Walsall, West Midlands WS1 4JN; Tel: 0922 616358.

MEMS '94

This year's *Midi and Electronic Music Show* (MEMS) has been hailed a great success by the organisers. Tim Collins, managing director of Westminster Exhibitors, said, "Exhibitors talked about the real buzz around the show and remarked that the the show had finally 'arrived'." He added, "It has taken five years of extremely hard work to reach this stage and we are very proud of the event."

The exhibitors seemed to be equally enthusiastic. Yamaha's Jim Corbett said, "As I said last year and the year before, this is the single most important hi-tech event we do - of course we'll be back!" Jane Pendry of Steinberg's UK distributors Harman Audio added, "Everybody is delighted by the event. We took it seriously and are really pleased we did."

MEMS is the UK's biggest music event, strategically placed in the calendar so that new products unveiled at the NAMM and Frankfurt events can make their debut in the UK just a matter of weeks later. It has a strong Atari presence because of the number of professional musicians who use the ST. This year's big names from the Atari world who exhibited at MEMS included Compo, System Solutions and Harman Audio. Dates for MEMS '95 have yet to be announced.

Forever Blowing Bubbles...

Think printing and you think inkjet - Peter Crush does anyway. He's been looking at the smaller, lighter ones available and weighing up their suitability for ST usage.

With every notable printer manufacturer now producing inkjet printers, the days of the dot-matrix machine really seem numbered, certainly in the personal user field. If you run a business, dot-matrix is still a good way to produce labels and multi-copy invoices, delivery notes etc., but for home use you really can't beat an inkjet. They are quieter, cheap to run and produce near laser quality output. The DeskJet range is probably the most popular inkjet printer among ST users, and they're so well known I don't need to prattle on about them here. But good as they are, DeskJets are not the only option, and there are quite a number of other models to chose from.

The monochrome personal inkjet market splits roughly into three. There are the HP printers and their clones from Triumph Adler and Olivetti, Canon Bubblejets and cloned brothers from Star and Brother, and out on a little limb of its own is the new Epson, which is currently without any copies. Here follows a mini round-up of three rather cute compact inkjet printers which represent what's available in each of these categories.

Baby Brother

The Brother HJ100i Inkjet Printer

Although HP were the first in the inkjet stakes, Canon caused quite a stir when they released their Bubblejet BJ-10 printer with its tiny size, portability and crisp output. A number of "clone" versions of this 360 dots per inch machine soon appeared, including Brother's first effort, the HJ100. This has now been superseded by the newer HJ100i, which despite its name is still a printer and not a souped-up saloon car. The HJ100i looks very much like the original Canon Bubblejet and other clone versions, and it's very compact, appearing more like a small portable laptop computer than a printer. A set of multi-function control buttons are on the top panel, a standard Centronics parallel port is sited on the right hand edge, and a low voltage power lead plugs into the left hand side of the printer from a separate mains transformer unit. Just as with the Canon Bubblejet, you can run the printer from an optional nicad powerpack which fits inside the little machine, enabling you to escape from the National Grid and happily print away alfresco, if you have a portable computer that is.

Character spacing and Letter/Draft quality can be selected via the switches on the top panel, but choosing the font you require has to be done via your software. This is no problem if you have a WP like Protext, where fonts can be chosen from the style menu. With a "graphical" WP like Write ON/That's Write and Redacteur you're not limited by the Brother's few typefaces, but can use the numerous fonts available for these programs. Likewise, if you are printing DTP documents from software such as Timeworks or PageStream, any text is created as a bit image and bypasses the printer's font limitations. Although the Brother's printing speed is adequate rather than fast, its output quality is very good indeed.

With many competitors about, the HJ100i needs features to set it apart, and supplies these with its three printer emulation modes, its ease of operation and the fact it's often on sale for well under £200. Thanks to its super print quality, quietness, and a very friendly nature, this little Brother has much to recommend it. If you are looking for something a bit bigger, check out the newer Brother HJ-400 inkjet too.

Pretend Printing

The HJ100i is a deceptive little machine: it can impersonate three different types of printer! Under its cover are a set of DIP switches, and by adjusting these, your diminutive Brother can be either an IBM Proprinter, a Canon Bubblejet or an Epson 24-pin.

Proprinter mode has two fonts in the form of the Courier and Prestige Elite typefaces, and these are printable at 10, 12, and 17 characters per inch plus proportional spacing. Canon Mode has the Courier typeface only, in the same range of cpi spacing as Proprinter mode, plus the neater looking proportional spacing. Epson Mode has Roman, Sans Serif and Draft typefaces, at 10, 12, 15, 17 and 20 cpi, plus proportional spacing too.

This versatility ensures that your "serious" software will be usable with the HJ100i, as most programs ought to have drivers to match at least one of its three modes.

Product:.....BROTHER HJ100i INKJET
Price:.....Around £200 in the shops
From:.....Brother
Tel:.....061 330 6531

Pros:

- ✓ Good print quality
- ✓ Easy to use, cheap to buy

Cons:

- ✗ Only a few built-in fonts

Piezo to go

Epson Stylus 800 Inkjet Printer

Does Epson's new baby make HP a has-bean, or stop Canon's can-can? With inkjets we've got used to HP DeskJets and Canon Bubblejets, but missing off this list of famous makers is perhaps the biggest name of all, Epson. Although well known for their dot-matrix and laser printers, and inventors of the universally used control protocol used to drive many printing devices, Epson have never produced a mass market inkjet printer. Until recently that is, as they have now launched their very own challenger for the inkjet crown, the Stylus 800 Inkjet Printer.

Epson have designed the Stylus 800 printer to look like their current range of dot matrix machines, and it's finished in a light grey coloured plastic. Whilst not a tiny machine like the mini Bubblejet printers, neither is it bigger like the rather chunky DeskJets. It's an in-between size, more like a typical compact dot-matrix printer. The IEC kettle-type mains cable plugs into the rear of the machine, as does a standard parallel printer cable to connect it to your ST. The power switch is at the front, as are the control buttons. The control panel is neatly styled, and, unlike most, is particularly easy to use. A set of green LEDs light up to indicate what mode the printer is in, what font is selected, etc. An automatic sheetfeeder is built into the Stylus 800, resembling the one used in HP's DeskJet and accommodating 100 sheets of paper. Single sheets of paper can be inserted manually at the rear of the printer without interfering with those in the auto sheetfeeder, and envelopes can be printed similarly.

What about the output?

After all the hype about the "new" method of printing used by the Stylus 800, the bottom line is: how good does the output actually look? Somewhat disappointingly, printed results are much the same as any other inkjet, and there is not the dramatic increase in resolution or quality that you might expect after reading the literature from Epson. However, the output is very good, and the criticisms raised shows how quickly we get used to results not long ago hailed as first-rate. Although the letters formed by the Stylus 800 are very detailed and finely drawn, if you look closely you can sometimes see the little dots, and the kind of paper you use can be critical here. By contrast, output from other 360dpi machines such as the Canon Bubblejet and clones appears a little more solid and definite, with less sign of the little ink spots which make up the image. The italics version of text on the Epson machine is also less italicized, and doesn't therefore look very different from plain text.

Verdict

The Stylus 800 has a long two-year warranty, but it cannot match the three-year guarantee offered by arch rival Hewlett Packard for their DeskJet printers, which in my opinion still reign supreme for ST use generally. Points in favour of the Stylus 800 however are its great ease of operation, a good inbuilt fonts selection and its attractive street price, which is much lower than the officially quoted one. And the Epson's general compatibility with existing 24-pin drivers means that it's usable with a large selection of software, even though there is no support as yet for its scalable fonts. Overall, the Stylus 800 is a good little printer, and represents a promising debut from Epson into the inkjet arena, and further models in the range have already appeared.

Product:.....Epson Stylus 800 Inkjet Printer
Price:.....About £200 in the shops
From:.....Epson UK Ltd
Tel:.....0442 61144

Pros:

✓ Easy to operate
✓ Lots of inbuilt fonts

Cons:

✘ Print quality

What It Prints

If you want to print text, Epson's Stylus 800 has five bitmap fonts built in. These are Roman, Sans Serif, Courier, Prestige and Script, and they can all be printed at 10 or 12 characters per inch. The Courier font can also be printed at 15cpi, and the Roman and Sans Serif fonts can be printed with the better-looking proportional spacing if you wish. Many Epson printer drivers for existing 24-pin printers should enable access to some of these features from some wordprocessing software, but they can be selected manually from the printer control panel if your WP doesn't override these.

As a bonus, the Stylus 800 can also print Scalable fonts. There are four such vector fonts built in, all printable at sizes between 8 and 32 points, there being 72 points to the inch. To obtain access to this feature you need wordprocessing software with the correct printer driver for the Stylus 800, unlikely to be found at present (unless you have Protext 6) because of the comparative newness of this Epson model. However, the more supportive software houses will provide custom drivers for the new Epson in due course. Alternatively, you could try to program your own control codes into your software if you are a bit of a techie.

Any text can be embellished by the application of a good range of styles available within the Stylus 800, such as double strike, emphasised, italic, double width, double height, outline, shadow, strike through, overscoring and underlining. The printer has the usual 14 International character sets, plus a Legal set and five graphics character sets also built in and selectable.

When it comes to graphics, if you have a program that includes an Epson 9 or 24-pin printer driver, you should be able to obtain reasonable quality output. For instance, although PageStream 2 has an Epson 24-pin driver which worked OK with the Stylus 800, it only delivered a less detailed resolution of 180dpi instead of the 360dpi the new Epson is capable of.

How It Prints

The Stylus 800 utilizes a different form of printing from the inkjet printers we are used to (such as the HP DeskJets or the Canon Bubblejets) which use thermal print-heads. Epson's new machine is equipped with a print-head actuated by piezo technology. These special crystal materials expand slightly when an electric current is applied to them, and this movement is harnessed to pump out a little blob of ink from a tiny nozzle. The method is not new, but has traditionally been limited to expensive industrial uses. The Stylus 800 has 48 such crystal pumps in its miniature print-head, which Epson claim is quite an achievement for a low-cost personal printer. Whereas the familiar thermal inkjet machines combine the print-head with the ink reservoir into one throw-away unit, Epson's print-head stays permanently in the printer, and all you have to replace is the ink cartridge, which costs about a tenner.

This "green" approach may find favour, as inkjet users already seem to resent dumping their old cartridges judging by the interest in the ink re-fill kits that abound. It should also work out cheaper to run the Stylus 800, as all you are buying is the ink, and not the whole print-head. Multi-colour printing (possible with mono DeskJets and Bubblejets by swapping cartridges and overprinting the same page with a series of different colour inks) would be impractical with the Stylus 800 in view of the residue of ink left in the print-head.

Mobile DJ
Hewlett Packard Portable

Hewlett Packard's DeskJet printers are probably the most popular inkjet machines for use with the ST. Combining excellent quality of printed output with reliability, sturdiness of construction and compatibility with most ST software, they make an almost unbeatable choice for ST owners seeking a printer. The other main inkjet contender is the Canon Bubblejet series, which also comes in a range of "clone" versions from Brother and Star. Bubblejet machines have the advantage of being much smaller than the DeskJet, and they're portable - you can carry one in a briefcase and use it in the field with its nicad battery. HP have been very active in bringing out new versions of the DeskJet, including the latest colour versions, but have been strangely quiet on the portable front. So after all these years it was quite a surprise when HP released a portable model at long last! This first portable model from HP is simply called The DeskJet Portable; unusually it has no model number. There has recently been a second version of it, the DeskJet 310, which can convert to colour printing. More of this in another article on colour printers, but the first version is still available (I spotted them in Dixons!). Expect to pick one up for less than the newer version.

As you might imagine, the new portable DeskJet is much tinier than its chunky big brothers, but instead of the usual HP creamy grey colour, it's a rather smart matt black affair. Visually, it's attractive in a utilitarian sort of way, with modern looking illuminated control buttons and a dusting of coloured LEDs which give it a space age look when you switch on. The shape of the new DeskJet is rather like a medium sized radio, or a larger version of a house brick, and it stands very steadily on its base owing to a praiseworthy, very solid construction.

In use, setting up the portable DeskJet is easy: just connect it to your ST via the printer cable. Unusually, HP supply a cable with the machine - you normally have to buy your own lead. Their cable is a specially thin, lightweight one, thus ideal for its intended portable use. If you have the optional nicad battery there is no need for any other attachments, otherwise plug in the supplied PSU unit. This connects next to where the printer cable plugs in, on the right hand side of the DeskJet. Switch on and a plethora of little green LEDs light up, and if you push a sheet of paper into a slot at the rear of the machine, it automatically reels in, the paper advancing to the correct position ready for printing.

So what's the verdict on the new machine? HP have obviously targeted this printer on the mobile market, and for use with the portable PCs much used by today's mobile sales personnel and yuppie business executives. Here it scores immediately by enabling the instant production of sales figures, price quotations, etc., to impress the client. However, the average Atari owner is not a very mobile creature when sat at the ST, and although the portable DeskJet is a desirable piece of kit, the standard big DeskJet is probably more sensible unless you are really pushed for space. And bear in mind you will have to pay extra for the sheet feeder with the portable machine, which comes as standard with the normal DeskJet. If however Atari were to get their act together and market the portable ST Book properly, HP's new baby would be its perfect travelling companion.

Product:.....HP Portable DeskJet
Price:.....Under £200 if you shop around
From:.....Hewlett Packard
Tel.....0344 369222

Pros:
✓ Quiet and quick
✓ Lovely output

Cons:
✘ Extras bring the cost up

HP Shrunk The Printer

When you buy a portable DeskJet you get the printer, the manual, a printer lead, the inkjet cartridge and the PSU included as standard equipment. Here are the tiny technical details:

Size: 310mm (13") wide, 90mm (3.5") high, 240mm (9.5") deep.
Weight: 2kg (4.4lb) printer only, 3.4kg (7.5lb) with sheet feeder
Graphic resolution: 300dpi Letter Quality, 150 x 300 dpi Draft
Speed: 167cps at 10cpi Draft, 240cps Letter Quality printing
Printer protocol: HP PCL Level 3 with extensions
Fonts: default Courier, CG Times, Letter Gothic & Univers via software
Media: prints on A4, Executive, US Letter & Legal, and transparencies
I/O Interface: Centronics parallel port
Buffer size: 48Kbyte receive buffer
Power: Supplied with UK PSU and plug, optional Nicad battery.

If you want some extra goodies, HP also supply a good range of optional accessories for the printer. The HP sheetfeeder, which copes with 40 pages, costs £81, the clip-in nicad battery is £39, and if you want to look really smart, the executive-style leather-look carry case will set you back another £81. All figures quoted are HP's recommended retail prices including VAT, but expect to see them on sale for less.

Clever Engineering

Hewlett Packard have not only managed to compress the bigger DeskJet down to a tiny size, they've built in a few innovations too. Take the DIP switches for instance, those miniature switches used to select fonts, character sets etc. The portable DeskJet didn't appear to have any, but a quick read of the Manual reveals that these options are in fact user-adjustable in a very novel way. Putting the printer into a special "Settings" mode and lifting up the printer's top cover exposes a pointing Arrow on the print-head cartridge. A panel fixed behind the head carries printed legends for each of the many printer settings, and you can advance the head with control buttons to the option you want to change. With the head in position, other buttons raise or lower the print-head so that the Arrow points to the desired setting. This provides an easy, original and rather fun way to set up the printer, and is more convenient than fiddling about with those annoying tiny DIP switches usually encountered.

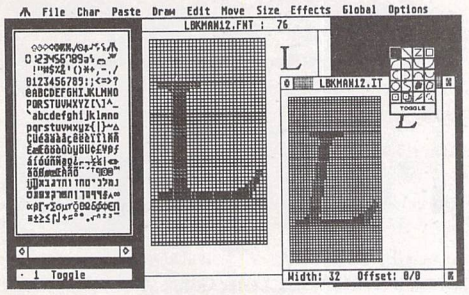
Time For Some Printing

Printing from the ST was trouble-free with various software tried, and the DeskJet was very quiet in use, being probably amongst the quietest inkjets I have ever tested. It's pretty fast in use too, taking about forty seconds to print a page of text from the Desktop, using ReadText (the textfile viewer/printer built into Mouse Tricks 2). This produced good clear results in the default Courier typeface.

To try the other internal fonts I used the Protext WP with its DeskJet 500 driver, which seemed compatible with the new machine. This gave more attractive printouts with both the CG Times and Letter Gothic fonts, and took 38 seconds in Draft Quality, and a hardly any slower 41 seconds in Letter Quality. The Univers typeface built into the printer was not accessible from within the Protext driver used, but this is now implemented by Arnor with specific drivers for the new DeskJets in Protext 6. If you're a bit of a techie-type, the excellent manual accompanying the DeskJet explains how to send the correct escape codes to the printer to control it.

To test the baby HP with graphics output, a PageStream DTP document was used, and I tried both 150dpi and 300dpi output. The 150dpi page took two minutes forty-five seconds to print, but the first seventy seconds of this time was taken up with PageStream creating the bit image prior to actually sending it to the printer. At 300 dpi, a more detailed rendering of the page took a reasonable seven minutes forty-five seconds, of which the first two and a half minutes was taken up with creating the page's bit-image.

Fontkit Plus 4.1



Price: £24.95
Upgrade from version 4.0:
Return master disk No. 1 (only)
plus upgrade fee of £3.95

Supplementary Disk

The Fontkit Plus Supplementary Disk contains text files which were omitted from the printed, along with fonts, drivers, and text files which could not be fitted onto the main program disks. Additional contributions such as new drivers or text files are always welcome.

appendix.e - Information and source code for using ST screen fonts or GEM fonts in your own programs.
cyrillic - Cyrillic fonts and tables.
djfonts - 24-point Bookman Deskjet 500 font.
gfa - GFA Basic code for displaying fonts.
gst - Detailed information on the GST font format
pdrivers - Fontswitch printer drivers
protext - Protext drivers and information files
twrite - Screen fonts and pseudo-fonts
for Deskjet 500 and Epson 24-pin printers
gemfonts - GEM fonts
info - Information files

Cost £1.25

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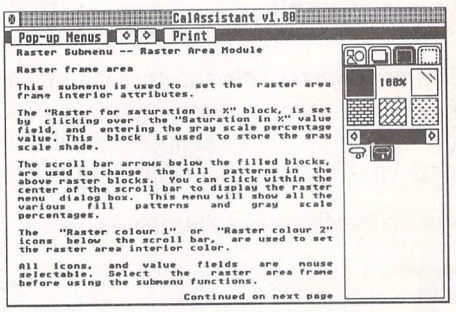
Cal Assistant

The Online Help Companion for *Calamus 1.09n*

£19.95
Fully inclusive.

Also available:
PageAssistant
for PageStream 2
just £29.95



- CalAssistant is an accessory program that runs on top of the Calamus software providing online help for each function.
- Includes a 40 page manual packed with tutorials and much, much more.
- Printer drivers included for use with the CalAssistant print command. Send the online help text to printer for hardcopy reference.
- Text, icons and pictures are used to illustrate, explain, and give tips on functions step-by-step.
- Includes complete Helvetica font set (Regular, Italic, Bold, BoldItalic), and requires just 145K of memory.
- Supports pop-up overlapping menus, monochrome and moniterm monitors, and virtual screen drivers such as MonSTEr and BigScreen.

CalAssistant SL - £29.95

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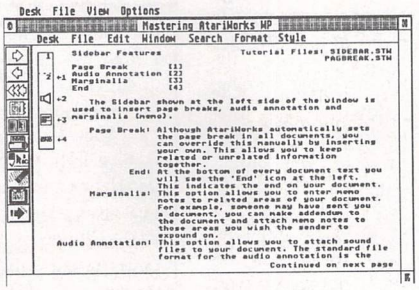
Mastering AtariWorks

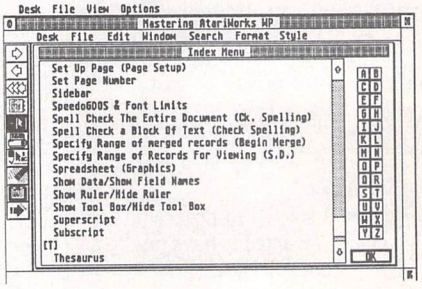
The Hypertext Personal Guide for AtariWorks that offers quick referencing to all commands with concise screen summaries and tutorials, including tips and tricks.

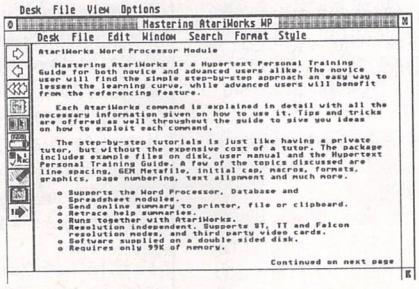
Mastering AtariWorks is ideal for both novice and advanced users alike. Novice users will find the simple step-by-step approach an easy way to lessen the learning curve, while advanced users will benefit from the referencing feature.

Each command is explained in detail with all of the necessary information given on how to use it correctly. Tips and tricks are offered throughout the guide to give you ideas on how to exploit each command to its fullest.

Just a few of the topics covered by Mastering AtariWorks are line spacing, GEM Metafiles, drop capitals, macros, page numbering, reporting, charting, calculations, and much more.







Features:

- ☐ Send online summary to printer for hardcopy reference.
- ☐ Runs alongside AtariWorks.
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- ☐ Requires Hard Drive or HD floppy, and uses just 99K of RAM.
- ☐ Massive collection of example AtariWorks documents and tutorial files.
- ☐ 52 page printed manual.

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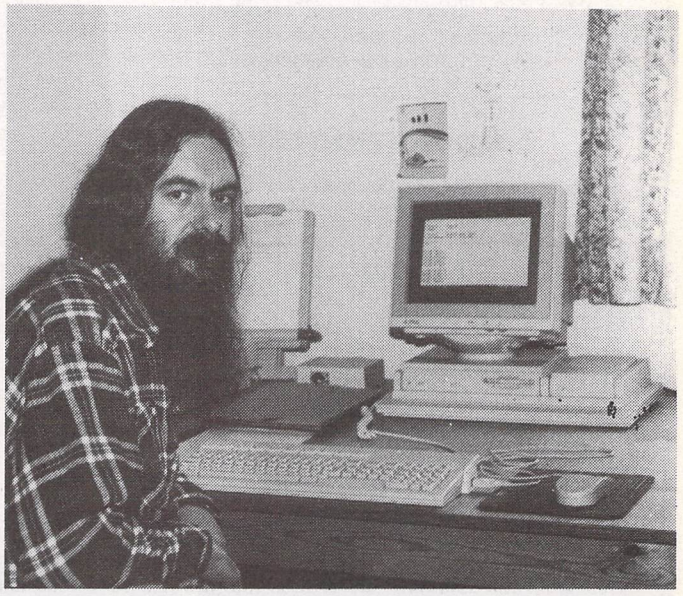
PROFILE

Jeremy Hughes

Dave Howell

Jeremy Hughes needs no introduction from me. Responsible for some of the most useful and innovative software packages on the Atari, Jeremy has made a reputation for himself for producing quality software at an affordable price.



Jeremy in his programming den.

The interview took place at his home in Oxford which is his base of operations. Tucked away in a small room at the top of his house is the Atari den. Here he has a TT as well as a Falcon. While I was there the Falcon was running a slide show program (imagecopy 3) with some very impressive images in 256 colours. I asked Jeremy if he could describe his early involvement with Atari.

Beginnings

"I was originally writing a thesis in the area of Biblical studies. I needed a word processor to put that together and chose a 520 ST. At the time the choice was between the 520 and the Amstrad PCW. The 520 won because of its user interface and its good display.

"I also bought it on the recommendation of a friend as I had no previous computer experience. This was in 1986. So STs were quite new. I think the 1040 STs had just come out. I went for the 520 as it was cheaper. It had TOS on disk rather than in ROM so it had only 256K of usable memory. Fortunately the word processor that I got with it was a PC/UNIX style word processor. It had a non-GEM interface but it worked in a low memory situation.

"I suppose I started to program partly because I wanted to have my own Hebrew font that I could print. I initially designed the characters on graph paper but I decided that it would be easier if I had a program to do this for me."

The use that Jeremy put his first computer to was very specialised. I asked him if he had this application for the computer in mind when he bought it or did this come later on.

"I had a limited amount of money. The only machines that I could have afforded were the Amstrad PCW and the ST. This was even before Amstrad brought out their cheap PCs. I talked to someone with a PC who had worked out their own system for doing Hebrew. I think Macs could do it but they were over £2,000. This was before Signum as well, so I couldn't use that either.

"I also got interested in programming. I started off with ST BASIC and found that frustrating. I bought a copy of GST C and then Lattice C. It was obvious that C was the language to program in."

Early Programs

This was how the first of Jeremy's programs came to life. I asked him then, what prompted him to extend the program which eventually became the Fontkit we know today.

"I continuously wanted better Hebrew fonts. The initial font that I had was a 9-pin dot matrix font. I made contact with the ST Club at the end of '86 when I saw an advert that they had put into the mainstream magazines. I bought some PD software off them and offered my font program which they were interested in putting into their catalogue.

"I think that I found programming an interesting occupation. The logical approach to programming and breaking down a task into chunks which could be put together into a useful program was something that interested me. The logical challenge was the same as the logical challenge that I got out of studying Biblical Hebrew."

Jeremy also teaches Hebrew at Oxford University. His two occupations are very different. I asked him if this was a help to him as he could get away from his programming and do something else entirely. I also asked if there were any areas of overlap with computing and his teaching.

"There isn't a great deal of overlap, I find that it is enjoyable to be able to do two different things and to be able to step back from both of them and do something else. I also find with programming that it sometimes helps to shelve a problem or just leave it and think about it later. The solution that you ultimately think about is quite likely to be better than the one you would get if you sat down for six hours solidly and just thought about it."

I asked Jeremy if he actually imposed any kind of regime on himself to get the programs finished. As he is now programming commercial software, does he now feel obligated to the users to have the next up-grade out within a certain time span?

"Yes I suppose I set targets that I aim for, to have something out in a particular point in time. But I think it is more important to have it out when it is ready. I wouldn't be happy with software being released which didn't seem to be finished."

I also asked if the fact that he works alone is a help to him or does he feel a little isolated?

"I have not had any experience of working in a programming team but I do enjoy the ability to be totally in control of a program. I get feedback from beta testers, what they would like to see. I also discus program development with Paul Glover"

Fontkit

The initial software that Jeremy had written was in the Public Domain. I asked him if it became immediately obvious that there was a market for this type of program, or was it the case that the prprogramhad a steady growth in users?

"I immediately got feedback from a small group of people who had bought the program who either had problems that they wanted me to look at or had suggestions that they would like me to take up. It was a kind of semi-shareware situation where I offered people the option of voluntary registration to get a printed manual. The number of people who responded to that was very small, perhaps ten to fifteen registered users.

"Initially Fontkit edited downloadable printer fonts and screen

fonts; GEM fonts were not really used much in the early days of the ST because GDOS didn't appear until about 1988. When GDOS appeared I put in the work to edit GEM fonts. After I put in quite a number of hours to do that, I discussed it with Paul and he said that the ST Club was interested in marketing commercial software and suggested Fontkit, or Fontkit Plus as it then became, becoming a commercial program.

"I think both of us wanted to market it fairly cheaply so that there wasn't this break with the PD ideal. That was how Fontkit Plus v1 originated and sold probably more copies in the first week than all of the registered users I had got in the previous year or so."

Imagecopy

Fontkit was out and selling well. I asked Jeremy what prompted his next program. Was there something that he already had in mind or was his next project suggested by someone?

"I spent a lot of time working on Fontkit, and Fontkit developed into a suite of programs including various font conversion programs. I suppose the next program that I did was Imagecopy, which developed from one of the small utilities that came with Fontkit. This was a kind of screen grabbing program that grabbed characters from the screen, and saved then as GEM fonts which could then be edited.

"When writing Fontkit manuals I was unhappy with the screen grabbers that were available at the time. There was an accessory screen grabber but of course you couldn't use this to grab dialogue boxes. There were some programs that allowed you to grab dialogue boxes but this involved saving the whole screen. So I had a personal need for a screen grabbing program. This developed into Imagecopy. Imagecopy v1 was really a general purpose image utility. But there was an obvious link between Imagecopy and Fontkit as they are both bitmapped graphics programs.

"I think Fontkit had developed to the point where it did everything that I felt it needed to - this was by version 4. If I was going to continue then a vector font editor would be the next step. But there were vector font editors around that were reasonably good so I didn't pursue that.

"Imagecopy was always intended to print in colour. Imagecopy v1 had a colour option greyed out. Imagecopy progressed to version 1.5 which had colour and version 2 that had vastly better colour printing."

All of the software that Jeremy has written has been to fill a niche that is lacking in some way. So far he has not written a program that has been another version of an existing area. For instance he decided not to write a vector font editor or another word processor as there were many available already. I asked him if there was any area that already has software for it that he thinks he could do better than the existing software.

"I suppose if there are no programs or there are programs but they aren't very good then to me that's the same thing. There is a need for a program that works properly. But if there is a good program out there that does something then I don't see the point in writing another program that does the same thing."

User Interfaces

Following on from that I asked Jeremy what he thought of the trend towards the icon driven interface. A great deal of the software that we use in the UK has been imported from Germany. Many of the programs are driven by a forest of icons, Calamus being the obvious example. I also asked if he liked this prevalence towards the icon interface.

"I think I see software in a similar way to the average user, in that the user interface is a very important part of the software. The code that is behind these interfaces is not transparent. One can produce the same result in many different ways. But it matters to me as a user that it does what I need in a way that I am comfortable with. I think that this should be intuitive and aesthetic. I don't like using programs where the user interface makes me uncomfortable.

"I design a front end that I personally feel comfortable with. If I had a choice between Protext or Calamus for instance, I think I would prefer Calamus. I think that possibly Calamus did go over the top with its icons though.

"I try to be fairly consistent, but on the other hand the user interfaces evolve. The use of selector boxes or pop-up dialogue boxes are all useful and helpful features of a user interface which I have introduced into my programs. There is a difference between Fontkit which doesn't have so many of these options, and Textstyle and Imagecopy which do.

"One of the aspects of ST software at the moment is that on the one hand there is a proliferation of user interfaces which are all different, which causes problems for the user as there isn't any overall consistency and on the other hand there is some kind of convergence on certain features that are implemented in the same way."

As we were on the subject of front ends and the icon environments that we all use, I asked Jeremy about the plethora of new operating environments that we have now in the shape of a number of new multi-tasking systems.

"I think that MultiTOS was a brilliant idea and it was really good that Atari put the effort into producing it, but they haven't continued to work on it and release a version of MultiTOS that everyone is happy with. The proliferation of multi-tasking environments on the one hand is a good thing as it leads to progress. But on the other hand it can cause problems with compatibility."

One thing that was mentioned in the HiSoft interview was that multi-tasking requires you to modify your work practices to a large degree. We are all used to completing our work in a linear fashion, one task after the next. With a multi-tasking environment this becomes a thing of the past as you can do a number of tasks simultaneously. Many users will use MultiTOS, etc., as a task switcher and nothing more. This is a shame as it can offer the user a great deal more. I wondered if Jeremy found this new way of working attractive and whether multi-tasking as such was a help to him.

"I don't use MultiTOS, I have some compatibility problems with programs that I use and programming environments that I use. Specifically my favourite editor and shell doesn't work under MultiTOS. Certainly it would be useful to be editing something and to have a program compiling in the background. I suppose the problem with Muti-TOS is ideally it wants an 030 processor to run on, certainly something faster than the standard ST. I would imagine that 95% of users have standard STs instead of Falcons or TT's."

Languages

We then moved on to talk about the language that Jeremy uses to create his programs. Most users have at one time or another tried programming themselves. This is usually with BASIC. Jeremy settled on C. I asked him his reasons for this choice.

"The version of BASIC that came with my first machine was buggy and quite a poor version of BASIC, and also BASIC itself has serious limitations with what you can do, how you can structure the programs and how complex the programs can become before they become too complex to handle.

"I got some books on programming - Oxford is a good place to get hold of books. It was obvious that most programmers were using C and I liked the look of C. It looked a logical and clean and elegant way of programming."

C seems to have become king with programmers no matter which platform they are writing for. I asked why this was. There are alternatives, but C seems to have become the dominant language for commercial software development.

"The alternatives to C are BASIC, PASCAL and Modula 2 I can't think of any other general purpose alternatives to C, except for assembly language of course. People do of course write large programs in assembly language, but it is not something that I have ever wished to do. I use assembly language for small programs that have to be fast. C allows you to do anything that you could do in assembler, but obviously not as efficiently. C also allows you to integrate modules written in assembly language with modules written in C.

"As C is a structured language, a task can be broken down into its different functions. Many of the features that are provided as built-in parts of the language in BASIC are simply functions in C. C encourages you to write your own functions. These operate as extensions to the C language, so you can develop your own tool kit of functions that you can then re-use in a wide range of programs.

"I use the latest version of Lattice C, and a source debugger X-Debug, which is as far as I know the only source level debugger for Lattice C. I think it is a shame that HiSoft didn't take X-Debug and bundle it with Lattice C because it is one of the most obvious tools that is missing from Lattice C."

I then asked if he had problems when he began to learn the language. He seems to have taken to programming and the C language with ease, but was it like that when he started?

"Looking back, the early programs look poorly written to me now. I now have a much better knowledge of C than I did then. With anything you do there is a learning period. Probably with programming that continues. As you program you learn better ways of doing things. There were not many tutorials when I was learning C, but

there were books, so basically I worked with that. I think that most programmers probably learn from books and tutorials, or other peopl's code, rather than going to formal classes."

I then asked Jeremy what he would recommend for the user who has looked at the programming languages that are available but isn't sure which one to buy. Would he recommend the one he uses for all situations or others depending on the application that the user wants to write?

"For anyone who wants to do a bit of programming, there are much better versions of BASIC around than there were when I started. But for anyone who wants to write a large program I would recommend that they use C rather than assembly language because with C it is possible to do something in five minutes that would take an hour in 'assembler'. Also use C rather than BASIC as BASIC isn't well suited to writing large programs.

"I think that Lattice is a very good professional programming environment and programming language. It would be nice to have Lattice C++ but HiSoft have never given any indication that they will do that as the size of the market for ST programs isn't large enough to make it commercially viable."

Other Platforms

Following on from that I asked if this lack of development was a frustration when you look at what is available on the PC for instance. I also asked if he had ever felt that he wanted to program outside of the Atari.

"Not so far. I have thought of programming for PCs in the past but have been put off by the limitations of the operating system and the memory limitations, particularly the graphics as you have to work within 640K. This is a serious problem which I prefer not to be involved with, but PCs are overcoming that.

"I think to program in a whole new environment would mean learning the new operating system. I know how Atari machines work. I haven't got that knowledge for the PC so that would be an initial barrier that would have to be looked at."

I then asked if he had ever thought of porting some of his own programs to other platforms.

"The idea of transferring programs to PCs or Macs is an attractive idea for programmers as it extends their market. It possibly makes more sense with larger programs such as Calamus or word processors or graphics programs. But of course they are then in competition with other programs that already exist on those platforms. These have a user base and a recognised place in the market."

Falcon

I asked Jeremy if he felt let down by Atari itself from a hardware point of view. We have the Falcon but since the Jaguar is just about with us the computing side seems to be on indefinite hold. I asked if he felt frustrated that the Atari hadn't developed as fast as machines on other platforms. Does he look at other machines and ask why can't the Atari do that?

"Well I think Atari have some very nice hardware, and the Falcon is a very nice machine. Obviously I am concerned that Atari should make and sell computers because writing programs and selling programs depends on having users to buy them. On the one hand if Atari did stop producing computers the Atari market isn't going to disappear overnight, but on the other hand it is obviously going to shrink.

"I enjoy writing software for Atari computers so I would like to see Atari continue to make and develop computers. It would be nice if they did produce an 040 machine in the future but there are no obvious signs that they will."

Staying with the Falcon, I said that I thought that Atari had mishandled the marketing of the Falcon. They made a great song and dance over the fact that the Falcon 030 was the first in a new line of machines. What everyone therefore did was to decide that they would wait until the next machine came out which would be more powerful, etc., and buy that. Of course this may well not happen if Atari do not make the required return on their investment in the first generation Falcon.

"I think that most people would say that Atari have marketed the Falcon badly. I know that Atari put in a lot of work in developing Falcon, and they were very positive in their relationship with programmers. Saying things from the start about there being a re-cased machine which would be available shortly was a bad move. The adverts that they produced were generally considered to be rather poor and unintelligible. And the price of the Falcons has been such that it doesn't compare favourably with PCs and Macs even though it is more powerful than similarly priced PCs and Macs.

"I suppose the initial success of the ST was because here was a machine with a good specification and a good user interface that was cheap. The problem with all of the computers that they have brought out since, the TT and the Falcon, is that though they are very nice machines they weren't cheap. The Falcon was a better machine but it still wasn't cheap enough."

I then asked what he thought of the Falcon from a programmer's point of view. Is the DSP chip really the gift to programmers that I had been told it was by the press?

"Programming the DSP is not the same as programming the 68000 and the 68030. You have to program it in DSP assembler which programmers have to learn. My impression is that learning to program in DSP assembler involves a fair amount of time and effort. The problem lies in whether there are enough Falcon owners to justify putting in the time and effort to use the DSP."

I then asked if the DSP chip was a very different chip to program. If someone was coming from 68000 programming would they find the DSP chip that much different?

"I think so. I haven't done any DSP programming as I haven't had the time to immerse myself in it. I wish I had the time as there are areas that are interesting. Clearly JPEG is an obvious area. There is a DSP JPEG decoder which is very much faster than decoding JPEG on an ordinary 68030. Fortunately that is available as a separate program that can be called from within other programs, so one can make use of the DSP chip to decode JPEG programs without having to learn DSP programming.

"Imagecopy takes advantage of Falcon graphics and features in the Falcon but it doesn't actually use DSP routines to speed up things that could be quicker. It would be very nice if there was a rapidly expanding user base of Falcons. I wish it was out there. I wish Atari would cut the price of Falcons by half so that people would buy them.

"It's still a good up-grade machine if you look at what you get. If you look at the cost of putting a graphics card into an ST, an accelerator, etc., and perhaps buying a hard disk, you could probably buy a Falcon for a similar price. It still makes sense as a machine for ST users to up-grade to."

One point that Ray Cross had made was that the average ST user has had his/her machine for a long time. He was having the problem of having to educate the user. They wanted to use his software on their old machines; they were not inclined to give them up and buy the Falcon for instance. This it seems tends to be the case throughout the user base.

"I think that says something about STs and about the operating system. If one was to look at a PC that was four years old or even eight years old - I have an eight year old ST downstairs that is useful, but eight - and four - year old PCs are not much use for anything.

"Clearly STs were powerful machines when they were introduced. They compared favourably with PCs at the time. But also the operating system of the ST imposes fewer overheads on the machine compared to the Mac operating system or Windows on the PC. I have a lot of sympathy for Atari. I think that with the Falcon they just ran out of resources. They had put all their resources into developing it and in the crucial stage when they needed to market it and sell it, they found they needed to put all of their resources into the Jaguar."

The programming industry on the Atari is more of a cottage industry that is characterised by people like Jeremy. The PC and Mac markets are dominated by large software companies. I asked Jeremy if he thought that the software that is written for the Atari machine is better and of a higher quality then that found on other platforms as the authors have more time to polish their programs, than their colleagues who are working for large software houses.

"I can't really make an informed comparison as I don't use PCs. I sup-

"Clearly STs were powerful machines when they were introduced. They compared favourably with PCs at the time. But also the operating system of the ST imposes fewer overheads on the machine compared to the Mac operating system or Windows on the PC."

pose part of the question is what place the ST has in the computer market in the '90's as opposed to its place in the '80's when it was seen as a cheap Mac.

"Since then it has moved into becoming a home computer with a large user base, but also with small niches such as music and DTP. I am involved with producing programs rather than marketing them so I don't have great commercial insights. I personally feel that the ST, Falcon, whatever, needs to have a home computer base in addition to a niche in other areas.

"I think clearly Atari are not in the same market as PCs or Macs; there is no prospect of Ataris being corporate business machines, or replacing Macs as DTP machines, so I think it has to be seen as a home computer. But I would think that you can have a home computer that has professional use in small businesses and in academic circles and in the niches such as music etc."

Compatibility

One of the problems that many programmers have to consider is the all important compatibility question. When a new piece of software is being developed the programmer can write for a new machine's capabilities for instance and sacrifice the backward compatibility that is sought to capture the widest possible market, or the programmer can leave out some of the code they would like to have put in, so that it will run on all machines but does not take full advantage of the newer machine's features; the STe and Falcon being obvious examples. I asked if Jeremy, when writing for the Falcon, has found himself in this position.

"It's a consideration I suppose. A lot of code will run on any machine as there is a fair degree of compatibility between them. Writing a program that will only run on the Falcon depends on there being a market for Falcon software, such as music. I am not sure that this exists in other areas. If there was a strong Falcon market out there, it would make logical sense at some stage to have a Falcon-only version that had additional features. If that happens I suppose Falcon users would pay a premium because of the extra work that had gone into the program."

I then asked Jeremy if he ever felt frustrated by the hardware that he had to write for. The hardware platforms that the average users have are very different. Not everyone has a mono monitor or has up-graded to TOS 2.6 for instance. Is this a frustration for him as he could make a particular aspect of a program very good if he could guarantee that the user would have a certain set-up, for instance if he could guarantee that all users had TOS 2.6.

"I think that with TOS a lot of the improvements have been made to the desktop. They are not really relevant to applications programmers. The other improvements have been the removal of bugs. I don't think that anyone should be running TOS 1.2 now. They should at least up-grade to TOS 1.4. But I think I would still aim to make my programs run under those versions of TOS.

"The version of TOS that has made the most difference to programmers has been the version of TOS on the Falcon. There are a lot of new options that can be used. But most people would want their programs to run on other versions of TOS, not just Falcon TOS.

New Projects

I then asked Jeremy how he approaches a new project. I asked if he had a set work pattern that he adopts when he is putting together a new program, or is each project different from the last?

"I suppose my approach to programming is a bit like Lego, in that it goes in a bit at a time. The user interface goes in fairly early on. I think it is important to deal with the program in blocks which should be fully functional and bug-free all along the way, instead of a rush to put everything in at once and look at the bugs when you get to the finished program. Also - which is the way that most software works - you plan to have further versions after the initial one. So you aim to have something that is a functional program at a particular level but one that can be enhanced at a later stage.

"I think ideally you start off with an idea of what the final version three or four will look like, so it does not look like you are bolting things on, but that it looks like an integrated program. Starting off with a small program that has grown by bolting other things on can become a little unwieldy."

I then asked if he felt that he had a better idea of what programs should look like and what the end user is looking for as he is a user himself and not some faceless programmer who is part of a huge team in a large software house. Also, does this link with the users help him to write intelligent documentation? The general rule is that the programmer should not write the manual as they are too close to the software and take too much for granted. Did he feel that he had the advantage of being a user and therefore in a position to write better documentation for his software?

"Every so often someone writes to me to say that if they could give me one piece of advice it would be to get someone else to write my manuals. Basically I write my manuals because it is cheaper than getting someone else to. I try and learn along the way. I think that I write manuals better now than I did when I wrote the first Fontkit manual which grew from an overgrown Read.Me file on disk."

I then asked about the kind of work that goes into a program. I took the original Imagecopy as an example and asked Jeremy how long this took him to get to a usable state ready for release onto the market.

"I guess most people who aren't programmers don't realise just how long programming takes, just how many hours are put into a program. You can't normally write a program in a day or a week that is multi-functional.

"Imagecopy was written over a period of eight months. I wasn't writing it full time, but there would certainly have been hundreds of hours. And then from Imagecopy v1 to Imagecopy v2 there were probably six months of almost full-time programming."

"I have plans to write something like an application rather than something at a utility level... but as a part-time one-man programmer I don't want to set off to write a huge application program that will take me years to write."

Users

We then moved on to talk about the users of Jeremy's software. I asked if he got much in the way of feedback and of what type. Did he get many letters from would-be programmers who have seen Jeremy's software which implements a certain feature and ask him how that was done in Lattice C or are his letters more of the type where users suggest new features of the program they have bought.

"I don't find myself instructing people in the use of Lattice C, but sometimes people write to me wanting particular information that they can see I have got as I have done something in Fontkit for instance. Fortunately people don't do that too much as it takes time to write down explanations on how to do things.

"I think that users who are not programmers often have better ideas about how a program should go, and what they find easy and what they find difficult, than a programmer who writes good code but finds it difficult to give feedback about what the average user would want."

The Press

I then asked Jeremy about the Atari press. The magazines that we all read are our window on to the Atari scene. I asked him if they had any relevance to him as a developer and if they gave Atari a fair deal, as a lot of Atari-bashing does go on.

"I think reviewers and magazines have a double responsibility. One is to the people they are writing for: they should be honest with them and not present a program as being good if it is buggy. I think that sometimes happens. Equally, they have a responsibility to the programmers and software houses to be fair about programs and not be unfairly critical and negative."

Future

The last thing that I asked Jeremy was what plans he had for the coming months. I asked if he had a programming schedule that he has given himself or at least has he planned to have certain projects either finished or started this year.

"I have ideas of what I would like to do in '94. I think Imagecopy has progressed from a utility to something that is almost an application in some respects. I have plans to write something like an application rather than something at a utility level. I think the basic issue is that as a part-time one-man programmer I don't want to set off to write a huge application program that will take me years to write."

With that we ended the interview and went off to some well earned lunch. Whatever Jeremy turns his talents to next will I am sure turn out to be as useful and innovative as his previous projects. If you are thinking of having a go at programming, Jeremy's work is testament to what can be achieved if you have the enthusiasm and the willingness to learn.

Harlekin 3

Features and Uses

Harlekin 1 was "...the program of possibilities". The cover of Harlekin 2 said "...dreams can come true". Harlekin 3 is "...everything you always wanted". Before anybody else wades in, here's a suggestion for the next version: "Harlekin 4 – now that's what I call quite good".
Tabloid superlatives aside, this excellent all-rounder deserves a place on all Atari computers.
Bill Blackledge explains why.

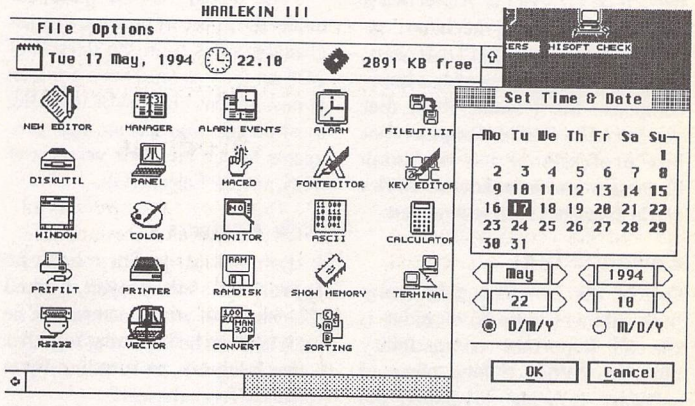


Fig 1. The Harlekin "Desktop". All the modules can be accessed from here. Version 3 has added a great deal of flexibility: you can reposition, hide, edit, load and save icons and titles; assign macros to call each module; and have a nice little calender pop up to set system time and date!

Introduction

I recently set up a friend with a second-hand ST for word processing, and possible future use of accounts or database packages. There was one piece of software which I felt he needed before any other – Harlekin. This conviction arose from my own use of the accessory over several years, starting with Harlekin 1, and upgrading to Harlekin 2. If I could only have one piece of software on the ST, this would be it.

If you already own Harlekin, the chances are that you will agree that as a single piece of software, it contributes to more aspects of the smooth running of your computer than any other software could. You may also be considering upgrading to Version 3, recently announced by Hisoft.

If you don't own Harlekin, you may be wondering what all the fuss is about. I hope to answer both questions in this article, which will consider use of Harlekin in general, and comment on changes between Versions 2 and 3 as it goes along.

What is Harlekin?

Harlekin is a "multiple desk accessory", or as the manual would have it, a multiple program accessed from one desk accessory slot. A brief list of the modules contained in Harlekin is as follows:

* Text Editor
* Manager (diary/notes/database)
* Alarm events (V3 only)
* File utilities (including replacement file selector)
* Disk utilities (floppy disk format and copy)
* Disk monitor/editor
* Control panel (keyboard editor, font editor, mouse speeder, colours, blitter, screen saver)
* Macro processor
* Screen clock and alarm system
* Calculator (decimal/binary/hex)
* Ascii table
* Ram disk
* Printer settings, filter and spooler
* Communications terminal/RS232 settings
* Window and Colour setups (V3 only)
* HPGs (other settings and information relating to Harlekin – language, memory, vectors, sorting)

This is the first, and one of the greatest, advantages of Harlekin. Most utilities, certainly the PD

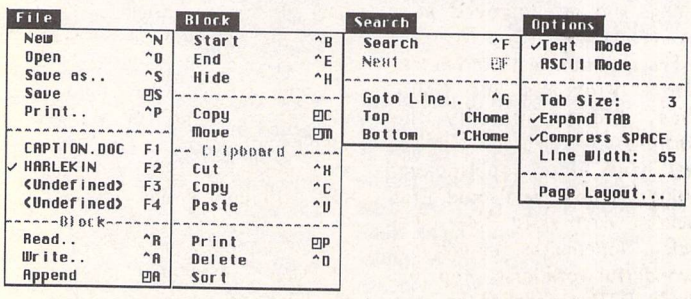


Fig 2. Text Editor menu gives a full range of editing options and now allows multiple file access. Notice the shortcuts'n'chips with everything.

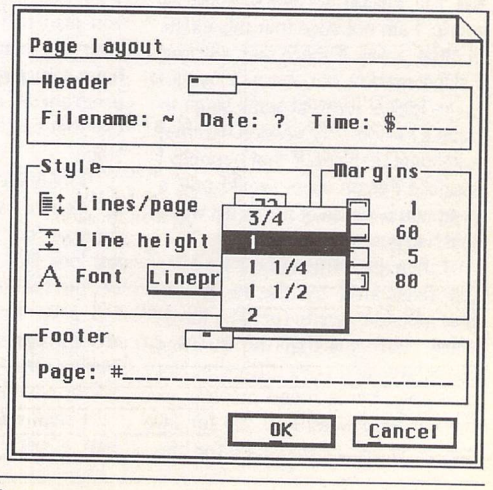


Fig 3. The page layout dialogue allows comprehensive control. The Editor and Manager have separate page layouts. The Font option allows an overall choice from the printer fonts set in the Printer Filter.

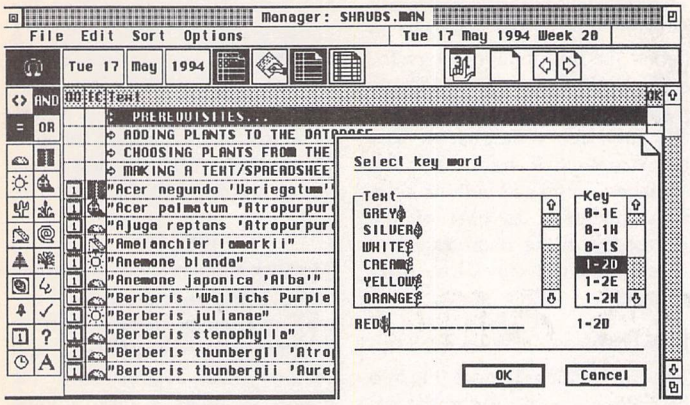


Fig 4. The Manager showing a plants database and text filter dialogue. This dialogue allows filtering of the notes by text or key content. Note the graphics for flowers etc - modified in the Font Editor, and that the first four Notes are my instructions for use - always there!

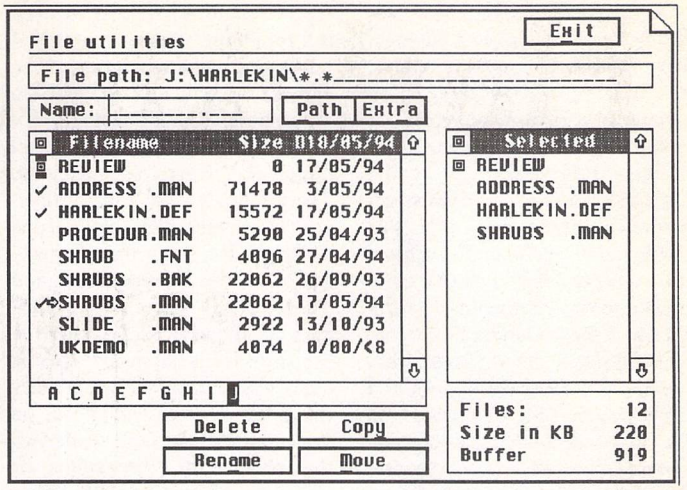


Fig 5. The File Utitlities allow easy and intuitive file information and manipulation. Note the Size in KB giving a running total of the size of selected files and folders.

ones, take an Accessory slot each. Harlekin leaves five slots free, and yet gives you the fantastic list above. Together with a couple of other essential accessories to perform the few tasks that Harlekin can't (eg Chameleon and Imagecopy), you can still have a few slots left to indulge in any way you see fit. With Harlekin, you can be confident you're not going to get caught out needing an essential utility in mid-session.

The second important point to realise about Harlekin is the usability of these modules. I often see mini-reviews or discussions about the use of disk formatters, address books, macro managers, ram disks etc, which list fine PD or commercial offerings which perform the necessary functions. Because Harlekin deals with so much more than just the function being considered, it rarely gets a mention in these lists. I have often looked down the lists, and thought "Where's Harlekin? It can do that!" Well, perhaps this is a chance to set the record straight.

Modules

The modules are accessed through the Harlekin Desktop (see Fig 1) or via macros. The modules are reviewed below, with some description of their uses, and, where relevant, comparison with similar products performing the same function.

Text Editor

The Text Editor (menus shown in Fig 2) allows you every editing tool you would expect in a word processor with the possible exception of spell-checking, but without any of the formatting options such as font size, bold, italics, justification, etc. Block marking, copying, moving, sorting, cut and paste, search and replace are all there, and operate very speedily. You can 'mark' (Cntrl 1/2/3/4) and 'goto' (Alt 1/2/3/4) any points in the text, and 'goto' any line number or top/bottom of the text. The editor can operate in either true ASCII mode (no text wrap, lines ended by returns) or in text mode, where it will allow line width and page layout settings, including headers, footers, page numbers, etc. Either way, the files saved are ASCII for complete compatibility with other applications, transfer to PCs, etc. Keyboard shortcuts are available for almost all functions, and follow accepted conventions in so far as they exist for the ST. Version 3 has added the option to access up to four documents for editing, and an improved page layout dialogue (Fig 3).

This is not the last word in text editors. Programs like Edith, Alice, and presumably the shortly-to-be-released Matilda, may have more sophisticated editing functions, and some offer facilities which assist Basic or C coding. Nonetheless, the editor is a wonderful workhorse, preparing text for DTP, supporting the Atari Clipboard, allowing text files to be combined either in the editor or on disk (read and append functions). There are very few WP or data files it will not have a go at displaying, and those it can't, can be shown on the Disk Monitor. I find that when I want to get ideas down fast, and move blocks around a lot to compose a note or report, I go straight to Harlekin, in preference to my word-processor.

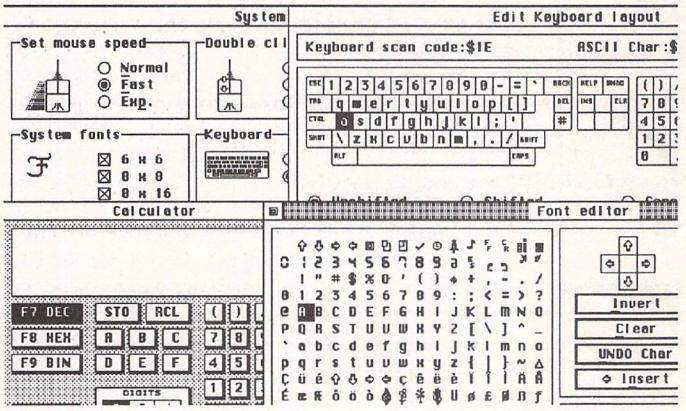


Fig 6. The Control Panel replaces Atari's Control.Acc/CPX, and includes the Font and Keyboard Editors. The Calculator is also shown.

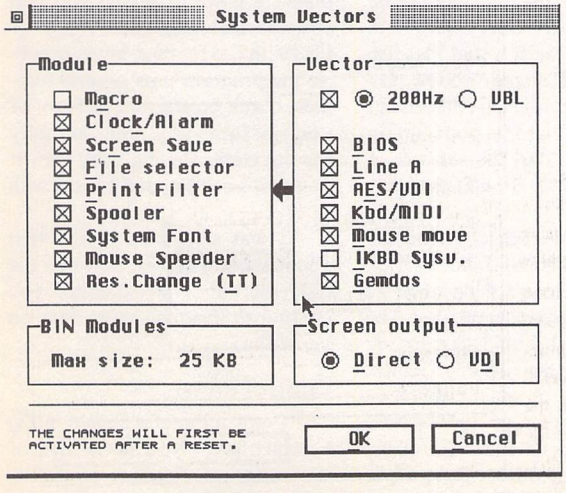


Fig 7. The Vectors module should only be used where you have to remove Harlekin's use of particular vectors, in this case the IKBD vector for improved MIDI compatibility.

Manager

Ofir Gal recently wrote that some form of address book would be an ideal addition to Harlekin. I have to say that Harlekin has been my address book for the last couple of years, and that I can't think of any reason to go for a more "dedicated" program. The Manager is a database by any reasonable definition. Whilst you can't search, filter and report on every type of data, the range of options by which to manipulate notes (the equivalent of a record on a database) is surprisingly large, as we shall see.

The Manager combines a

multi-page editor (every note uses all the same functions as the main Text Editor), database functions, and a computerised diary. You can choose to use, combine, or ignore any of the elements of its design. It is described in the manual as an information management system, and this open-ended definition suggests the extent to which it can be configured to suit your needs. For my wife and me as landscape architects, it is a client list/address book, plant database (Fig 4), and photographic slide database. One file can be auto-loaded at bootup, and new files can be loaded at any time. I do not work with the ST on a day-to-day basis, and therefore do not have any use for the diary element of the manager. For others, however, this would be a major part of its usefulness. In either case, the use of dates (and times) associated with notes, increases their range of uses; in the examples above, dates are used for project start and completion, flowering periods and date picture taken respectively.

Notes can be displayed as a text list, or date/priority/text/key list, or as yearly, monthly or daily diaries, selected by clicking on the day, month, year or list icons, or via the function keys. The UKDEMO.MAN file which comes with Harlekin adequately demonstrates its use as a diary. Notes can be given an alarm date and time; again, probably most useful if you work in constant proximity to the ST. Notes can be repeated daily, weekly, monthly etc. The range of options prevents you from grasping all the opportunities at first glance, and only use will determine which are important for you. Version 3 has made entering dates and alarm settings much easier, eg formats 25/12/94, 25 Dec 1994, 251294, 25 December, and will all be automatically recognised. It will even determine that when you enter "mon", you mean next Monday, and "mon+14" means a fortnight next Monday! Alarm Events can now be acted upon or viewed in their own separate module.

The database (sorting/filtering) aspects of the manager are immediately accessible. Sorting is greatly improved from V1, which some of you may have from a magazine coverdisk. Listed notes may be sorted on Name, Date, Icon, Size, Key, Priority and in reverse order. Some terms to explain: Dates are the dates which you have allocated to the notes, nothing to do with file dates; Icons we'll come to in a minute; the Key is a four-letter text field attached to the note, which can be used to classify the note eg in a database of recordings this might be CD, LP, CASS, etc; Priority is an option of A, B, or C for each note. There are twelve user-defined and six preset ("system") icons which appear down the left margin of all the Manager's list and diary displays. These allow a formidable range of filtering of the lists. Edit Icons (from the Options menu within the Manager) enables the user-defined icons to be drawn, given titles, and located on the left margin. When editing or viewing a note (selected by double-clicking on it from the list) any number of icons may be assigned to the note simply by clicking on them. So, for example, my shrubs database has icons for plants which are evergreen or deciduous, tolerate wet, dry, shady, sunny, acid, and alkaline conditions, as well as others for variegated or architectural foliage. Filtering can also take place on text strings and Keys (I use the Key field to define the height range of the plants) via the "A" preset icon, where previously defined text strings can be selected (Fig 4).

Date/time ranges can be selected via their icons, and the remaining icons show notes with alarms, checked notes, and notes modified but not saved in the current session.

What all this means is that I can produce a list of evergreen shrubs which, for example, tolerate shade, dry conditions and alkali soil, have red flowers in July-August, and grow no higher than a metre, all by clicking on the relevant icons/dialogues - no typing at all! Incidentally, there aren't any plants that satisfy the above conditions... at least not in my database.

Using some of Harlekin's other features, I can take this list a few steps further. I enclose the species names, specifications, etc., in "parentheses" as I enter them. Having filtered to get the list I want, I then create a text file using a couple of macros. These go into each note, make a block of the first line, and append them to a file, using the text/file functions referred to above. The resulting DOC can then be imported into KSpread, to form the basis of an estimate, Bill of Quantities etc, the parentheses acting as delimiters. If I want a simple text list I use Harlekin's search and replace: search for ", replace with _.

Although it has been necessary to think a lot about how best to define the information above for ease of retrieval, it seems to me that the end result is a lot easier to use than most databases. The point-and-click nature of the Manager, combined with its constant presence as part of the Accessory, make it an excellent accompaniment to GEM programs.

File Utilities

The File Utilities dialogue (Fig 5) is basically a file selector on the left side (files selected with a click, entire directories with Shift-click) with a second window on the right side showing selected files. Selected files can be moved, copied, renamed and deleted as you would expect. Some nice touches are that files can be combined from different drives/directories before copying/deleting etc. As files/directories are selected, their cumulative size is shown in Kb below the list. This is particularly nice, because you can't normally find out the total size of all the files and subdirectories in a directory without actually looking in each one (I haven't seen this feature in any other program - Atari or PC). It also gives you an idea how much you can squeeze on the floppy disk. How do you know how much space is left on the floppy? Click on the "A" button, pull down the "Extras" menu and choose "File free". Total disk and available space is shown in the resulting dialogue. Other "Extras" include: "Find file" - using filenames/wildcards, Harlekin will search the entire current drive, stopping at each match; Create directory - obvious, but useful when you're in an application; and File sort order. The "Paths" menu allows you to set up to ten paths/filespecs, or you can leave some of the slots unspecified, where they form a list of your latest directory accesses. With the exception of the selected files list, the facilities listed above are found in the Harlekin replacement file selector, which pops up in place of the Atari file selector in GEM programs (it can be disabled).

I dare say that Selectric or UIS could teach the File Utilities a trick or two, but I can't think of anything that's obviously missing. The only change I would like to see would be for the full File Utilities box to come up as the replacement file selector, so that it would be possible to rename, etc., whilst loading/saving files. This might also be a suitable place for a file undelete utility. Otherwise, this is a thorough and easy-to-use facility. Version 3 has added more keyboard shortcuts, allowing access to almost every file and function via the keyboard, including scrolling up and down the file list.

Disk Utilities

The Disk Utilities allow formatting and copying of entire disks. Formatting options include number of sides (1/2), tracks (80-83) and sectors (9/10), together with the option to enter a disk volume name. Version 3 has added high-density support for computers with TOS 2.6 or above. Unlike the desktop and some other formatting programs, Harlekin doesn't get stuck if it meets a bad sector, but gives you the option of marking it as unavailable. Copying entire disks is accomplished with the minimum of disk-swapping, and again there are a number of options including verify on/off. You get a pretty picture of formatting/copying progress, as per FCopy. The only additional feature I would like to see here is a quick way to clear a disk, as with the "ZERO" option in Diamond Format; this erases all files on a disk (or rather, blanks the FAT) in about two seconds. One for the wish list.

Disk Monitor/Editor

This module is akin to "Knife" or several other disk editors available. It enables you to view and edit individual bytes of data, identified by filename or sector on disk, or even in memory. It is also possible to take sections of data, and create new files from these. I have used it, for example, to extract patchnames from a Midi editor program, or to remove program-specific header information from a patch dump in order to get a raw Midi patch file. The manual makes a point of telling you that you can seriously screw up your files with this feature, but in practise the program puts several hurdles, check boxes, etc., in front of you, before you can actually rewrite data. Having said that, if you don't need it, don't mess with it!

As was suggested in the text editor section above, between the disk editor and the text editor, you can get to examine most data on you disks.

Control Panel

The Control Panel is shown in Fig 6, which gives you some idea of the range of features available.

The font editor deals with screen fonts, and allows you to edit, save and load sets of fonts as required. I have used it to provide some graphical symbols on otherwise-unused characters, which then play a part in my Plant database (note the flower, leaf, etc., in Fig 4). The keyboard editor allows you to put any ASCII character on any shifted, unshifted or capslock key; not to be messed with unless you have good reason! The icons at the bottom of the screen deal with key sounds, screen colours, blitter on/off, and a simple (boring) inverting screen saver. It would be nice to see some other options for the latter - you know Startrek, Intel Outside - that sort of thing.

Macro Processor

The Macro Processor lists all the keyboard shortcuts to the various modules, which are editable to your taste. Between the fact that all modules can be called from the keyboard, and most options within those modules have key shortcuts, you can control most functions from the keyboard, and, therefore, assign them to macros. Most module shortcuts use three keys, eg Alt+Shift+E to call the Editor. This usually prevents them from interfering with the Key combinations used in the GEM program they may be being called from within.

Version 3 has removed text and keypress macro editing functions. These were available in version 2 with full editing screens. They have been replaced by an extension to the "tape macro" function. This was not a predefined macro, but a temporary macro which started recording any time Alt + Escape was pressed, in any GEM program! A little cassette icon appeared in the top left of the screen, and all subsequent keypresses were recorded until Alt+Esc was pressed again. To replay the instant macro, Shift+Esc was pressed. Version 3 still allows the macro to start at any time, but when recording is finished (Alt+Esc), a key appears in place of the cassette. The macro is then assigned to the next key combination pressed, and placed on the list of macros in the Macro Processor. From here it can have its keystroke altered, or be deleted from the list, but the macro itself cannot be edited. Not being able to directly edit macros should not be too much of a problem, as they are created "in context", although I would have preferred the option.

I used V2's tape macro whenever I realised I was doing a repetitive set of key strokes, e.g. moving every line in a list two tabs to the left, adding the same word to several spreadsheet cells, etc. I expect to use V3 in exactly the same way, but with the added benefit of being able to save my instant macro if I prefer.

To round things off, there are also macros for getting results from the calculator, ASCII panel, inserting date and time, and for forcing warm- and cold-boots. Finally, Alt + decimal value will call the ASCII character of that value. Macro files can be saved, loaded, merged and made to autoload with Harlekin.

The Rest

The remaining modules are all useful, but require rather less explanation than the items above.

The screen clock is fairly standard, allowing LCD-style characters displaying the time and/or alarm countdown in the top right of the screen. The alarm can 'go off' at either a set time of day or so many hours/minutes from "now". A message may be entered which shows on screen when the alarm goes off. This is not connected with the Manager's Alarm Events, which can be set months in advance!

The Calculator operates in, and converts between, decimal, binary and hex. It has one memory, and all entries can be made by keyboard/mouse. Comprehensive without being over-complicated, like so much of Harlekin.

The ASCII table allows you to check the ASCII value (dec/hex) of all keyboard characters. It is possible to double-click on a series of characters which appear at the bottom of the table, and then call the string into eg the Editor with a macro. What I find is more useful is to check the value of some obscure character e.g. right arrow or bullet point, and then use the Alt key plus the value to enter it into text, etc.

The Ram disk is reset-proof and auto-loadable at bootup. The friend I referred to at the start of the review has a 4Mb ST (at my insistence - if you can't afford a hard drive, at least get 2-4 Mb of RAM for a decent ramdisk). I have created an auto-loading ramdisk for him which loads Harlekin's BIN directory (overlay files for the modules). Having told Harlekin to look on (ram) Drive D for its BIN files, it runs all modules instantly, and without ever asking for a disk swap. This would appear to be even more important for V3, as it uses overlay files extensively. Ramdisks can be any reasonable size.

The Printer Settings largely relate to dot matrix printers eg draft/final, fanfold/single etc, and are more relevant to programs outputting pure ASCII eg text editors, spreadsheets, finance programs etc. They are unlikely to be relevant if you have a reasonable word processor and graphics printing program, which will do their own thing irrespective of settings here. This module also includes a print spooler - basic but functional. The spooler has the ability to store files and then print or save them to disk. We're not talking Multiprint here, and I've never tried saving sophisticated WP or DTP files and printing them later. I have, however, saved "text" files destined for the printer from Personal Finance Manager, edited them with the Editor, and then imported them into a KSpread3 spreadsheet.

The Printer Filter allows translation of characters as they are sent to your printer - eg $ to £ if you're so inclined. The complex text file which you edit/create to perform this apparently simple task also lets you define 8 command buttons, for your printer switch to bold or elite font, for example. Harlekin comes with 9/24-pin and Laserjet files, and a Deskjet file is on ST Club Disk PTR.16.

I can't say a lot about the Communications Terminal, as I have never dabbled in this area of computing. However, the program supports X- and Y- modem protocols, has a translation table for all ASCII characters, and has a directory of names/numbers/terminal characteristics. Version 3 adds Z-modem via an external module, and allows sets of directories to be saved or loaded, placing no limit on the number of entries you can recall (previously 20). Entries can be auto-dialled (see - I do read Going On-Line, even if I don't always understand it!). It would be nice to hear from a Comms user how Harlekin 3 compares to "dedicated" terminal programs, perhaps through Forum.

The RS232 settings can be called separately or from within the Terminal. This function has allowed me to talk to a Macintosh serial printer and a Roland pen plotter (plotting from MasterCAD) in the past.

HPGs are Harlekin ProGrams, not Spectrum Pursuit Vehicles as you may have thought. These deal with other settings and information relating to Harlekin:- Memory allocation to Harlekin's modules; Sorting order within the Editor/Manager. The Vectors HPG determines which system vectors Harlekin uses - again you are advised not to mess if you don't need to or know how to. However, access to these can be very important (see below).

Compatibility

So, with the tour of Harlekin's zillion modules (actually 24, but the sub-options make it seem like zillions) over, it is worth knowing how well this super ACC resides with other programs, particularly as I have occasionally read letters in magazines blaming Harlekin for various problems. From my experience, Harlekin is very competently programmed, and works beautifully with most programs. Given the range of operations it is involved with, there are some specific points to be aware of: the Printer filter/spooler settings will mess up most graphical outputs

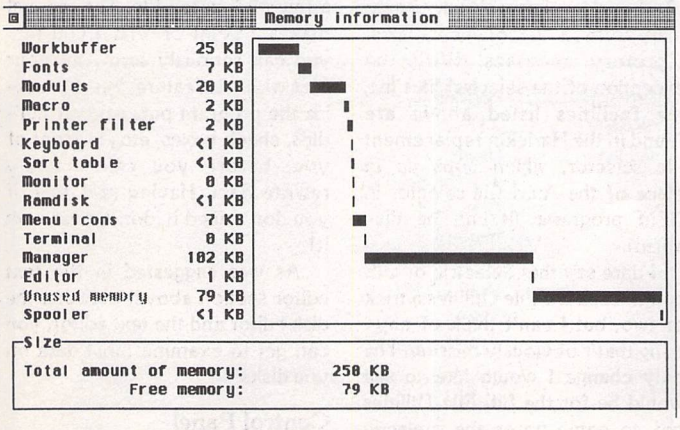


Fig 8. The Memory module shows the total amount of memory grabbed by Harlekin, and how it is being shared. The total appears to be the amount set when saving the DEF file plus the 25Kb workbuffer.

e.g. most pictures, DTP output, graphical word processors, etc., converting nice graphics into an inky river of overwritten text characters. No problem... turn off the filter/spooler before you start printing. Any on-screen clock will upset That's Write's printing; Harlekin is no exception, so turn it off. The Screen Saver is upset by MIDI sequencer transmissions, which appear to speed up its time-out clock so it leaps into action every 2 seconds! I've found this to be the case with a few Screen Savers. My preferred solution was Starsaver (UT.360) which is a MIDI-proof Auto folder program which lets you boldly go... etc. However, I've just realised that Version 3 prevents its operation (it was fine with Version 2). Time to fiddle with the Vectors, Scotty (Fig 7). Finally, another MIDI problem: Harlekin's use of the IKBD Keyboard Vector can mess up some incoming bulk MIDI data eg patch dumps called by synth editors. Again, turn the Vector off (via the HPG), although this leaves you without Harlekin's macros.

Apart from the above, in three years of using Harlekin I've never experienced any other problems.

Memory/Disk Space

My Harlekin setup takes about 250kB of memory. V2 supplied a "smaller" version of Harlekin with the master disk, which did not include the Manager. V3 makes extensive use of overlay modules, which dynamically share whatever memory you allocate. The default is 150Kb, but our address book is so big that it can't be loaded into this. By going up to 200Kb I can call either the address book or the Harlekin Desktop via macros, but not both together - this is sharing in action - whilst another 50Kb lets me have both together. The Memory module (Fig 8) makes it easy to see how the memory is being allocated at any time - if both widows are open you can see the allocation changing as you load a text file into the Editor. It is possible to delete or rename any of the Harlekin modules such that they are not loaded at bootup, thereby reducing both disk and memory space.

Harlekin can be run from a floppy, although if you don't use a ramdisk as described above, you will get a lot of requests for the disk containing the BIN files. Hard Disk owners will have no problems here. Most Harlekin information is reset-proof, so newly edited text in the Editor or Manager, and the contents of the ramdisk, will survive a reset.

Saving Settings

One problem area for the user is the way Harlekin saves its settings. Version 2 saved some settings (eg page layout, clock on/off, terminal program telephone list) direct to the Harlekin ACC file. Other settings, determining whether or not macros, printer filters, ramdisks etc were used, were saved to the Harlekin DEF file. The result of this was that it was hard to know which settings were being saved where, and even harder to set up multiple definitions. Version 3 appears to save almost everything to The Harlekin DEF file, but not, as far as I can tell, the Vectors module settings, which are still saved to the ACC. This still leaves the problem: how to achieve multiple setups - you would normally want macros, but not when you're doing MIDI dumps; you would normally want printer spooling, but not when you're printing graphics.

A utility like Superboot would make this possible, if ALL settings could be saved to named configuration files. However, matters are further complicated by the fact that Harlekin's memory-setting program, which reads the DEF file, should be first in the auto folder, before the likes of Superboot get a chance at selecting the file of your choice... hmm... maybe some more experimentation is needed here. One sneaky trick that does appear to work is to have 2 versions of HarlekinACC (with/without IKBD vectors), as follows:

1) copy HARLEGFP.ACC to another directory/drive.
2) enter the Vectors module, turn off IKBD, click OK (saves to the ACC on C:\)
3) rename the ACC to HARLNOKB.ACC or similar
4) move the original back to C:\
5) you now have HARLEGFP.ACC and HARLNOKB.ACC, and can choose between them, as with any other accessories, with Superboot etc.

Those booting from floppy can obviously configure as many versions of boot disk as they want.

Other Changes to Version 3

Version 3 makes extensive use of movable windows, which is, apparently, good news for MultiTOS owners. It also appears that modules run from movable windows can be left lying around while other windows are opened, even on non-MultiTOS machines (eg see Figs 1, 7). The other main type of window used is the flying dialogue (see Figs 3, 5), which can't be left open whilst other tasks are performed, but can be moved around the screen, or made transparent if you need to see what's underneath.

There are more keyboard shortcuts than ever, either via macros, keystrokes as indicated on the pull-down menus (see Fig 2), or option letters underlined (as with Path, Extra, Delete, Rename etc in the File Utilities dialogue, Fig 5) where Alt plus the underlined letter selects the option. Harlekin will not allow access to all options without a mouse, but if your rodent took ill, you could still do most things.

The V2 to V3 upgrade is not cataclysmic, but it is worth £20 if you like flexibility and to customise to your own taste. It would be especially worthwhile for MultiTOS/Falcon owners who enjoy opening multiple applications, and playing with window fill patterns and colours.

Conclusion

What could be added to Harlekin to make it "complete"? Well, nothing really. A few items are mentioned in the descriptions above, but they don't amount to any substantial additions. The progressive improvements which have been seen in Versions 1 to 3 are probably the way Harlekin should continue to develop. Image handling is best left in the capable hands of programs like Imagecopy or Gemview. With one of these and Harlekin, the world is, as they say, your lobster.

The competition for Harlekin is best represented by the entire UTILITIES section of most PD libraries, but how many of these can you cram into your computer? OK, there are a few multi-function utilities, but nothing approaching Harlekin in the public domain. Mortimer, at £15, appears to be good value, although it is unlikely to be as comprehensive as Harlekin, and it does not have the Manager. Harlekin's manual is, incidentally, excellent.

There's a nice line in "Your Second Manual to the Atari ST" which says that "Utilities or Tools are programs which help you solve problems which you would not have if you did not have a computer." Well, you do have a computer, and Harlekin could solve most of your problems. Although £60 may be a lot of money for a collection of utilities, Harlekin integrates both within itself and your system in a way which no other software does.

You can save yourself a lot of time if, upon becoming an ST owner, you get Harlekin as early as possible. That way, you'll see a lot of utilities come and go, and won't waste your time learning to use them, because you'll know - "Harlekin can do that!"

Points for:

- ✓ *The* utility for the ST/TT/Falcon.
- ✓ One accessory slot, thirty-something functions!
- ✓ Definitely a "once-you've-used-it, won't-want-to-be-without-it" program.

Points against:

- ✘ Multiple configurations not easy.
- ✘ Diary/alarm system comprehensive but not intuitive.
- ✘ Can affect other software owing to its wide range of functions, but these can generally be "turned off" if a problem.

Product:	Harlekin 3
Version:	3.11
Publisher:	Hisoft The Old School Greenfield Bedford MK45 5DE
Tel:	0525 718181
Price:	£59.95
Upgrade:	£19.95 from V2
Manifest:	168-page manual, one DSDD disk
System:	All ST's, TT's and Falcons. Theoretically can run in 500Kb RAM with one floppy, but best with 2-4Mb, or 1Mb RAM plus 2nd floppy, or Hard Drive.

EASY STITCH

For a modest charge, you too could be converting those favourite colour pics into cross stitch patterns, or even designing your own patterns from scratch... Donald Bailey explains how.

When a review of Chet Walters' PD program "Stitch Matrix" generated a considerable amount of interest, Chris Skellern of Emerald City – the creator of "Family Roots" – decided to write a commercial professional cross stitch pattern creation package. The result, "Easy Stitch", is impressive.

The program allows the creation of any size of pattern between 10x10 stitches and 1280x800 stitches. Full, half and back stitches can be created in up to 16 colours. The user can select any symbol from a built-in library and assign it to any palette colour. Additionally, a line of text can be typed in against each symbol/colour describing its DMC number etc. And, if the pattern becomes too crowded with large symbols, they can be swopped around, made smaller or larger, or even created to the user's own design. A selection of Easy Stitch sample patterns can be found on disk – useful for testing out the program. Neochrome, Degas or 32K screen dump images can be imported into Easy Stitch for conversion into Easy Stitch format.

How to get started

Boot up the program in low resolution and you will be greeted with the main workbench screen. To obtain the main function menu, you must click the right mouse button.

Click with the left mouse button on "DISK", and another menu appears from which "LOAD" is selected. Having selected the sample Easy Stitch .CST pattern file, the screen display should revert to the workbench now displaying the loaded pattern.

What's on the menu?

The "OPTION" menu allows you to review the finished stitch pattern as symbols before printing, to load the supplied fonts or design your own to be used by the tool "TEXT" function, to manipulate the grid, and to access the "PRINT" menu. **Easy Stitch** is compatible with most printers.

The "BLOCK" function, selected from the main menu, gives you the ability to define an area of the pattern which can then be copied, pasted, flipped vertically or horizontally, rotated or re-sized.

Accessing the "TOOLS" selector from the main menu make the Stitch, Line, Fill, Box and Text functions available. The "TEXT" function allows you to paste a string of characters onto the pattern in a chosen orientation.

Functions are readily accessed through the main and subsidiary menus, and many have keyboard alternatives. Clear instructions are to be found in the 12-page A5 manual.

Summary

Points For:

- ✓ Reasonably priced
- ✓ Easy to use
- ✓ Customer support available
- ✓ Supports back, half and full stitch
- ✓ Many functions incl. Block manipulation, Text, and Pattern review
- ✓ Support for most printers

Points Against:

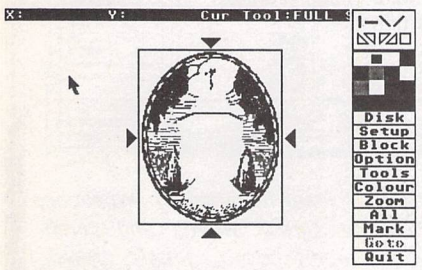
- ✘ No print landscape option
- ✘ Print preview would be more useful than the pattern review

Alternatives:

Il-Soft X-Stitch Designer v.3 (£34.99): similar range of functions, but costly.

Ursa Cross Stitch Master (£15.00): an easy-to-use basic cross stitch design package, but with few functions and only full stitch is available.

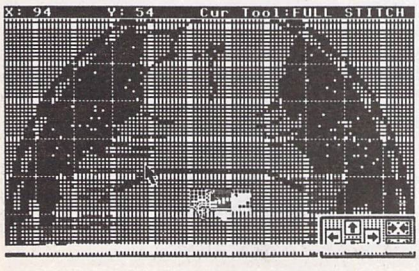
Product:	Easy Stitch
Version:	1.0
Author:	Chris Skellern
Supplier:	Emerald City PO.Box 28 Southampton Hampshire SO18 4AA
Telephone:	0703 672577
Price:	£16.95
Manifest:	12-page A5 manual & D/S disk
System:	Atari ST(E)/TT or Falcon with low-res monitor or TV

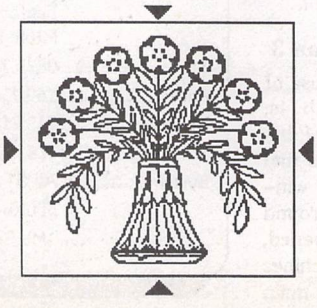


Left: 'Garden' pattern loaded from disk and displayed normal size; menu bar to the right.

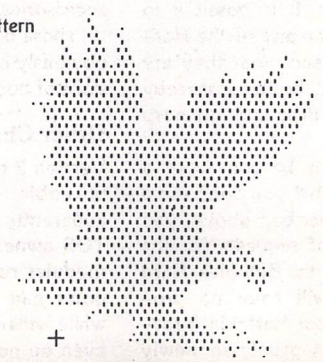
Below left: Part of the same pattern in 'zoom' mode display.

Below: 'Flowers' pattern.





Below right: a PI1 file is imported ready for incorporating into the pattern window.



Define area for Pattern Conversion.

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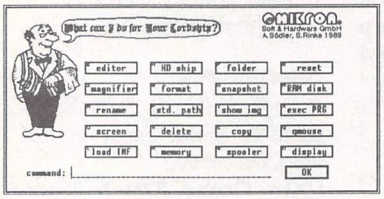

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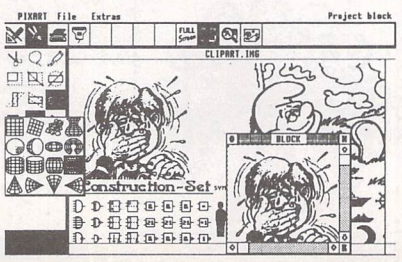

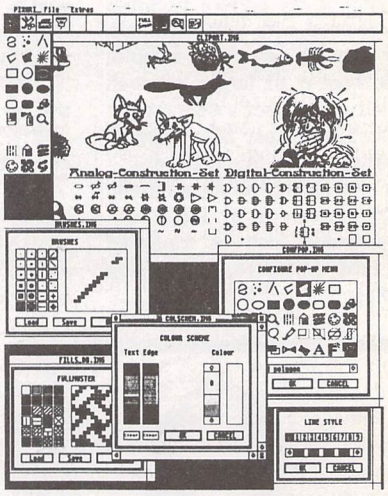

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Hear Ye! Hear Ye! Hear Ye!

or "Hear Ye!" Cubed

A Review of "Falcon Audio Plus" by Piper

Brace yourself, Martha, this is going to be a big one.

Music is the one area in which everyone agrees Atari did well. They actually thought it through and decided to throw some ports on the side of the ST that fit in with the (fairly new at the time) MIDI standard. And Lo, there was brought unto them MIDI recording packages, and Steinberg begat Pro-24, and giants walked the earth.

Or something like that.

And now, these many years later, ignoring the impediments of advancing age, Steinberg are busy begetting again. And this time, it's a mutant.

Through the generations, the MIDI recorder Pro-24 has been refined, adjusted, improved, renamed and generally tweaked. Cubase was the name of the most recent offspring and was still largely a Pro-24 sort of beast with frills on.

Now, though, things are changing. The name's changed to Cubase Audio, and it's exactly the same as Cubase, no new key presses to learn, no new approach, no new layout, no need to dump your old files. Exactly the same. Except for the mutation. This is no longer just a MIDI program. Now it turns your computer into a tape machine.

Big and Boxum

The box that Falcon Audio Plus (the package under review) comes in is pretty impressive on its own, professional and glossy, with two folders inside, one of which contains the manuals for Cubase and Cubase Audio, the other, unusually and unfortunately, contains no paperwork at all, but is wrapped around the software discs and the Falcon Digital Interface (FDI), the device that turns this from being the normal Falcon Audio to being Falcon Audio Plus. The reason why the lack of even more manuals is unfortunate is that there's NOTHING about the FDI in the first folder. The only reference to it is in a text file on the disc which comes with the FDI. Or should do. I had a pre- release version, which had a distinct lack of disc, not conducive to easy installation.

If you're used to Cubase, you can fairly safely skip the Cubase manual, since it's pretty much the same as before. If you do need to read it, it's not a chore. The text is reasonably clear and goes into some detail without being overly technical. Admittedly, you'll have greater success reading it if you already know about quantizing, sync, MIDI and punch-in, but if you don't, what are you doing with a MIDI sequencer program anyway?.

The second manual is an addendum specifically for the Audio side of things and expects you to already know what's in the rest of the manual. It maintains the straightforward approach, which is a great relief.

Manual Labour

Just so that there's some variety in life, let's take a look at the manual. It's actually highly beneficial to read it. For instance, it lets you know what it thinks your hardware should be, giving disc speeds and access times (figure 1), and mentioning that it recommends you have a post mid-93 Falcon - mine's mid 92, but it still works fine. It states that the more memory you have, the better. It would be faster with more memory, you'd have the option of sampling to RAM if you had enough spare, but it works with no problem on my meagre 4Mb.

There's also a section on Atari-approved hardware modifications you could make to improve the inputs and outputs. It doesn't recommend you do anything with this information, and will accept no responsibility if you go ahead with it. Harmon Audio, the distributors in this country, are even thinking of Tippexing out that page so they can't be blamed if things go wrong. Various dealers will do the mods for you and keep the machine under guarantee, and since the modifications are to surface mount components, it's not just a quick bodge job that you can knock off yourself with little experience. I was in the fortunate position of being able to get the electronics division of Papworth Audio Technology (makers of extremely prestigious and well renowned amplifiers) to play with my bits for me. Most rewarding. The Falcon's standard audio in and out are geared up to microphones and headphones, not the

Figure 1

To get:	...you need an Average Access Time of	...and a True Average Data Transfer Rate of
4 Tracks:	at least 22 to 23ms	at least 800kbit/second
6-8 Tracks:	at least 12 to 15ms	at least 1600kbit/second
	on my disc, 43ms	638kbit/second

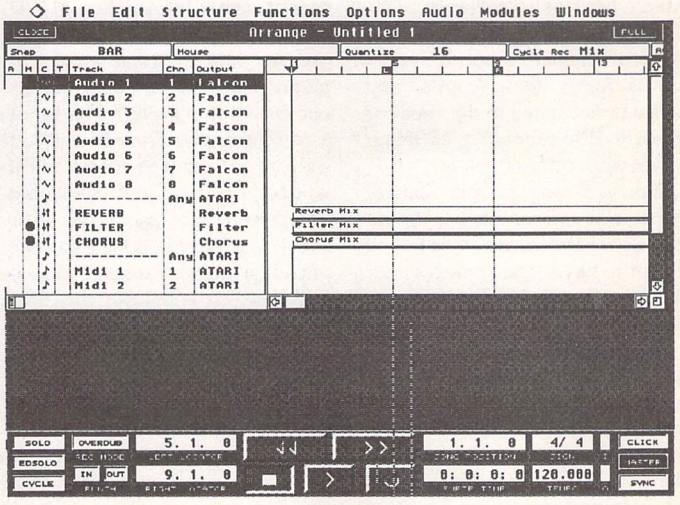

Figure 2

The first screen. The default song allocates a track for each of the eight audio channels of the Falcon.

sort of line level inputs and outputs you're likely to be dealing with in a studio. The mods adjust this so that you can plug the Falcon straight into your mixer and listen to your newly created wonders without the horrible distortion caused by overloading the mixer input, and you may be able to record things equally unhorrible, depending on the quality of your musicians.

Added to this, there is a mod to remove the bass-boost that Atari built in, so it's all getting much closer to the straight signal processing you'd expect from a sampler.

But (and it's a big but. Still, enough of my weight problems) the manual suggests another way out which doesn't involve opening the case and is likely to give you professional quality sound. It tells you to avoid the Atari digital to analogue (D/A) and analogue to digital (A/D - but from now on I'll just say D/A to cover both) convertors entirely, get a digital interface for the Falcon (which the Plus package has), and plug it in to the digital input and output of the DAT (digital audio tape) that you've got in the studio. You do have a DAT in the studio, don't you? Yes, of course you do. Silly question.

Like nearly every manual, though, it's got its faults, like telling you to select the Edit option from the Edit menu (there isn't one - option, that is, not menu), but these are generally pretty minor.

Less Speed, More Haste

Okay, enough reading, on to the doing. Installation is a cinch. Sort of. Another thing mentioned in the manual was that you'd need Atari's hard drive software, version 6.0 or later. This, of course, I ignored. The hard drive software I use is faster than Atari's, and hence better suited to the needs of direct to disc recording, so things would work out even better.

Sorry, wrong answer. Cubase Audio will collapse in a heap on the floor and weep a lot if it doesn't have the comfort of Atari's software. It will not play at all.

Apart from making sure you're using an Atari driver, all you have to do is plug the Steinberg key into the cartridge slot, the FDI into the DSP port, put the FDI driver in the Auto folder, and copy the rest into a folder on the hard disc. You can use the internal drive to hold the program, but for sampling you'll need to use an external SCSI, so make sure you've partitioned it in a way that you'll be able to use. 20 x 10Mb partitions are not going to be much use to you, since one minute of stereo sampling would need the whole 10Mb. Make sure you've got plenty of space.

Blatant Colour Prejudice

And so it comes into view, Cubase Audio. You can have it in any colour, as long as it's black and white. A VGA monitor is recommended, not so that you can see glorious colours, just so that you can get more on screen. Cubase Audio doesn't have any colours in it, and is designed that way so that you switch your video mode to 2 colour, which gives the processor less to deal with, which speeds up its benchmark tests, which means there's more processor power available for direct to disc recording. If you switch to 256 colour mode, everything slows down, so avoid it, you get no graphical benefit from it apart from a slightly different shade of grey. Not worth it. It works fine with the Atari hi-res monitor, and even copes with the different screen sizes you can muster with Screen-Blaster.

So here I am, with one of the most advanced audio/MIDI packages around. In my living room. Without a keyboard in sight. Wonderful. Time for some improvisation.

Some Seedy Matters

My CD (like many) has a coaxial digital output. The FDI box plugs directly into the Falcon's DSP port and has digital inputs and outputs, in both optical and coaxial form. The current version of Cubase Audio is set up to accept digital information at CD frequency (but see Futures). I rigged up some normal phono to phono leads to stretch from its coaxial input to the CD. This is not a recommended procedure if you want to get the best sound, but it works adequately for testing things out. To maximise your sound quality, you'll have to shell out a few pounds for some coaxial cable, which will have the right level of resistance for the signal to pass through it in the expected manner. If you're REALLY serious about sound quality, you'll have to fork out a couple of hundred for good optical connectors. Sounds a lot, but some people swear by them.

From the Cubase Track List, a track was selected, set to Audio and told to expect a stereo input

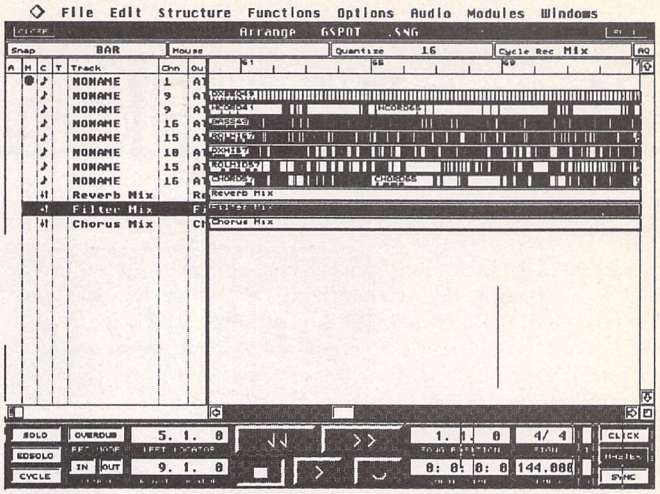

Figure 3

Apart from the three options at the bottom of the list, this screen should be familiar to those of you who've used Cubase's facilities before. All fairly standard MIDI track info.

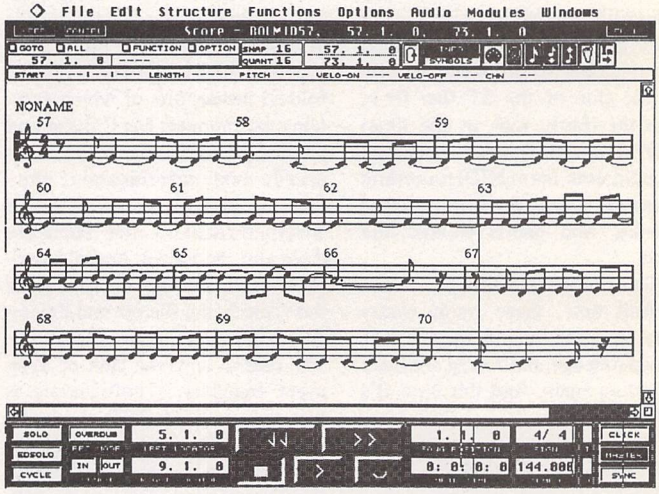

Figure 4

Part of my brilliance on display. I'd never seen a score of my work before. Not very impressive looking, is it.

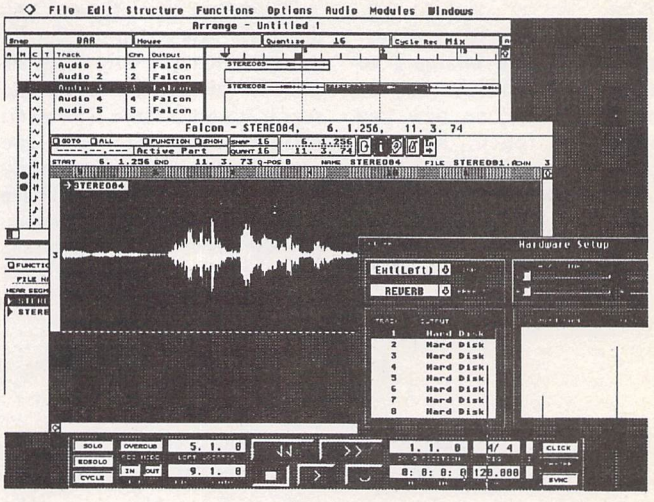

Figure 5

The Stereo02 sample happily continues all the way from start to finish, but we've dragged Stereo04 over it at one point, and since Stereo04 is what we see, Stereo04 is what we hear. You can probably work out what it sounded like from the Edit page waveform.

Histories

Cubase, and its predecessor Pro-24, are programs which allow you to feed musical information into your computer, record it, manipulate it, and then throw it back out to control a musical instrument.

The principle of this is fairly simple. First, everyone agrees on a language for musical instruments so that they can talk to each other (the Musical Instrument Digital Interface, or MIDI system). Second, since it's digital, it's a prime candidate for computer use. Incorporate some MIDI ports on the computer and it will be able to join in with the digital chattering. Third, write a program that can store all the MIDI data coming in on disc, retrieve it from disc, and stuff it out again. Fourth, refine the program so that it can edit the MIDI data that it hass stored. No problem.

That was the basis of MIDI programs nearly a decade ago. They've grown a lot since then, as has the MIDI standard, which now even specifies information about the kind of sound that's expected.

Futures

Steinberg are due to bring out an upgraded version of Cubase Audio, at virtually no cost at all to those who've already purchased the current version, which will do something quite impressive. In fact, when I first heard about it, I thought it was astounding. The Falcon has eight audio channels. ADAT, the digital multi-track medium, has eight channels. Once you've added the necessary peripherals, the Falcon costs a little more, but has the advantage of far easier manipulation of data. ADAT has the advantage of being more widely accepted and having a greater number of inputs.

Steinberg came up with the idea of expanding the capabilities of the Falcon so that it could record sixteen tracks of digital audio. This would mean that you'd not only have more control over the data than with an ADAT, you'd actually have more data to play with. Sixteen tracks instead of eight. Incredible.

What's coming through now is that certain compromises have to be made. Steinberg can provide the sixteen channels, but they can't provide them at ADAT quality. The quality will still be pretty good, around the standard of Sony's MiniDisc or DCC, the digital compact cassette, but that's not enough for professional studios. Pity. Maybe some further tweaks are possible which would once again make Atari THE machine of choice for studios. We'll let you know.

ADAT's superiority in sound quality is due to the fact that it samples at 48KHZ. Cubase Audio currently can only cope with the 44.1KHz of compact discs. This will be amended so that you can feed in digital information from other digital sources, such as DAT and ADAT, and store the data without having to convert it to a different format, keeping the sound quality of the original.

Also in development is an eight-way interface to allow you to plug straight in to the Falcon without having to use a DAT machine as an interface, giving you eight channels simultaneously and with a higher quality than the Falcon's D/A. This would again put the Falcon in a better position to challenge ADAT, although you might well need further add-ons and enhancements for the Falcon to really take advantage, pushing the price differential up. For instance, to cope with playing back all the audio channels simultaneously instead of just a stereo pair, you might be advised to upgrade the processor, and you'll probably need a fast hard drive. Very fast. There has been rumour that, if you want to record 16 tracks, you might have to get a second SCSI drive to cope with the data load. If you do take this route, though, it'd be worth the upgrade.

Presents

One of the big drawbacks of doing direct to disc recording is the amount of room it takes up. That's not so much of a problem when you're sampling, as samples tend to be shorter and can be used in different songs at different times. With direct to disc recording, you're recording a full track, and the only place it's going to do you any good is in that song. Suppose you used all eight tracks for a four-minute song. That's 160Mb gone. An album is going to take about ten songs, 1.6Gb. Not something conducive to an easy life for a studio that turns out an album every couple of months. You could back up to floppies, but that's about 1000 floppies per album, a lot of time, a lot of fiddling about, a lot of lugging bags full of floppies around if you want to do a remix. Alternatively, you could lay out a couple of thousand for a new 2Gb drive every time you wanted to do an album. I have grave doubts this would appeal.

Falcon Audio Plus gets around this. Sort of. When you get the FDI disc, you'll find a couple of extras on it. One of them converts AIF files from stereo to mono and vice versa, a nice enough little gadget. The other relies on your having a DAT recorder around and streams audio files to and from it, letting you save all your album to just a couple of DAT tapes. Pretty good. Of course, if you haven't got a DAT, you're in difficulties. For studio work, it's a good idea to have a DAT around anyway, and buying one will cost you from around £500, which isn't too bad for a master tape recorder and a backup drive, and you then have superior D/A convertors at hand. But you're quite at liberty to ignore my advice and take up weight training with 1000+ floppies. Feel free.

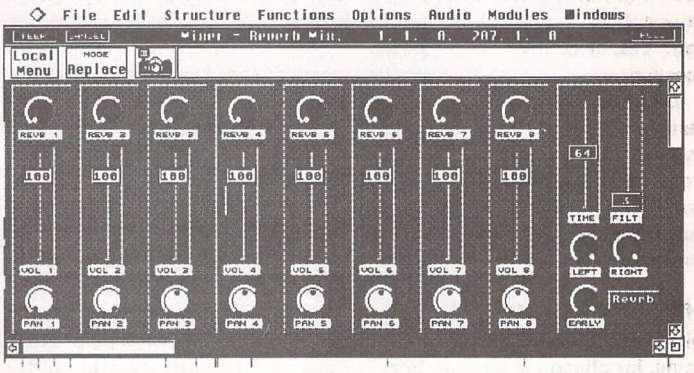

Figure 6

Apart from just allowing you to add effects, these options let you pan the sounds you're hearing, so you can record a stereo track to two channels and then pan them to get the stereo effect you want.

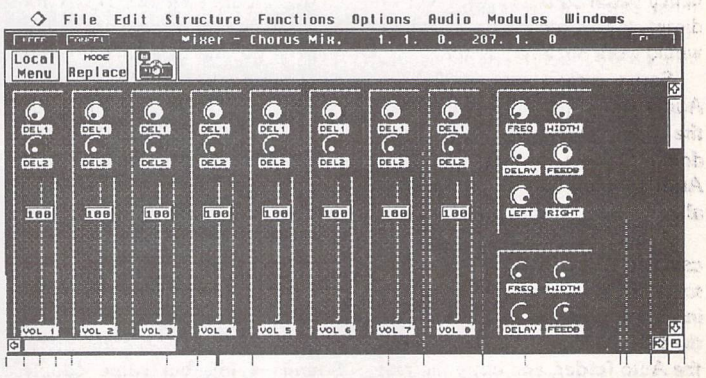

Figure 7

As you can see, we didn't do a whole lot with the Chorus option.

through the external channel, the monitor for the track was turned on, a set of headphones plugged into the Falcon's output, the "play" button on the CD pushed, and I got to hear how the modified Falcon deals with converting a digital input to an analogue output.

Not bad. Not as good as the sound from the CD itself, or the CD through the amplifier, but definitely not bad. A real improvement over the "pre-adjustment" sound.

Seedy Fixations

So how about recording? Basically, what you hear on the headphones when monitoring is some digital information coming through the Falcon's D/A convertor. What you hear when you replay a recording is exactly the same digital information coming through the Falcon's D/A convertor. The convertors don't care where the bits and bytes they're getting come from, they convert them the same way.

When you record from CD, the digital info that comes through the FDI is just stored to disc. Play back from a compact disc or the Falcon's disc, and you get the same stream of digits rushing around. And herein lies one of the "teething troubles" of this piece of software:

At the moment, it expects its digital input to be in CD mode, 44.1KHz. It doesn't take the standard DAT frequency of 48KHz, and you can't decide to save disc space by sampling at a lower quality. It's CD or nothing.

This, of course, is only a "so far" situation. They're working on adjustable sampling rates (see Futures) and should even have them out by the time you get to read this. It definitely falls into the "birth pains" category, rather than being a design fault.

When you do decide to record, it's pretty much the same as when you want to record MIDI - you select your track and press "*" on the number pad. It can take a little while for the record button on screen to react to this since the program gives priority to reacting to sound rather than presenting visuals, but it will punch in on time, whether you set that up manually or automatically. When you've finished recording a section, the Falcon becomes unavailable to you for a short time as it sorts out its sample, stores it to disc and, if you've asked it to do so, makes up a waveform of the sound you've just thrown in.

Waving, not Drowning

Unless you happen to be a real wiz with identifying sound frequencies, volumes and timings - down to the hundredths of a second level - then it's well worth the extra few seconds of processor time and kilobytes of disc space to get the waveform made up. You can get it formed at any point after recording, and you may even need to do this after some adjustments, but having the waveform available makes for substantially easier editing. Looks more impressive too.

Real Life. Real Studio. Real Coffee.

So, having established that it's quite reasonable at doing stereo recordings on domestic equipment, it was now time to test it out in a professional studio. A few polite phone calls and a substantial bribe later, I'm offered the facilities of that doyen of musical supremacy, Clive Latham, within the sumptuous setting of the famed Cobra Studios.

After setting up the Falcon in the studio and getting Cubase Audio running, Clive's first reaction was "Is that it?". Y'see, he's had quite a bit of experience with Cubase, and the new facilities do very little to trumpet their presence. If you already know how to use Cubase, you know how to use Cubase Audio, at least as far as the MIDI manipulation is concerned. That was what we ran through first to make sure everything was where it was expected and was doing what we wanted it to do, with Clive running off some "make it up as you go along" masterpieces with the same nonchalance as an absolutely stunningly dressed woman saying "Oh, this is just something I threw on since I didn't have anything decent to wear".

Standard Cubase works just as expected: quantize as far as a sixty- fourth of a note, allowing a certain amount of "feel" rather than just getting the notes exactly on the beat; show a score of what you've done and edit it as a score; copy sections from one place to another once you've got a "good" version of something that occurs more than once in the piece; use punch in and punch out to re-record particular sections without the danger of recording over any pieces that are already uncommonly perfect; change the tempo; cycle the sections, it's all there.

Just to make sure that it was fully compatible with old files, and nothing to do with me being an egomaniac with pretensions of superiority, we pulled out an old track of mine done on Pro-24. Cubase will try to load old Pro-24 files and convert them, but it admits that certain things might be lost, like cue points for SMP-24/TimeLock and preprogrammed mute settings. It had no problems with my piece, which still sounded as extraordinarily wonderful as it did all those years ago. I was good, y'know. I coulda bin ah contenda. The problems of having a life full of "if only"s.

Sounding it out

Having got comfortable with the standard stuff, it was time to move on to the audio side. First of all we tried the easy way, recording from a CD. But this time, it wasn't just coming through headphones. We'd set up the FDI so that its digital output was going through to the digital input of a DAT recorder, being translated to analogue, and thrown out of the speakers. Here we could do a direct test by recording to the Falcon, then swapping the leads so that we could have either the Falcon or the CD player coming out and compare the two. End result? No difference. Absolutely none. We fed sound into the Falcon, recorded it, then got the same sound out by avoiding the Falcon's D/A converters. Quite impressive, but what could we do with the sound once we'd got it in there?

This time we laid down a MIDI track, then recorded some vocals over it. Admittedly, not particularly good vocals, but we were in a hurry.

Instead of plugging the microphone through the Falcon mike input, we put it into the DAT machine and took the DAT's digital output as our Falcon input through the FDI box. When we'd recorded it, Clive was able to move it around on the Track List as if it was a MIDI section, putting duplicates wherever he wanted, extracting sub-sections of the track and moving them around independently.

Close.. close.. close.. close to the Edit

Cubase Audio handles a sample as a very large piece of data. When you get into editing, however, you're dealing with references to this large amount of data. If you want to repeat a sample in different parts of a song, you don't suddenly take up twice as much disc space, you just take up enough space to say "start playing the sample now"; if you edit out a sub-section, you haven't created a new sample file, instead you just have references to different parts of the same sample file, definitely the most sensible way to do it.

Editing is fairly easy. The waveform is there in front of you, you can listen to any section of it just by clicking on it in playback mode and, if you know your way around, you can chop out any section you want. This is where there are some grumbles. You can't just point to the beginning of the section and drag the mouse through to the end like with MIDI files. It doesn't work that way. Instead you have to type in your start point and end point to define the block you're after. Clive, being the master he is, caught on to it pretty quickly, but it would

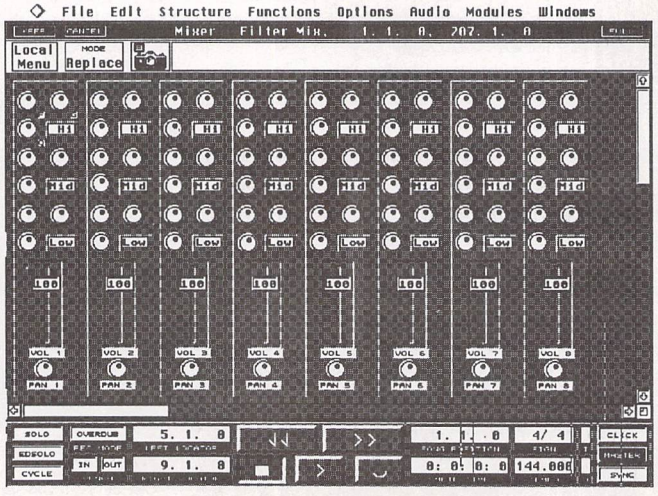

Figure 8

This we did play with, quite excessively, but here's a shot of it before we started messing around.

definitely benefit from being more "intuitive".

Keeping on the right track

Where you do get to do some drag-and-drop in Track manipulation, there are some neat side-effects. Any sample you want to play back has to be assigned to one of the eight channels the Falcon has for audio. No two samples can have control of one channel simultaneously. But this doesn't mean that you can't assign two samples to one channel at the same time. S'pose that you did a Weird Al Yankovic impersonation and recorded Michael Jackson singing "Because I'm Bad ...". There you have a sample, it has control of a channel (okay, two channels if you're doing it in stereo). Now you sample yourself singing the word "Fat" over the same backing music. That's another sample. It can be assigned to any channel. You take hold of it on screen, drag and position it on top of the other sample so that they both have the same channel. When you play back, the first sample has control of the channel for the first two words, then the second sample cuts in and takes over. This doesn't alter either sample. If you were to drag "Fat" off, you'd have the full Michael Jackson version back again. The top sample (on the window) has priority on the channel for its duration, and hands it back again as soon as it's finished. If you can see it, you can hear it.

The sample is treated a little differently to a MIDI event (obviously enough), and lacks some of the "wouldn't it be nice if .." frills that those with only a passing acquaintance with reality (i.e. me) would have hoped for. There's no way to change the pitch of the sample, nor do you get a score of it, but you do have some scope with quantizing and changing tempo. You can take a sample with a certain duration and say that you want it to last THIS long instead. Cubase will stretch out the time of the piece without adjusting the pitch, a pretty neat trick. You can also try to convince your MIDI piece to match in with the not-too-strict tempo of the sample by using Q-Points (some imaginatively named reference points which can show any "musically significant event"), stating how many bars the sample goes on for, that sort of thing. You also get to change the volume of any section of the sample so that you can fade in and out automatically or change the dynamics of the piece.

The Object of my Effections

Because of the audio nature of the program, there are a few new gizmos thrown in for you to adjust your sound. With the package, you get a chorus effect, reverb, and, most impressive, a filter mixing desk.

We tried the chorus. Even a high quality chorus box would have trouble sounding impressive with vocals, particularly these vocals. It has Delay, Width, Frequency and Feedback knobs on to adjust the chorus to your requirements. Clive fiddled a bit, grunted at it, and we moved on to reverb. The effect was slightly better, but if you're in a studio, you almost certainly have a better reverb box available. It has Time, Filter and Early Reflection controls, but again, it's not stunning. Keep to the studio boxes. Onwards.

The Filter Mixer is definitely the best of the bunch. For high, medium and low frequencies, it has complete parametric control, with Gain, Frequency and Q (which, for some arcane reason, stands for bandwidth this time). Gain is obvious. It lets you increase or decrease the amount of the tinkering you're doing. Frequency lets you "tune in" to the frequency you want the gain to have an impact on. Q adjusts the "width" of the frequency, so that you can cut or add to a very specific frequency, or adjust everything within a wide range of that frequency. This was pretty good, getting a good word from Clive, a rare and treasured occurrence.

Something which didn't get the elusive good word was the way in which the knobs in these effects were controlled: Strangely, when you want the effect to increase, you click on a control knob and pull DOWN, and vice versa for decrease. This shows the knobs turning on screen. If you just try to grab one and turn it, it will go down when you're moving up and up when you're moving down. It seemed to be the wrong way around. If they'd been shown as sliders instead of knobs, you'd obviously have to go up to increase the effect, something which does occur at other points in the program. Because they're knobs, they've reversed it, something which takes a bit of getting used to and doesn't seem to make any sense. At last, something to complain about. This program has got a hell of a long way through a review without me being nasty about it. That's impressive. Maybe I'm just mellowing in my old age.

The Bitch is Back

Okay then, on to bitching time. During the period I was trying it out, there were a couple of times when the whole program crashed on me. I don't know what I was doing at the time, but it did happen. It's not something you'd want to happen when you're in the middle of a £20,000 recording session, so be careful when you're using this, and save your work often. It's probably something that occurs with nearly all new products, some slight glitches that get smoothed out as the version numbers change (damn, I'm being mellow again).

How about this: Sometimes we'd do a sample, then try to play it back and get some very strange sounds coming out, as if we'd turned down the tape speed. The sample was there, but it was coming out low and slow. But here I have to admit that my hard disc has just 638kbit/s data transfer rate and 43 ms access time, not meeting Steinberg's expressed speed standards. (No, it's gone. I've lost the knack for being nasty. Drat.)

One final try: When we first tried to play back through the DAT, we disconnected the input lead from the CD. From that point, the DAT didn't know what frequency signal it was receiving. The DAT can switch between different input frequencies so that it can digitally record CDs (at 44.1kHz) or DAT (at 48kHz), but it has to be told what to expect. The Falcon doesn't seem to send out any clock signal to let the DAT know. Once we re-connected the CD to the digital input of the FDI, the DAT happily settled back to 44.1kHz and got on with its work. This should be amended when the other digital frequency adjustments are included in the program.

Just before we dismantled, we decided to listen to the Falcon through its own (modified) output. Clive had already heard the sounds coming out of it when using the pre-modified version with D2D, and hadn't been particularly bowled over. This time we tried the CD/Falcon input approach again and were surprised by the result: There is a difference, but you had to be listening for it to bring it out. Since we could now throw it through the mixing desk without the overloading, none of the previous dis-

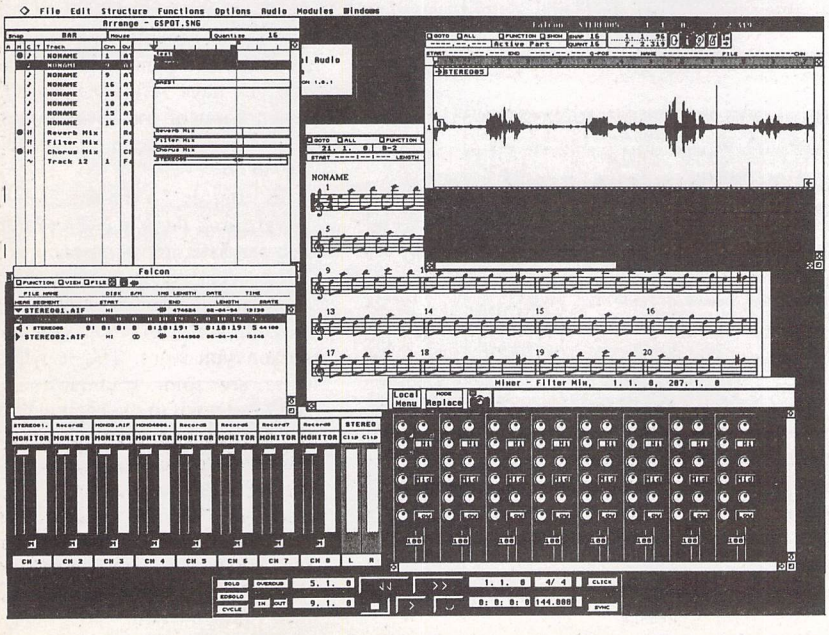

Figure 9

All this and more can be yours as long as you've got ScreenBlaster and a VERY big monitor.

tortion was present, and it gave a perfectly acceptable sound. Again, not good enough for professional studio quality, but perfectly acceptable.

At an Impressionable Age

Clive was fairly impressed. He's got ADAT (eight track digital tape) in the studio, and had been sold on the idea of it being able to do all the digital editing and mixing down he needed, but he's found that it's fiddly, unreliable and not the all-encompacing panacea that he thought. After having tried the Falcon with Cubase Audio, he started thinking about how much easier it would be to edit eight tracks just by grabbing them and moving them around on screen, something he was easily able to do with his previous knowledge of Cubase, saving him some of his (expensive) time, and letting him more easily experiment with different approaches.

I was reasonably impressed, particularly when I heard of what might be on its way from Steinberg (see Futures). This package finally does what should have been done as soon as the Falcon came out, shows what the Falcon is capable of and keeps it compatible with the stuff you've already spent years creating on the ST. The future of studio recording looks set to be in the use of direct to disc recording which will allow the same ease of manipulation for tracks that MIDI brought about for electronic instruments. As with that area, there will be a progressive growth in the products on offer so that eventually, the wish list of being able to create a score, change a note, sculpt a sound will be the norm, and the things coming out now will seem primitive, but compared to what we've had before, this is an enormous leap.

If you've already gambled on the Falcon being the machine of the future for the studio, here's your chance to really show it off. When the updates come through, it could present a real challenge to ADAT for sound quality (as long as you by-pass the D/A), give you far greater and easier control of the tracks, and have all the added benefits of being a MIDI package as well. It costs, but for Falcon studios, it's worth it.

Points for:

- ✓ Backwards compatibility
- ✓ Sound indistinguishable from the original
- ✓ Fairly easy to manipulate
- ✓ It's the only integrated package out there

Points against:

- ✘ Price is not conducive to casual purchase
- ✘ Currently limited to CD digital frequency
- ✘ Silly design for controlling knobs

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Mastering Calligrapher

The Hypertext Personal Guide for Calligrapher that offers quick referencing to all commands with concise screen summaries and tutorials, including tips and tricks.

Mastering Calligrapher is ideal for both novice and advanced users alike. Novice users will find the simple step-by-step approach an easy way to lessen the learning curve, while advanced users will benefit from the referencing feature.

Each command is explained in detail with all of the necessary information given on how to use it correctly. Tips and tricks are offered throughout the guide to give you ideas on how to exploit each command to its fullest.

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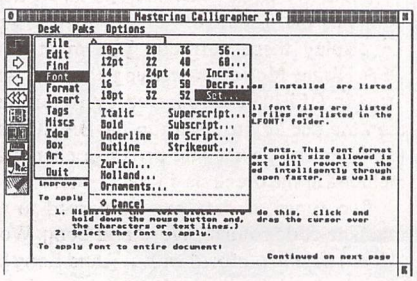

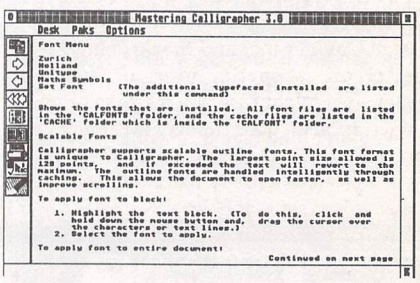

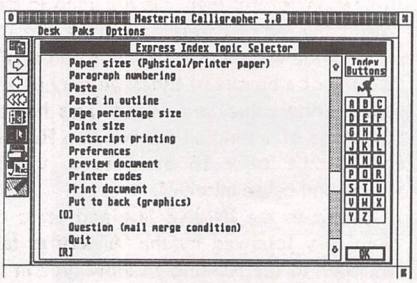

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Beyond GFA

Passing Data, 68000 Addressing and Accessing GFA Arrays

By Mark Butler

Readers of my last tutorial will have seen how GFA BASIC and GFA ASSEMBLER can be linked to create a powerful development tool. Now we will explore passing groups of data between GFA BASIC and Assembler, 68000 Address Modes, and how BASIC String arrays are stored in memory.

Passing Data between BASIC and Assembler

We have already discovered that the 68000 CPU includes many 32 bit wide registers that can be used in a similar way to GFA Integer variables. Apart from a few special cases there are two types of Register available to us, Address and Data. If some clever person mentions Supervisor Mode operation to you then smile sweetly and wait for them to leave!

Address Registers a0–a7 have special properties for addressing data stored in the computer's memory, while the Data Registers are best suited to manipulating that data. The Program Counter (pc) and Stack Pointer (sp) Registers are a special form of Address Register. Just to confuse you the Stack Pointer register also goes under the name of Address Register a7. Using sp or a7 in your code will produce exactly the same result, it's just that sp is more readable.

Now for some hands-on fun. Load GFA Assembler and run GFA BASIC from within it as we did in the last tutorial. Previously we were able to retrieve a single result from our machine code. Now we will consider how we can pass data to it. The commands 'C:', CALL, and RCALL can all do the job.

My own preference is for the C: command, so that's the one we'll continue to use in our examples. We have already used the C: command in the previous tutorial. The closed brackets associated with it can now be filled with data to be passed to your machine code. This data doesn't have to be in any particular order – the machine code can pick and choose from the values sent to it. The data is passed to the machine code routine by way of the computers Stack.

All computers have various amounts of memory that can accommodate programs and data. The memory mostly fills up from the bottom up, but the Stack starts at the top of memory and works its way downwards. It's a special memory structure that amongst other things stores the return addresses of Basic and Assembler Procedure and Function calls so that you can safely return from them. The special Address Register sp (or a7) keeps track of the size of the Stack by pointing to how far it has grown down your memory.

In GFA BASIC type in the lines:

```
DEFINT "a-z"
INLINE assembler%,&H1000
PRINT C:assembler%(L:100,L:800,L:500)
```

The DEFINT line ensures that all numeric variables that follow are of the Integer type. To display these correctly you must enter GFA Direct Mode by pressing the Esc Key. Type in DEFLIST 2 followed by Return and then the Esc key to return to the BASIC Editor. Note the values and prefix L: characters included in the brackets on the C: line.

Two types of data can be passed to the machine code routine, Word and Long. Word (16 bit) data is prefixed with W:, and Long (32 bit) data is prefixed with L:. If the data hasn't an L: or W: prefix then it is assumed to be a Word value, so be careful to include every L: prefix if you want to pass all Long values. For the sake of a couple of bytes we may as well pass a Long value as a Word. This has the advantage of setting all the bits in a Register and doesn't leave 16 of them to wander around and cause mischief.

Cursor to the INLINE line and press the 'Help' key followed by the 'A' key to take you back to the Assembler. Now type in the assembly lines:

```
move.l 4(sp),d0
move.l 8(sp),d1
move.l 12(sp)d2
```

These lines will move the values 100, 800 and 500 into the data registers d0,d1 and d2. They use a method of addressing called 'Address Register Indirect With Displacement'. All will be revealed!

Address modes are various ways in which we can use the Address Registers to access the computers memory. The jargon used to describe these modes are technically correct but not easily digestible. A quick guide to most of them follows; don't worry if you can't remember the exact terms for the modes, just concentrate on where to put those brackets and extra numbers and characters to achieve the desired effect.

68000 Address Modes

We have already used the move command, so we know that it is can be used to copy a value into a Register.

```
move.l #88888,d0
```

is called Immediate Addressing, with the 88888 value immediately moved to Register d0 without anything else be done with it. Note that machine code instructions work left to right: the value on the left (in this case #88888) is moved to the Data Register d0. GFA BASIC has some very simple and quick instructions that are very similar in operation to machine code. Unfortunately, they are written the other way around. ADD a%,50 takes the right most value of 50 and adds it to the variable a% to the left of the comma. Very confusing.

By adding the .l characters to the move command we have specified a Long 32 bit move. For Word and Byte moves we can substitute w and b to make move.w and move.b. The GFA BASIC instruction LET d0%=88888 works in the same way. If we remove the hash # symbol then we change to Absolute Addressing.

```
move.l 88888,d0
```

takes the value of 88888 as a Memory

Address and moves the value stored there to d0 instead. Just like LET d0%=PEEK(88888) Register Direct Addressing is where the contents of a Register are copied Directly over to another Register; move.l a0,d1 copies the contents of a0 over to d1.

```
BASIC, LET d1%=a0%
```

Register Indirect Addressing is obtained by surrounding an Address Register with brackets. The value in the Register is not copied directly but is taken to be a pointer to a position in the computer's memory where a value is stored; move.l (a0),d1 copies the data stored in memory position a0 over to d1.

```
BASIC, LET d1%=LPEEK(a0%)
```

Address Register With Postincrement can be obtained by Adding a plus + sign to a bracketed Address Register to tell the computer to Increment the Address Register Post to the operation. Or, in plainer English, add the value 4,2 or 1 to the Address Register depending on the number of bytes in the move specified, Long, Word or Single Byte, after the data has been moved, so that it then points to the next position in memory.

```
move.l (a0)+,d1
BASIC, LET d1%=PEEK(a0%)
ADD a0%,4
```

Now for Address Register Indirect With Displacement. move.l 4(sp),d0 displaces (Adds Temporally) a value to the address Register to form a new combined address.

```
BASIC, LET d0%=LPEEK(4+sp%)
```

The Address Register is not changed by this operation. We are using it as a pointer to find data stored above or below it. Our programming example uses the Address Register sp in this mode. As well writing our data to the Stack, the BASIC C: Command adds a final address value that will enable the computer to Return to BASIC from where it was called. The (sp) points to this address which isn't of much use to us. What we want is all that lovely data which was stored before it. The Address mode employed allows us to look back up the Stack without changing the value in sp that could confuse the computer and cause it to crash.

Remember that as the Stack grows downwards in memory Displacing the sp with a positive value will take us back up the stack to where our data is stored. The Displacement 4 will give us our first value, 100. Further displacements of 8 and 12 will give us our other two values 800 and 500. If we had passed Word values instead then our displacements would have been 4,6, and 8. The code assigns the values 100, 800 and 500 to the data registers d0,d1 and d2. Just to prove that it works add a few lines to the program to perform a little maths and return the value to GFA Basic in d0.

```
move.l 4(sp),d0
move.l 8(sp),d1
move.l 12(sp)d2
add.l d1,d0
sub.l d2,d0
rts
```

The instruction add.l adds the value stored in the first Register d1, to the second Register d0, giving us 100 + 800 = 900. Then sub.l subtracts the value in d2 from d0, giving us 900-500=400. When we get to the rts instruction the value that we want is already in d0 and will be returned to BASIC. Assemble the code and Return to BASIC. Now Run GFA BASIC to get the value 400.

You can change the values in the GFA program to get different results. The program will even handle Negative values, but will ignore decimals.

```
PRINT C:assembler%(L:1100,
L:-8500,1:L1500) will give us:
```

1100+-8500-1500 = -8900 (+- gives us -).

So there we have it, many values passed to a machine code routine and a result passed back. Now we will look at how we can return not just one value but many. There are two ways of doing this.

First we could pass a reserved memory position as an extra value to the machine code that could be a GFA Basic array or another INLINE. The machine code could then write many values back to this reserved memory that could then be accessed by the BASIC. Try the following Basic and Assembler examples:

GFA BASIC

```
DEFINT "a-z"
INLINE assembler%,&H1000
INLINE storage%,&H100
PRINT C:assem-
bler%(L:100,L:800,L:500,L:storage%)
PRINT
FOR i%=storage% to storage%+16 STEP 4
    PRINT LONG{i%}
NEXT i%
```

Note the extra INLINE that will be used by the machine code to store its return values. Also the passing of the storage% variable pointing to this reserved memory in our C: line.

Finally the use of LONG{} to retrieve our results; LONG{} is a version of LPEEK() that allows us to read signed Long values from anywhere in memory.

GFA Assembler

```
move.l 4(sp),d0
move.l 8(sp),d1
move.l 12(sp),d2
movea.l 16(sp),a0

move.l d0,(a0)+
move.l d1,(a0)+
move.l d2,(a0)+

add.l d1,d0
move.l d0,(a0)+

sub.l d2,d0
move.l d0,(a0)+
rts
```

Note that the fourth move instruction has been changed to movea.l. The difference between movea.l and the move.l command is minimal, and the Assembler Editor will automatically change move.l to movea.l when you enter the line as and when it is required, so don't worry about it.

We have used Address Register Direct With Postincrement to store data into the Reserved memory pointed to by a0; a0 has the value of storage% passed to it from GFA BASIC. That allows the program to write its values without overwriting anything stored before. Assemble, Return to BASIC and Run to get the result:

400 (PRINT C: Call result)
100 (1st Value Passed)
800 (2nd Value Passed)
500 (Third Value Passed)
900 (Result of 2nd Value added to 1st Value)
400 (Final Result of Third Value Subtracted From Previous Result)

The second method is for the machine code to store data where it wants, and then tell you where to look for it on return. The following Basic and Assembler programs are an example of this:

BASIC

```
DEFINT "a-z"
INLINE assembler%,&H1000
posn%=C:assembler%(L:100,L:800,L:500)
PRINT posn%
PRINT
FOR i%=posn% TO posn%+16 STEP 4
    PRINT LONG{i%}
NEXT i%
```

Assembler

```
move.l 4(sp),d1
move.l 8(sp)d2
move.l 12(sp),d3

lea data(pc),a0
move.l a0,d0

move.l d1,(a0)+
move.l d2,(a0)+
move.l d3,(a0)+

add.l d2,d1
move.l d1,(a0)+

sub.l d3,d1
move.l d1,(a0)+

rts

data:.DC.10,0,0,0,0
```

This is very similar to the previous example, but there are a few important differences.

First we have shifted all our Data Registers along as we need to use d0 for something else.

A new instruction lea, Load Effective Address, has been used to set up the Address Register a0 with the address of the routines own data store using the pc Register and the data: label. This is another instruction that is invaluable for the writing of Position Independent Code. The pc Program Counter

Register is a special Address Register that keeps track of where we are in memory as we work our way though our machine code instructions. The distance in bytes between the lea instruction and the .DC.l data line is unchanging. This is called a Relative distance. The actual position in memory of our .DC.l data line can be found by adding the current value of the pc Register and the distance to the ,DC.l data line together. It doesn't matter where our code is running in the computer's memory as the pc value will move with it. This is precisely how the lea instruction works. Note that we store a0 to d0 before making any changes to a0 with the following Postincrement Addressing instructions.

The value in d0 is Returned to GFA BASIC to show where the data has been stored. Finally, the .DC.l data line has been added to hold the five long words that are to be stored there. Assemble the program, Return to BASIC and Run for the following result:
1305710 (Memory position of stored data - Will vary)
100 (1st Value)
800 (2nd Value)
500 (3rd Value)
900 (2nd Value Added to 1st)
400 (3rd Value Subtracted from Previous Result)

Have a play with the Address Modes and Passing and Retrieving Data while you wait for your next issue of ST Applications. Before I sign off we'll take a quick look at how GFA BASIC stores its data arrays.

GFA Data Storage

GFA BASIC has many types of numeric and string data types that can be readily manipulated from within BASIC. For those who want to get at this data in their own way there are the VARPTR and ARRPTR instructions. VARPTR gives you the storage address for any Numeric or String variable. The GFA BASIC lines

```
DEFINT "a-z"
LET a%=500
PRINT LONG{VARPTR(a%)}
```

will give us the result of 500, the same as PRINT a% when run. For Strings the GFA code

```
DEFINT "a-z"
LET a$="Hello"
LET posn%=VARPTR(a$)
FOR i%=posn% to posn%+LEN(a$)-1
    PRINT CHR$(PEEK(i%));
NEXT i%
```

will give us 'Hello', character by character, Note that as well as the position of a$ we also need to know the length of the String which is obtained with the LEN(a$) instruction. Things get a bit more involved when we move onto Data Arrays.

A Numeric Array can be accessed like this:

```
DEFINT "a-z"
DIM a%(5)
FOR i%=0 to 5
LET a%(i%)=i%
NEXT i%
posn%=VARPTR(a%(0))
FOR i%=posn% TO posn%+4*5 STEP 4
    PRINT LONG{i%}
NEXT i%
```

Note that we have had to Multiply the Dimension of 5 by 4 in the 2nd FOR/NEXT loop to allow for 4 Bytes per Integer element. Running this program will give us the values of a%(0) to a%(5). Numeric Arrays are easy in that a chunk of memory is set aside with all the elements of the array taking up the same number of bytes and following each other in sequence. Strings stored in arrays though can be of various lengths, So each String would have to have its position separately obtained with a VARPTR command and its Length with a LEN.

It is tempting to jump to the conclusion that by finding the position of the next string in the Array we could work out the Length of the previous string without using LEN by calculating the difference between the two VARPTR values. This doesn't work for three reasons.

Firstly, all strings start on an Even Byte boundary. If a string is an Odd Number of bytes long then an extra byte is used to pad it out. This byte could be any value.

Secondly, a String isn't given a VARPTR or LEN value until it has had some text assigned to it.

Finally, the order in which the String Elements are stored in memory depends on the order in which they were assigned values. Type in and Run the following code to demonstrate:

```
DEFINT "a-z"
DIM a$(5)
a$(1)="Hello"
a$(2)="There"
a$(0)="Well"
PRINT "Element","Position","Length"
FOR i%=0 to 5
PRINT i%,VARPTR(a$(i%)),LEN(a$(i%))
NEXT i%
```

Running the program will only give us values for a$ (0), a$(1) and a$(2). All others return 0 as they haven't been used yet. Also, if you look at the values produced by the program then you will see that a$(2) has pushed a$(1) further up the computer's memory to make room for itself, and a$(0) has done the same to a$(2) and a$(1), so the String arrays are stored in memory in the order of a$(0), a$(2) and a$(1). So it looks as if we're rather stuck with having to use VARPTR and LEN to find every string, and indeed I used this method in Super Card 2, looping through every String element in BASIC before passing on the Position and Length information to the machine code Search and Scramble routines. But then I managed to unlock the secrets of the ARRPTR command, and things got a lot faster.

The GFA manual helpfully points out that for String Arrays the ARRPTR command tells us where in memory we can find the array Descriptor, and then leaves us to our own devices. Much PEEKing later, it all made sense. The Array Descriptor points to an Index in memory that holds all the Position and Length information for a String array. So now we can pass a whole String array to our machine code routine in one go, which is precisely what happens in Super Card 3.

We'll add a few lines to our last program to show how it works:

```
DEFINT "a-z"
DIM a$(5)
a$(1)="Hello"
a$(2)="There"
a$(0)="Well"
FOR i%=0 to 5
    PRINT i%,VARPTR(a$(i%)),LEN(a$(i%))
NEXT i%
PRINT
ad%=ARRPTR(a$())
PRINT "Array Descriptor Position=";ad%
ai%=LPEEK(ad%)
PRINT "Array Index Position=";ai%
PRINT "Array Dimension=";LPEEK(ai%)
ADD ai%,4
PRINT
PRINT "Element","Position","Length"
count%=0
FOR i%=ai% TO ai%+5*6 STEP 6
    PRINT count%,LPEEK(i%),DPEEK(i%+4)
    INC count%
NEXT i%
a%=INP(2)
```

Run this to see that the ARRPTR method works just as well as the VARPTR and LEN arrangement.

First we find the Array Descriptor with the ARRPTR command and store it in ad%. Then we find the Array Index by LPEEKing the Array Descriptor value, storing the result in ai%. The first Long word in the Array Index pointed to by ai% is LPEEK'd to give us the Array Dimension (DIM?). Note that the value given is 6 which takes into account a$(0) as well as the 1,2,3,4 and 5 elements.

After adding 4 to our ai% Index pointer to skip over the 4 Dimension value bytes, we move on to the actual array elements. Postincrement would have been useful here!

Every element is Indexed using 6 bytes. The first four form a Long word which points to where the String Element is stored (VARPTR), and the last two are the Length of that String (LEN).

The count% variable is used to show which element we are looking at, And the INP(2) line waits for a key press to stop the results being covered with a 'Program end !' Alert. So there you have it. Next time we'll do it in machine code.

If you are experiencing any difficulties with the tutorials then please feel free to contact me through the magazine. Any other GFA problems are also welcome, Please include a disc including all relevant files with your query. Having your letter on disc in ASCII or 1st Word format will also ensure that nothing gets lost. See you in the next gripping instalment.

Shareware Column

This month Joe Connor takes a look at the recently released Kandinsky upgrade and has news of other Shareware updates...

Most of the authors I support are developing On-line help using a new Hypertext system called ST-Guide (naturally I'm trying to organise an English version). With ST Guide installed as an accessory you can access the On-line help which can feature images, text styles and different fonts, etc. It seems an excellent way to offer On-line help which can also double up as the On-disk documentation.

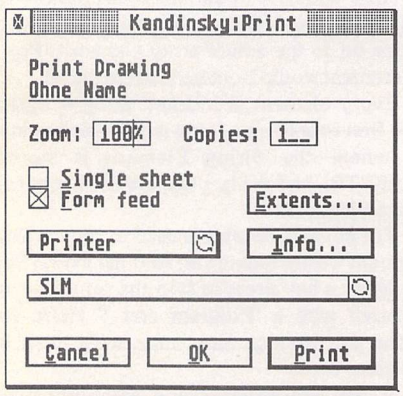
OCR and Everest have both been upgraded with new releases:

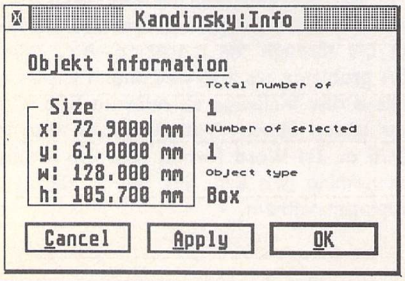
OCR is now at V1.25 and features faster Character recognition, ST Guide support.

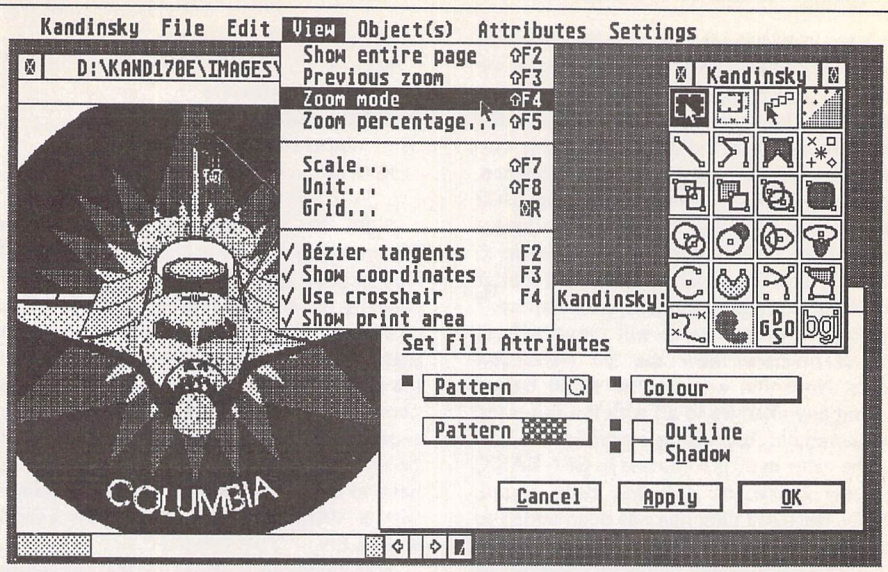
Everest is now at V3.3e and now uses a key system. Registered users should send me an SAE and disk to the address given for Kandinsky and I'll send them a copy of the latest version and their key details. Here's just a few of the new features:

- ✓ Two new 'File' menu entries: 'Save changes' and 'Close all'
- ✓ Everest can create backup files
- ✓ Save a marked block using 'Save as' option
- ✓ Faster Search and Replace option to disable the auto-reverse direction in the search/replace dialogs, a much requested change!
- ✓ New 'Replace selection' and 'Select word' menu options
- ✓ ST-Guide and WINX support added

Below: New printer dialog; same range of options, just better organised.
Bottom left: Info dialog is now editable. Selected objects can be positioned and sized entirely from the keyboard.
Bottom right: Plenty to keep you busy in here: the 'View' menu and several other options are new and the layout has been reorganised to make things easier to get at.







Kandinsky Revisited, V1.70e Upgrade

Kandinsky is a superb Shareware vector drawing package which takes over where EasyDraw left off. Kandinsky supports all the latest Atari standards (SpeedoGDOS, Clipboard, MultiTOS, Drag & drop, Falcon etc) and most of the popular system tweaks such as WINX (enhanced GEM windows on all TOS versions), the GEMINI desktop protocols, ICFS (Iconify windows on pre TOS 4.x machines) and MagiX (multiTOS alternative).

There are now over 70 registered UK users and this response has encouraged Uli to continue to develop Kandinsky. This release features a staggering 40 new features, loads of enhancements and a number of bug fixes.

What's New?

My favourite major new features are:

As you can see from the screenshots the front end has been reorganised with a new 'View' drop down menu and toolbox.

IMG format bitmaps can now be freely loaded, moved and resized as pseudo objects. This makes it possible to manually vectorise simple bit-images and include complex bit image data which would not normally be included in vector images, e.g. photographic detail.

The new 'Info' dialog can directly edit the position, width and height of objects in real time! It's now possible using this feature to accurately size objects using the keyboard instead of the mouse.

Support for the older v1.1 GEM Metafiles to offer backward compatibility with many older but popular programs which cannot cope with the v4.0 GEM Colour Metafiles generated by Kandinsky. Uli got a bit fed up with Kandinsky being blamed for Metafile problems when he'd gone out of his way to support the latest standard. Unfortunately there's no such thing as a standard Metafile but this new feature certainly improves your chances of generating a usable Metafile.

A new snap tool is available which makes it possible to easily align objects to each other. Each object type features different snap points, for example a line has a snap point at each end whereas a text object has a snap point on the baseline before the first character.

It's now possible to retrospectively edit text objects as if they were currently being created.

A special version compiled for users of machines equipped with a 68020/030/040 CPU AND 68881/82 FPU is available, so that's at least one application that uses the FPU!

Here's a selection of other new features:

- ✓ Speedo text can now be converted to polygons/filled polygons.
- ✓ Optional 'Mini toolbox' which frees up more screen area for drawings.
- ✓ Text effects are now possible using Speedo fonts.
- ✓ Drawing templates can optionally be loaded in all the popular European and US paper sizes and custom templates can be created and saved.

Why Register?

The Kandinsky on-disk manual is only available to registered users and a few non-essential feature such as PostScript export an full zoom tool are disabled in the unregistered version.

UK Support and Registration

Kandinsky is Shareware and may be freely distributed by PD/Shareware libraries and BBS's but may only be included on magazine cover disks or CD-ROM collections with prior written permission.

You can register in the UK as follows:

a) Make a cheque for £15.00 payable to Joe Connor

b) Include your name and address in the form you wish it to appear in the Registered User dialog

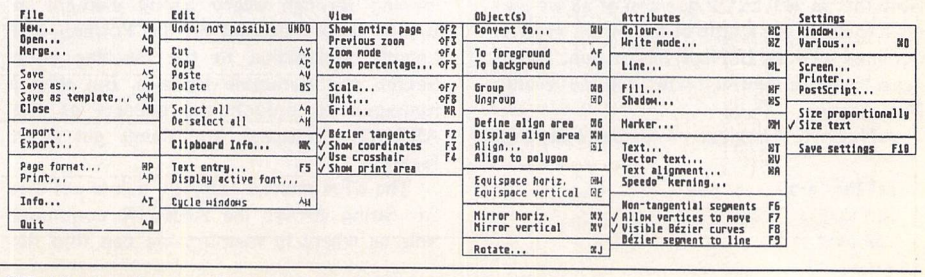
c) Enclose unlabelled floppy disk

d) Send to: 65 Mill Road, Colchester, Essex CO4 5LJ, England

Please do NOT send cheques to the FaST club as this causes unnecessary delay and expense.

After registration you will Emailed or posted your personal 'Key' which unlocks the registered only users features. Keep it safe as it may also be used to update future versions.

Registered users can obtain the latest English Version at any time by sending a Stamped Addressed Envelope enclosing an unlabelled floppy disk.



VIEW II

Replace the Desktop's *Show File* function with a far more powerful one! Chock-full of features, **View II** is one utility you won't want to do without.

- View text files with bi-directional mouse scrolling, fast search, and screen or file print options.
- View picture files (sixteen different kinds) in colour *or* mono. Converts colour to mono or vice versa. View STe pictures on a regular ST, too!
- View (and extract) ARC and LZH files, even "lh5"-compressed LHarc files.
- Play digitized sounds through ST or STe hardware at any speed from 5KHz to 30KHz, even through DMA hardware!
- View SEQ and DLT animations, even if you don't have enough memory!
- Works on ST, STE, and TT and with desktop replacements like NeoDesk 3! Falcon version due soon.
- Takes *no memory* when installed on a hard drive. When installed in RAM, it takes 48K *or less*!
- Includes a custom, high-speed RAM disk and a reset-proof clock setter!
- All viewer programs written in 100% assembly for high speed and small size.
- We couldn't find a program that wouldn't work with View II installed; and we tried a lot!
- Supplied with comprehensive printed manual.

So why settle for plain-vanilla text file display? Add some real muscle to your Desktop with **View II**!

Price: £14.95

Written in the USA by:
dmj software

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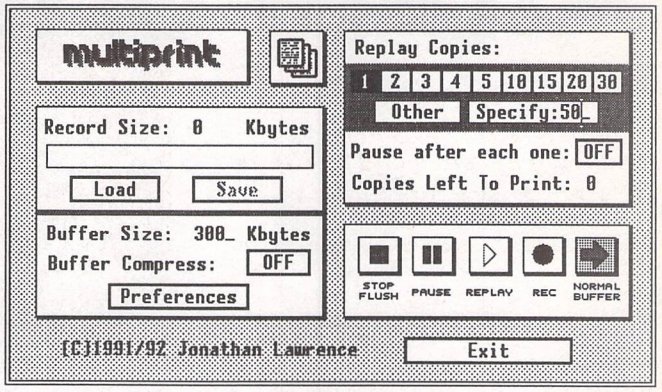
Multiprint



Multiprint is an intelligent printer buffer that records data sent to your printer via the parallel port or serial port. Multiprint is controlled by an intuitive dialog box with VCR style buttons. Features iclude:

Replay of recorded data for high speed multi-copy printing of letterheads or leaflets.

Saving of data to printer file (*.PRN or compressed *.PCN) and loading of buffer with previously created printer file - for quick'n'easy reprinting at a later date. No need to rerun your DTP or art program.

Option for compressed buffer and printer files for minimum demands on memory and disk space. Average 300 dpi DTP data compressed to 40% of its original size.

Load and print printer files produced by other programs - and compress them to Multiprint's own PCN format for better use of disk space.

Background printing with "Priority Delay" allows you to share a chosen percentage of your computer's time with Multiprint.

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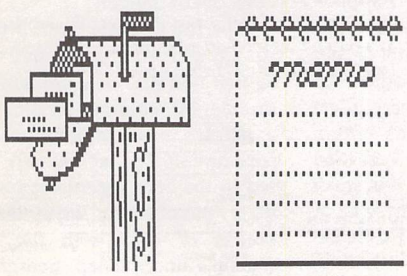
STA43

Feedback



Use this space for any feedback you'd like us to read.

STA43

Atari Portables

Two of our readers give their imressions on two of Atari's portable computers, the PC-compatible 'pocket' Portfolio and the early ST 'notebook', the Stacy.

Atari Portfolio Revisited

OR

Power Without the Weight

by Graham Curtis

I have always liked the idea of computing on the move. My job takes me around the country where I have to take notes, write reports and talk to other specialised computer installations. Traditionally we used Husky 8-bit hand-held machines which were fine as terminal emulators, but a little clunky as portable notebooks. The price, early on, was stupendous: £5k (yes £5000!) for a CP/M machine with 512K of RAM configured mainly as a RAM disk. We now use laptop PC's but they generally have an appetite for batteries which is ten times greater than the Husky. This means that as well as the computer, one must carry spare batteries or charger, both of which add considerably to the bulk.

I had often looked at palmtop computers with a degree of interest, but they were seen as toys which were not of much use professionally. Nevertheless, I rather liked the idea of a computer that could be carried anywhere in a pocket. Only the price was a major drawback for personal use. I started reading the magazines and discovered that the Atari Portfolio, originally highly regarded, was now seen as rather an also-ran. This intrigued me as it meant that the price was becoming more realistic. I eventually took the plunge over twelve months ago and bought my Portfolio and parallel interface for £129 when passing through Tottenham Court road one February morning. I actually thought I had bought the serial interface, but didn't realise my mistake until we were 50 miles up the M1!

Over the past year, I have made a great deal of use of my 'Port' and find that the criticisms levelled against the machine in comparisons with the trendy Psion 3 are either unfounded or irrelevant. The Atari keyboard is certainly much better if you want to use the machine rather than just pose with it. Batteries (three AA size) last me around two months per set, and the internal memory of 128K bytes is quite sufficient for several weeks of note taking. I have my machine set up with 64K of ram disk and 64K of user memory. With the inbuilt applications, I usualy have around 30K of free memory so the ram disk could be a little larger.

Built in Software

When you have a machine you can take anywhere, you want it to do all those things that you can do in the office. The Portfolio is a 128K MSDOS-compatible machine and comes with a number of built-in applications written by ex-Psion people DIP. The programs are very well integrated and all work very nicely together from a menu front end or from special function keypresses. The user can switch between applications at will and the machine can be turned off in the middle of any task. When turned on again the application will begin where it left off. Because the machine uses a version of MSDOS you can load any DOS application (if it is small enough) on to the RAM drive C:. A single card drive (not PCMCIA) card slot is available and is seen by the operating system as drive A:.

The built-in ROM modules comprise:

* Word processor
* Address Book
* Calendar/Diary
* Spreadsheet
* File Transfer/Setup

As might be expected, the applications are rather basic. Where they really score is in their integration and the intelligent way they operate. This is user-friendliness without the WIMP environment of GEM or Windows. The menu structure of each application is common so that time is not wasted on strange commands. Menus can be operated with cursor keys and 'return' or with the key letter of the command. If you've changed your mind press escape and you can back out of danger.

The rather basic word processor allows formatting to any width so that text can be word wrapped on the 40 column screen, then expanded to 80 columns (or more) for printing. The facilities are limited to the bare essentials, but it is quite possible to write lengthy pieces of text with the little machine on your lap. Search and replace is available, as is cut, copy and paste. There are no frills, such as spell checking or word count-

ing. Once a large (1500 words) document is loaded, scrolling reduces to a crawl, but options are included to jump from beginning to end or to any line in the text (if you can remember where you were!). The machine can be switched off if you have to suddenly stop your creative output. When you switch back on the little cursor will be blinking obediently where you left off.

The Filofax beating calendar and diary allows appointments to be entered as single items or entries which can be repeated at regular intervals. Once inserted the items can be moved or changed at will. Audible alarms can be attached to any item, so your first appointment of the day could be Wake Up! In use the calendar and diary are integrated. The calendar forms the front end for searching through your appointments. Pressing enter when the cursor is over a particular day reveals all of the entries for that day.

Like the diary, the address book has a two-tier approach. The front end is simply a list of names and phone numbers which can be searched and sorted. Pressing enter when on a particular entry exposes the lower, more detailed, layer of information. This could be an address or any intimate details you might wish to commit to silicon. One novelty for the address book is the auto dialler. Hold the Portfolio's mini speaker to your telephone mouthpiece and let it dial numbers straight out of the address book. If you work where you need a dial prefix to get an outside line, then this can be added as a selectable option.

The spreadsheet, while not being in the heavyweight class, is perhaps the most capable of all the applications. The work area is limited to 127 columns by 255 rows and masquerades as a little brother to Lotus 123. Surprisingly it is quite pleasant to use on such a small screen as it allows the fixing of a title row and column so that you can keep track of your s'cell labels as you scroll through your expense account. Many of the familiar Lotus commands are in there, and if they aren't you can export the spreadsheet to your main computer for heavyweight processing.

File Compatibility

All of the applications except the spreadsheet (which uses Lotus .WKS files and commands) work with plain ASCII text files, and information can be cut and pasted between them using common clipboard functions. Address book and diary files can be created and edited in a standard ST text editor and transferred to and from the Portfolio. Atari's excellent Calappt (supplied free to the small band of Falcon 030 purchasers) is able to use Portfolio diary and address files if you need interactive editing.

In typical Atari fashion the inbuilt file transfer utilities work only with the parallel interface and are designed to work with PC compatibles (software is provided on disk). The ST is not directly supported for file transfer, and several (expensive) packages have been released which provide parallel file transfer using a special cable.

A serial interface can also be had and looks remarkably like the parallel version except that it is generally £20 dearer. In return for your extra £20 you get no software and little direct support in the Portfolio. The inbuilt setup program does allow setting of speed and parity, but despite the trendiness of the little machine this is still stone age DOS technology without the niceties of software flow control.

Several shareware comms programs have been written to right the situation, but it is a mistake to buy the serial interface on its own. Without the transfer utilities supplied with the parallel version, getting the comms software on board is not easy. Better to have both (rather expensive interfaces) or just the parallel one. I have both now and use the parallel one with PC's and the serial version with my ST/Falcon.

Additional Software

Despite the Portfolio's diminutive memory size, a number of PD and shareware programs have been produced for it. The bugfix UPDATE.COM (STClub Disk APF.04) is a must if you are to avoid the ravages of a couple of nasty bugs built in by the DIP programmers. My machine has been perfectly behaved for the last twelve months since I installed it.

XTERM2 by Jim Strauss on disk APF.03 is a very useful terminal and comms program. Both ASCII and XModem file transfers are supported. At just under 3Kb it is well worth the space it occupies.

Many other 'baby' applications exist to perform file management, word counting and file compression. A couple of versions of BASIC exist and several games are available. The disks mentioned above and others in the series, APF.01 to 04, are well worth having. You can get a mountain of Portfolio programs on a 720K floppy.

Conclusion

I bought my Portfolio because it looked as if it would help me organise myself, and allow me to write on the move. I chose it specifically because it was unfashionable and dropping in price. Advances in technology are not always to the advantage of the customer. Surprisingly, after 18 months they are still available if you look in the right places. The memory cards are an expensive way of backing up your data, so if you don't need the data at your fingertips, it is better to store it on the ST and transfer it when needed.

Pluses:

- ✓ Cheap
- ✓ Good battery life
- ✓ *Very* portable
- ✓ Well thought-out software

Minuses:

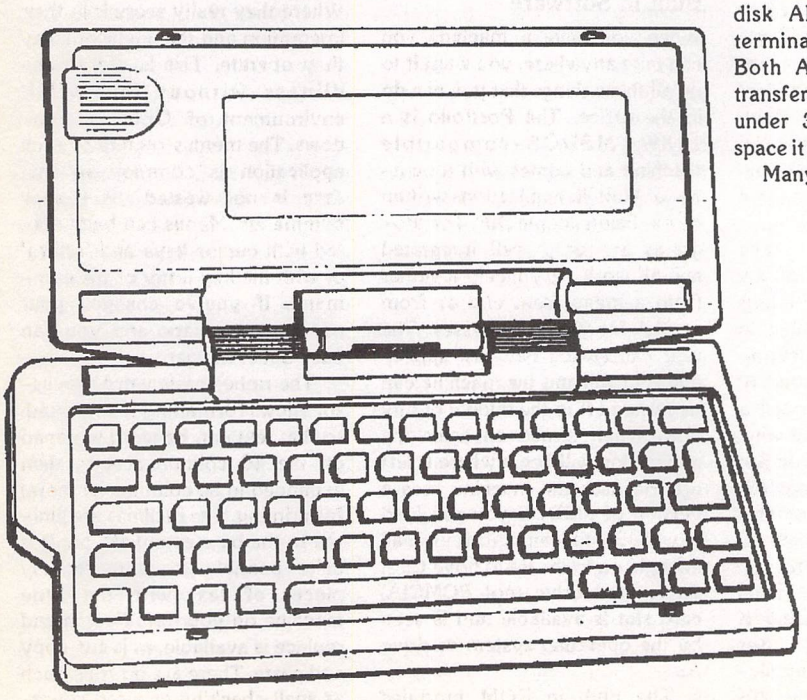
- ✘ Old technology (a plus if you're cynical like me!)
- ✘ Interfaces not built in
- ✘ Support fading

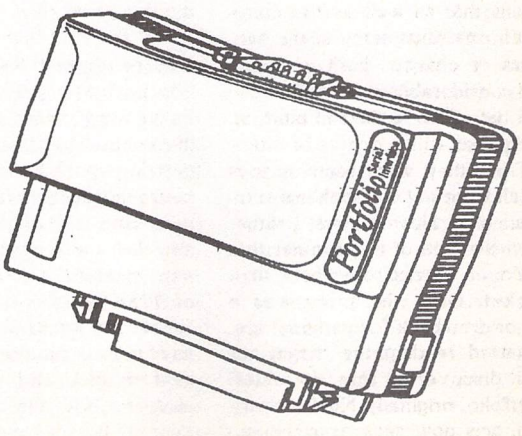
Suppliers

Silica Shop - 128K Portfolio, £99 + VAT including some free items; 081-309 1111

Pico Products - 128K Portfolio with Modem: £139.95 + VAT; 256K Portfolio: £134.95 + VAT; 0483 32276

Dabs Press - Various; 0772 623000





A user's view on Atari's first portable computer... by Tim Finch

Atari Stacy

A number of you have probably seen, with envy, many PC owners carrying round a 'notebook', a portable PC, with black and white screen, and thought, 'I'd like one of those.' Well, some of you may not know that Atari did release a portable ST called the Stacy. This was to be followed by a much better designed machine called the ST Book, but few of these later models ever made it the UK shores....

Last year I had the opportunity to buy a Stacy2/20 new for a very reasonable figure (with no warranty however). The only drawback I was told about by the company was that there were no battery packs available but it did come with a mains transformer. I ordered one not really knowing if it was a good move, only having seen a Stacy at a MIDI music show briefly. It arrived and the investigations began.

Stacy Explained

So, what is a Stacy2/20? Well it is essentially an STFM TOS 1.4 machine with LCD screen fixed in ST High resolution, built in Trackerball and the keyboard. The 2/20 model is equipped with 2MB RAM and a 20MB IDE hard disk unit. The other model commonly made was the Stacy4/40 which, as you might guess, is 4MB RAM and 40MB hard disk. The machines also have a 720K floppy drive built in. The machine is a complete ST - all the ports are there: Cartridge, MIDI, Printer, Serial, Monitor, Hard Disk, B Drive, plus a voltage-in socket for the power unit. In addition there are the two mouse/joystick sockets, the mouse port having a switch between external mouse and internal trackerball.

The LCD screen is back-lit and is a sort of royal blue on cream! In broad daylight it can get a little hard to see. It does have brightness and contrast controls that help 'angle' the view to be the best for you but if you have an SM124/5/144 handy when at home, plug it in! The Stacy will happily drive both LCD and hi-res monitor together. The main bugbear of the LCD is that when you move the mouse, the pointer disappears so that you are often left looking round to find it again!

On the Move

Now you may ask, 'What's the point of a portable ST if it is not portable?' Well, I asked this too and after a hunt through Maplin Electronics catalogue I decided I could buy some good quality external batteries to do the job. For the keener types there is the internal space for the original Stacy battery pack but you may have to hunt high and low for suitable batteries the right shape. I ended up buying a 12v & 6v (as the input needs 18v) Lead Acid rechargable batteries, both 4 Amp Hour. I also bought the ready-made charger kit (NOT cheap). But I think it has been worth it as, even though it's all quite heavy (the word 'luggable' rather than 'portable' springs to mind here), I get four hours' power before recharging which does my regular London train journeys with time to spare!

Stacy in use

I have successfully run all my ST software on this machine. After buying my Falcon I sold my STE kit (which was quite a bit of stuff) as I felt the Stacy was perfectly good enough for 'ST compatibility' when the Falcon couldn't cope with older software. The main part of the keyboard is lovely - I much prefer it to the standard ST/Falcon affair with positive feel on the keys and a good travel up and down - the whole thing is quite springy. The trackerball is all right, but I always plug in a mouse at home. The left and right mouse buttons are very spongy - in fact I had to work on my right button after I bought it before it would work properly. The number keypad, along with the F keys and arrow keys, etc., are all miniature keys that are OK but nothing to write home about. I suppose that Atari had to do something to reduce the overall space the keyboard needs. The trackerball is on the right hand side in front of the 'squashed' keypad, brilliant for all you right handed folk....!

Carrying around

The back panel of ports is covered by a hinged lid for water proofing which, when down, can be arranged to act as a 'back raiser' to give the Stacy a little bit of a lift. This is quite nice, and a careful look at the keyboard shows how the keys are actually only 'flat' under you fingers when this 'back lift' is in place. The cartridge port and mouse ports are also covered for water-proofing and when the LCD lid is folded down over the keyboard it makes a reasonably sealed container that certainly in light rain you would have no worry about. The weight of the Stacy is the worst thing. It is made from normal parts and is therefore quite a lump to lug around. The handle is an insult as it is very thin and so cuts into your hand under the weight. I have sellotaped a big block of foam around the handle. Despite it looking funny it helps tremendously in the carrying. Of course I also have to take a bag with the batteries in (pretty heavy) and, if going to London for a while, the charger as well which, together with clothes, etc., suddenly requires a car to get to and from the rail stations at each end.

Expandability

Atari have very nicely put two hatches on the base of the unit. The first covers the 2Meg RAM expansion. These are SIP units and you need two 1Meg ones. Compo have advised me they keep SIPs in stock but it looks like Atari have left precious little room for them and I think I'm going to have trouble getting the cover back on when I fit the SIPs. Secondly, they have thought of giving you access to the TOS 1.4 ROMS. You can thus remove these and install TOS 2.06, if you want, for better desktop, etc. A nice touch.

Conclusion

This was the best Atari purchase I've made. I'm writing this document on the train and we have just passed through Gillingham in Dorset! I've had it running Notator Logic (more on this in my review which appeared in STA issue 41), playing music and printing a score simultaneously. The few gripes I have are far outweighed by its usefulness. I nearly always take it to work as it passes for the only Atari computer in the shop these days! It's also very useful just as a second machine whilst I'm beavering away on the Falcon. If you can handle the weight when carrying, can make your own battery pack and don't mind everything being in cream and blue(!) the Stacy is a very good purchase (if you can lay your hands on one). It might be worth a few phone calls or placing a WANTED classified advert in STA. What Atari could do, which would be an excellent seller, is to release a 2MB STE TOS 2.06 based machine with LCD screen for about £499 and say £599 for 120MB HD version, both with good-life battery packs and chargers. And possibly a Falcon030 portable... Nice thought... I wonder...

Grafix Arts

Paul Keller

TECHNIQUE – Composition (a guide)

Last month we looked in a fairly detailed way at the planning stages of animation. This month we look at 'composition', a part of the planning stage for individual picture creations.

Composition is the use of ingenuity in the arranging of your picture details so that they form an organised whole. "The art of creativity is self discipline."

It is all too easy when we start our picture constructions to rush ahead on the wave of enthusiasm. We must learn to refrain from starting our pictures in a haphazard way doing the parts we like best or starting with our favourite colours first.

Geometrics

The utilization of composition varies with each individual and there are no hard and fast rules. There is however a formula to work with which helps the artist greatly, involving the use of unity and balance. An acquaintance with certain basic geometric forms and their relationship to good composition helps considerably and this is an important part of the formula for good composition.

This is where the computer comes in ever handy, as the creation of these geometric forms with it means that they are not so rigid as when worked on paper. By this I mean we can easily experiment with our pictures by cutting and pasting different sections. As well as this of course we have the option of shrinking, enlarging or distorting various parts of our pictures. The computer makes an excellent composition tool in this respect and with most art packages you can have more than one screen in memory at once providing you with even greater variation for experimentation.

The creation of these basic geometric patterns must not be regarded to rigidly, and really as with anything, the more pictures you create and the more you use composition the greater will your sense for this mode of working develop.

Faults

Before moving on to the forms it would be wise to look at some of the faults often found in the use of composition. A common mistake in the early stages of learning composition is making the main object in the picture too large and thereby cropping it to the extent of loosing parts of it from view. The opposite case is also a problem, making the main picture object, for example a house with some trees, too small. In such a situation, especially if there are only a few objects present, there will most probably be far too much sky and greenery. The middle way is the best, this means a balancing act. If you did have such composition as a house and trees to work with you would probably find it best to place the house near the bottom left or right of your picture. The placing of a tree opposite this would help greatly but it would be best to crop this tree rather than place it within the frame and therefore making the picture look to mechanical.

A small object which is very dark can be as prominent, or more so, than a pale coloured object which is several times larger. This means that in composition the balance of light and dark is as important as placing, and both must be considered together. Positioning the parts of a picture is important in itself, but a good arrangement can look 'out of plumb' if an excess of dark or light in one area is allowed to drag everything to one side.

To help you in finding faults with computer compositions a simple practical guide is to divide a rectangle representing the extremities of your picture into thirds. A template of this can be constructed on a separate screen, and when this grid of lines is completed pick it up as a brush block and in X-ray mode place it over the picture you are working on to check it.

Decide what is to be the point of interest in your picture, place this point of interest or object over any of the lines which bisect in your template, normally the nearest one to it.

Containment

Apart from the basic frame shape of your picture other determining factors can be created to help contain your picture. Start with basic geometric shapes such as the triangle. With this method the object of interest needs to fit very roughly within the shape and so follow its basic contours. An example of this type of composition might be a tree which is made to fit the basic shape. The tree does not and probably should not fit this triangle exactly but roughly, just enough so as the brain can see this similarity of basic perspective between the tree and its 'triangularity'.

For any colour composition work a greater depth and amount of experience will be necessary. When building up your compositions do it slowly and in stages. When working on the computer simply create the basic outline of your objects first, then you can easily manipulate these for positioning. Fill in these areas with their main overriding colour to help check that there are no colour clashes in your picture. This also helps check the contrast levels of your different picture objects. The brighter the object the more prominent it will be. Similarly, a bright red will stand out more than a light blue sky. It is important to make as much use as possible of white space and light tones against dark.

Summary

A picture should look complete without a frame although with the ST(E) unless you change the border colour to the same as

that of the paper you will have a frame before you start your work. This will mean working within these confines. One way which may help is to run your computer at 60HZ, so increasing your picture work area in relation to the monitor screen size.

The picture should hold the viewers interest without a tendency for the eye to wander off the edge of the screen. However having said this, a black border does help to centre your eyes towards your picture creation more easily, and is my favourite frame border method. Although a little simplistic it does give a great contrast.

Shapes or areas of colour help give it solidity. Sweeping curves suggest movement and a feeling of space. Be wary of attempting to show too much detail. Ensure that the emphasis, area or point of interest, lies well into the picture. Do not make the picture too 'busy', that is having to many things happening in your picture. Aim to get the important parts of your creation pointing inwards, and overlapping or joining. In this way you help to show a complete and integrated scene and avoid an impression of an arrangement of disconnected parts.

Beginners' Forum

Mark Baines

Archives and File Compression

Part 3: Archiving

After last month's article on how to deal with archive files, this month I'm going to tell you how to create some of your own.

But first, I want to mention the convenience of Installed Applications which there wasn't room for last month. On the Desktop and in some Desktop replacements, such as NeoDesk, you can tell TOS about certain filename extenders and which program to call when one of them is double-clicked on. This means that you can double-click on, say, DUMMY.ZIP rather than STZIP.PRG, and STZIP.PRG is loaded up with DUMMY.ZIP already selected in one window. Many programs have this ability of passing filenames to them - see Figures 1 and 2. However, there is a snag. You can only install one extender per program from the Desktop. You can get around this by editing the DESKTOP.INF or NEWDESK.INF file. You can install TWO-IN-ONE so that it is loaded when you double-click on a .ZIP, .LZH, .ZOO or .ARC file and de-archives that file automatically. Install TWO-IN-ONE for one of these extenders as normal, then edit the DESKTOP or NEWDESK.INF file copying the appropriate line you'll find at the bottom and editing the file extender at the end for each, like this for DESKTOP.INF:

```
#G 03 04 C:\ARC\TWOINONE.PRG@ *.LZH@
#G 03 04 C:\ARC\TWOINONE.PRG@ *.ZIP@
#G 03 04 C:\ARC\TWOINONE.PRG@ *.ZOO@
#G 03 04 C:\ARC\TWOINONE.PRG@ *.ARC@
```

or this for NEWDESK.INF:

```
#G 03 04 200 C:\ARC\TWOINONE.PRG@ *.ZIP@ @
#G 03 04 200 C:\ARC\TWOINONE.PRG@ *.LZH@ @
#G 03 04 200 C:\ARC\TWOINONE.PRG@ *.ARC@ @
#G 03 04 200 C:\ARC\TWOINONE.PRG@ *.ZOO@ @
```

Don't worry if most of these details are different as long as you have multiple lines with different extenders at the end. This isn't the place to explain further - maybe another time.

Archiving Files

There are two ways in which to produce your own archive files - using the TTP command line or a shell program.

ARC and LHARC archives

The syntax for the command line use of the LHARC TTP program is similar to that of de-archiving files in last month's issue. To add one or more files to an archive you use the 'a' parameter, so

```
a dummy.lzh dummy.prg dummy.doc read.me
```

adds DUMMY.PRG, DUMMY.DOC and READ.ME files to the archive file DUMMY.LZH. If DUMMY.LZH doesn't exist, then it will be created.

If you want to delete the original files after archiving (useful perhaps when backing up old stuff from one disk to another and wanting the space back) you can use the 'm' for move parameter instead of 'a'.

At a later stage you may find that one of your files has been updated since last archived. You can replace this file with the 'u' parameter if you don't want the filename to change. If you want to add the file but with a different filename then use 'a' to add it. So, to update the READ.ME file in DUMMY.LZH:

```
u dummy.lzh read.me
```

Again, you may use the '-h' hold parameter for LHARC only to see what happened after the program finished. Also, it may be useful to use the 't' test parameter mentioned last month to see if the archive is OK. For help on using the program and a list of its parameters, then just call the program with an empty command line.

ZIP archives

STZIP has a TTP program called ZIPJR.TTP which, as you may recall, uses a slightly different parameter style. The parameter '-a' is used to add files (note the minus sign) and '-u' to update files as above. STZIP is also different in that it has four different compression methods - Store, Shrink, Implode and Deflate. Deflate is the latest addition and compresses the files the most, but it isn't the default method so you need to stipulate it on the command line. The parameter is '-e' immediately followed by 's' for Store, 'h' for Shrink, 'i' for Implode and 'd' for Deflate. So,

```
-a -ed dummy.zip dummy.prg dummy.doc read.me
```

adds DUMMY.PRG, DUMMY.DOC and READ.ME to DUMMY.ZIP using the efficient Deflate method.

To move files you need '-a -m':

```
-a -m -ed dummy.zip dummy.prg dummy.doc read.me
```

This will delete the listed files from the disk leaving just DUMMY.ZIP. You can, as before, use the '-h' hold parameter as well. Call the program with an empty command line to see more parameters.

Unfortunately, TOS has a very short TTP command line and the above won't fit unless using a replacement desktop, such a NeoDesk which provides a more sensible length. If that is the case then you may be able to use wildcards. Notice how there are three files called DUMMY with different extenders. As long as those files are the only ones in the folder called DUMMY you can use the wildcard '*' so that this line will do the same:

```
-a -m -ed dummy.zip dummy.* read.me
```

or even

```
-a -m -ed dummy.zip *.*
```

if there are no other files at all in that folder and you want them all archived. The wildcard '*.*' means 'any and all files'.

If you can't use wildcards then you will have to add each file separately rather than all at once. Or better still, use a shell program!

The STZIP shell program makes life easier, of course. Double-click on STZIP.PRG and select the directory and filename in the file selector where you want the ZIP archive. Click on 'OK' and you will get the STZIP dialog with the name of the ZIP file over the left window. It displays an empty list at this stage, of course. If you haven't configured STZIP before, then click on the 'Config' button and choose your preferred method of compression. For Deflate you can also choose between Fast, Medium and Best. Select Best - the difference is negligible. Save the settings. In the right directory window select the files you want to add to the archive by clicking on them. To open folders you have to double-click on them. You may single-click on a folder to select it and all of its contents will be added to the archive. Click on the 'Compress files' button to add the files and when STZIP has finished you should see them listed in the left archive window. You can add more files at any stage or delete ones by selecting them and clicking on the 'Delete' button. Updating files can be found by clicking on the 'Add mode: Normal' button.

‹subhead›ZOO archives

As mentioned last month, ZOO has two modes of parameter entry, the single-letter format and the word format. To add a file to an archive you use 'a' or '-add'. To move a file you use 'm' or '-move' and to update an archive 'u' or '-update'. Files can be deleted from the archive with 'dP' or '-delete'. So, using ZOO.TTP

```
a dummy.zoo dummy.prg dummy.doc read.me
```

adds DUMMY.PRG, DUMMY.DOC and READ.ME files to the archive file DUMMY.ZOO. If DUMMY.ZOO doesn't exist, then it will be created.

The default compression method for ZOO is rather poor and not that much better than ARC - see last month for a comparison. However, there is an additional high compression method that many people forget to use. This uses the 'ah' parameter instead of 'a' and produces excellent results although not quite as good as LHARC or ZIP:

```
ah dummy.zoo dummy.prg dummy.doc read.me
```

Call ZOO.TTP with just an 'H' parameter to get extra help and examples.

ARJ archives

At present there isn't a program that can produce ARJ archives on the ST. This is probably a good thing!

UUEncoding files

As mentioned two months ago, the only time you will need to produce UUEncoded files is when sending e-mail to someone and you want to include program files with it. This is OK if the file isn't too big (less than 10K). Do check if the recipient and system would tolerate this method first. Floppy disks only cost a first class stamp to send! Also note that no BBS system that I know of allows UUEncoded files to be sent in message bases or netmail so this is only of value on the Internet.

Firstly, compress the program with LHARC, ZIP or ZOO. Then load up ESS UUCODER. If the file is large you may break it up into smaller segments by specifying the segment size in the 'Segmentation' menu. Anything generally over 64K needs segmented and a patience system postmaster! Go to the 'File' menu and select 'UUEncode file' and then select the file from the file selector and the program will produce a file with a .UUE extender or .UUA, .UUB etc. if segmented. You then write your e-mail message and merge the file at the bottom.

Self-Extracting Files (SFX)

Producing self-extracting archives is very convenient for the recipient as they don't have to mess about with any of this command line nonsense - they just double-click on the file!

To produce one you must first decide on what file compression method to use, LHARC or ZIP. With ZIP you need ZIP2TOS which comes with the STZIP package. This only works with ZIP files compressed with the Deflate or Stored method, so stick to Deflate and ZIP archive your files as above. Then double-click on ZIP2TOS, click on 'OK' for the two alerts and 'No' for the third. Choose the ZIP archive file in the file selector and you should then have a file on disk with the same name as the archive file but with a .TOS extender. This file will be larger than the normal archive file because it also contains the decompression program; see Issue 41.

If using LHARC archives then you can use SFX_LZH but beware! This program does not produce a self-extracting TOS file that works unless you use the LHARC '-o' option that produces '-lh1' compatible archives (the latest LHARC's use -lh5- compression method by default which is faster and produces smaller files). All appears to work OK but the TOS file just extracts the compressed files and doesn't decompress them - they are useless. Be careful.

So, produce your archive file:

a -o dummy.lzh dummy.prg dummy.doc read.me

and run SFX_LZH.PRG. Click on the '.TOS' button to make a file with the .TOS extender and click on 'Create'. Choose the LZH archive file in the file selector and then the folder for the TOS file in the second file selector. This method produces larger SFX files than ZIP2TOS mainly because of the poorer -lh1- compression method.

Program Packers

I pack all my program files on my hard disks with ICE v2.4. It saves quite a lot of space and the slightly extra loading time is hardly noticed. Double-click on ICE_2_4.PRG and select 'EXEC' button when asked "What do you wish to pack?". Reply 'Yes' to the "Relocate after decrunch" alert, then select the file in the file selector. As an example, a 97130 bytes program file was compressed to 46108 bytes - a saving of 51022 bytes! If you are having trouble fitting some applications and their files on floppy disks then consider this. ICE produces the smallest files but is slightly slower than PFXPAK (97130 bytes down to 50950 bytes). To unpack an ICEd file you need Mega DePack, see last issue. PFXPAK can depack its own files. Any version of PFXPAK 1.8 or earlier works, but I've had nothing but trouble from v2.0 and the beta version 3.0 - avoid them.

Shells

After setting up TWO-IN-ONE from last month, producing archive files is easy. You already have your preferred default method set up, say ZIP but TWO-IN-ONE is intelligent to notice that if you call your archive file DUMMY.LZH, it will create a LHARC archive ignoring the default.

Double-click on TWOINONE.PRG and then 'OK'. In the left window select the folder where you want the archive file to be (you can create a new one with the left 'Folder' button) and then the left 'Archive' button. You can change directory in the file selector again if you wish and provide a name for your archive file. This name now appears at the top of the left window. In the right window, select the files you want to archive - shift-click selects them all. Now finally click on the large arrow making sure that the box underneath says 'Add'. You can also select 'Update' or 'Move' here as well.

Well, that's it - what a marathon, but I hope you now have the confidence and knowledge to tackle these files and create your own.

Send me a letter or e-mail with ideas for future articles. Thank you for the letters received so far. Although I can't promise to respond to all personal queries, I'll do my best if a SAE is enclosed. You will also find me on CIX and the NeST, TurboNet and FidoNet BBS networks where this magazine is supported.

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E-mail:
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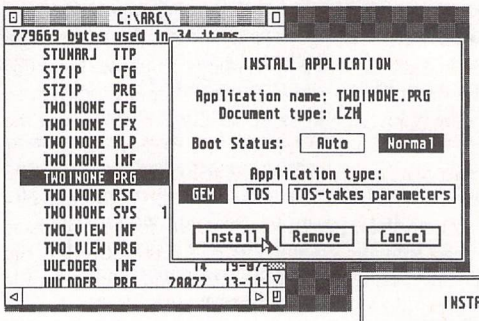
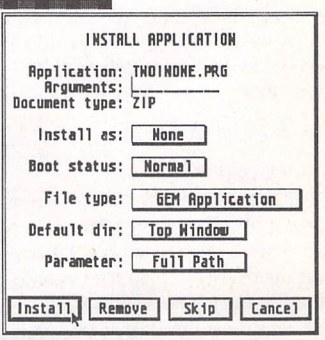
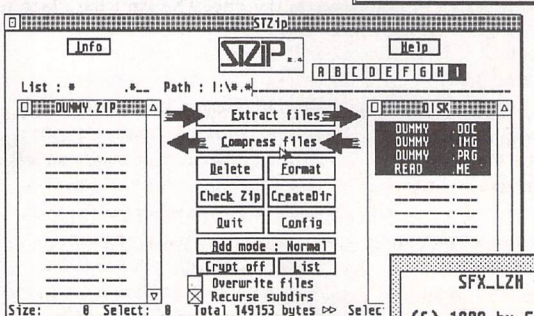
NeST: 90:105/5 STA support in N.ST.MISC echo
FidoNet: 2:259/29.10 STA support in ATARIST echo
TurboNet: 100:106/0.10 STA support in T_ATARIS echo



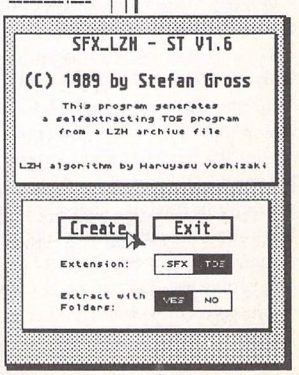
◁ Figure 1. Installing an Application with TOS 1.4. TOS 1.2 doesn't have the 'Boot Status' button. The application has to be in the same directory as the file.



▷ Figure 2. Installing an Application with MultiTOS, TOS 2, 3 and 4 are similar. You may need to experiment with the Default Directory and Application Window selections but those shown work in this case for files anywhere on disk.



◁ Figure 3. About to compress the four files on Drive I: into the archive file DUMMY.ZIP on the left.



▷ Figure 4. About to create a Self-Extracting TOS file from a LZH archive file.

Going On-Line

Mark Baines

Demon Internet Ltd

Whilst CIX is chiefly a conferencing system (see last month) with limited access to the Internet, Demon Internet Ltd offers a direct connection to the world-wide Internet where the basic Dial-Up service makes your computer a node on the Internet whilst connected to Demon. You get an Internet address and become part of the Demon domain where your node can have as many users as you wish, such as mark@linnhe.demon.co.uk and jane@linnhe.demon.co.uk.

When a Demon user logs on to Demon they are connected to the Internet and have available all the normal services that would be expected from such a link including multiple sessions, so that you could be downloading a file through anonymous ftp from one computer, doing a file search (archie) and reading mail all at the same time.

Low cost access

Demon Systems Ltd, an established software house, started the Demon Internet Service on 1st June 1992 and it was the first system in the United Kingdom to offer low-cost, full and complete Internet access. In fact it was started on the basis of discussions held on CIX. Today, there is an estimated 4,000 subscribers with over 150 new ones a month.

Demon runs on various computers where services are distributed between them so that if one goes down it doesn't totally disrupt the service. Each computer is connected together with Ethernet and routers and finally to Sprintlink in the US which is Demon's link with the rest of the Internet and a totally independent Internet service provider in the UK. There is also a direct link into Imperial College in London which is the largest ftp and archie site in Europe. Besides the headquarters in Finchley London, users can call the Points of Presence (PoP) or nodes in Warrington, Edinburgh, Cambridge, Reading and West Yorkshire (Sheffield, Leeds, Bradford, Hull). All the modems are USR HSTs with V32bis and V42bis.

A Demon subscriber can have a SLIP (Serial Line Internet Protocol) or PPP (Point to Point Protocol) connection. SLIP and PPP are protocols that allow computers to fully use the Internet with a standard phone line and modem instead of a high-speed dedicated line. PPP is quickly superseding SLIP. This requires special software, a terminal emulator won't do. For most users Demon can provide the necessary software, free or shareware, to get you started. The Atari program, called KA9Q NOS, is powerful and presents a multitasking environment but isn't user friendly or easy to set up especially compared to PCs and Macs. It is character-based which makes it difficult to access some services on the Internet such as WWW.

Services

As expected Demon provides the usual Internet services of anonymous ftp and telnet to any Internet sites that allow it as well as Internet mail and Usenet newsgroups. At the moment Demon doesn't have servers for archie (holds information about large numbers of files and can tell you where they can be found on the Internet), gopher (go for this, go for that - a menu-driven searching facility), WAIS (Wide Area Information Server - a more powerful system for use with indexed databases) and WWW (World-Wide Web - the hypertext-based system for finding and accessing Internet resources). These can be obtained by telnetting other computers on the Internet that provide those servers.

Demon has the complete list of the Internet RFCs (Request For Comments) and takes all the English Usenet Newsgroups which can be written to as well as read. There is access to the Demon Internet Relay Chat (IRC) server which enables subscribers to hold live on-line discussions with people from all over the world.

Apart from Internet access Demon also provide consultancy and programming services, sell modems, serial chips, boards and books, and is an Apricot Systems Centre and Authorised Unix Centre.

Charges

There is an initial setup fee of £12.50 and then a fixed charge of £10 per month regardless of how much you use the system. That's it - no on-line costs or charges for mail etc. Payment for home users can be made monthly in advance by Access or Visa credit cards.

CIX vs Demon

If you want absolute access to the Internet then Demon is for you and at these charges you can't lose. You are not charged for on-line time as you are with CIX and any files you obtain via anonymous ftp come in straight to your computer instead of being the two-stage process it is with CIX (they are downloaded to CIX then you have to download them to your computer within 24 hours). All of CIX services are character-based whereas Demon allows you to use the latest GUI interfaces and up-to-date software on PCs, Macs and Unix boxes. You can also run several sessions simultaneously.

However, CIX is mainly a conferencing and support system where such facilities are not to be underestimated. CIX is very friendly and welcoming with a great user base of knowledge and experience. If someone on CIX can't help you with your problems no-one can! Demon doesn't offer any of this except its own local support and discussion newsgroups. CIX access and software set up is simpler and certainly more accessible to the non-power user. CIX does provide limited Internet access but most Internet traffic is e-mail which CIX is more than sufficient for. CIX charges can be more expensive but the average user would probably spend less than £10 a month that Demon charges - I do. However, phone charges are likely to be more expensive for CIX as Demon has many local nodes charged at local call rates.

You pays your money...

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DESKTOP DISCUSSIONS

William Hern travels to the capital of Canada and mourns the collapse of the Canadian ST market.

In the Land of the Maple Leaf

If you want to really annoy a Canadian, just ask them which part of the United States they come from. Canadians as a rule do not like being treated as inhabitants of the fifty-first state of the US. Yet that is exactly how Atari chose to treat them when it closed down its Canadian branch and centralised operations for the whole of North America in California. As I'll explain in this column, the consequences were dramatic.

Earlier this year I was fortunate enough to spend a couple of months in Canada's capital, Ottawa. Having had a brief glimpse of the North American ST scene last September when I attended the Glendale Show, I was keen to gain a more in-depth understanding of what is, after all, Atari's home market.

Canada has contributed its fair share of ST software publishers. Batteries Included and their wonderful Thunder! spelling checker hailed from Toronto and there was Canadian input to later versions of Calamus. Ottawa itself has been home to a number of outstanding ST software. The comms package STalker originates from there, as do the excellent packages Spelling Sentry and Flash.

Nowadays the situation is rather different. If you ask the average computer user to name a software application from Ottawa then the chances are that they will mention CorelDraw, the leading PC art package. Like the rest of North America, Canada is firmly in the grip of the PC compatible. I only encountered a ST being used in a business setting once - a solitary Mega ST in the ticket office of the Rough Riders, Ottawa's professional Canadian football team.

It wasn't always like this. As recently as 1992, Atari was the third biggest selling computer manufacturer in Canada. The Toronto-based Atari Canada, although small, was able to provide the specialist service that the Canadian dealers required. This treatment paid off royally and Atari dealers could be found in all the cities and major towns. Ordinary users also benefited from measures such as the bulletin board system that could be dialled into free from any part of Canada.

Atari then decided to close down its Canadian subsidiary and move all operations to Sunnyvale. Dealers seemed to lose confidence in the company and began to move away from the ST. The number of outlets selling machines dropped and this had a knock-on effect on the amount of software sold. By the time I arrived in Canada, there wasn't a single dealer left in the Ottawa region (although as I write this one dealer is trying to get started).

Not surprisingly the lack of dealers has also affected the size of the user community. At its peak in the late eighties, Ottawa's local Atari user group (the National Capital Atari Users' Group - NCAUG) had about three hundred members. With the collapse in ST support, the membership dropped significantly and the two meetings that I attended had around thirty members turning up.

Spending a couple of months in Canada really brought home to me the scale of the task that Atari faces in North America to re-establish a presence. In the eyes of the average person in the street, Atari has completely vanished. There are practically no dealers left, advertising in Canada is zero and the only way to get software is to use mail order. Public recognition of the Atari brandname is extremely poor. I attended a local computer show in Ottawa with NCAUG and a number of those who dropped by the stand were quite convinced that Atari had gone bust several years ago. Fighting that perception will take a great deal of effort and some inspired marketing. There seems little hope of any ST-derived machine ever selling in great numbers.

The example of Canada should not be ignored by those in Europe. Over the past year or so, Atari has been systematically closing down all its European branches and is now relying on Atari UK to look after all of Europe. If Sunnyvale was unable to serve adequately a neighbouring country with a similar culture and sharing (mostly) a common language, what chance has Atari UK of catering for the diverse countries that make up mainland Europe?

If any lesson can be learned from Canada then it is the value of local offices. Atari Canada was not a large operation, never more than ten people, yet it played a vital role in supporting the dealers who sold the machines. Without that local support, the dealers turned away from Atari and moved to selling other computers. If you want to succeed in a market, you need in-country presence. Atari had better not forget that as it begins its drive to restore its fortunes with the Jaguar console.

(My thanks go to Hardy Zeltins and the other members of NCAUG for their help with the preparation of this column.)

aTTention!

Falcon Fact-File continues to grow as more and more Falcon owners register. In fact the FFF has proved so successful that its organisers, Colin McAllum-Fisher and Kevin Beardsworth, have decided to extend it to include TT users.

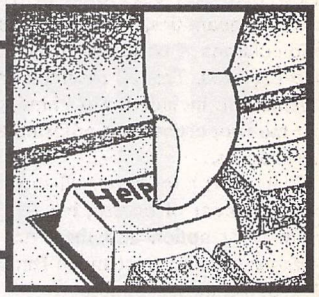
Incidentally, membership of the FFF is not limited to just those living in the United Kingdom. So far registrations have been received from users in France, Sweden, the Netherlands, Greece, Iceland and Thailand.

Registering with the FFF is very simple. All you need do is to write to them at 11 Pound Meadow, The Green, Whitchurch, Hants RG28 7LG, England and enclose a stamped addressed envelope (or international reply coupons if you live outside the United Kingdom). A registration form will be sent back to you. Return this completed form along with a floppy disk and another stamped address envelope and you will be entered into the database.

The floppy disk will be sent back to you containing the latest copy of the database and as much quality public domain software as can be squeezed on to the disk. The disk also includes a mini magazine with sections for hints and tips, classified advertising, comments on software and pleas for help. The software and magazine is updated on a quarterly basis. Currently the free software on the disk includes GIP (Greyscale Image Processor), 2 in 1 (multiple-archiver graphical shell), Masterbrowse (an elegant document reader) and FalconFX (useful desktop accessory). As if all this weren't enough, a number of well known companies are offering special deals for FFF members.

User database, disk magazine, PD software, special offers - for only the price of a couple of stamps, the FFF is incredible value for money. Every Falcon and TT owner should be a member.

FORUM



Interfering Cables

Jonas Moller Nielsen – Forum STA41

A In the early days of my Atari ownership (1987) I had graduated from a NewBrain machine which drove a parallel printer linked through a 4-yard cable. The Atari was able to cope with this without problem, and all my First Word Plus files printed out OK. Then I came to print graphics in the middle of the text file. I obtained random characters, usually followed by spurious printer control characters only when the graphics tried to be printed – the rest of the file was fine. I must have spent 2-3 days trying out different printer drivers, checking cables, etc. all to no avail. Still the text was OK, and the graphics failed. By pure accident, I plugged in another, far shorter, cable. Everything worked. The point of all this is that selective failure to print can also be the result of the cable interfering with itself, in this case owing to the poor parallel driver chip in the Atari.

The Forum pages are a regular feature of ST Applications, enabling readers to exchange ideas and help each other out with problems. Whilst we attempt to briefly answer questions here, if you have additional information or ideas please do submit them for publication. What you consider to be trivial information can often be of condiderable use to other readers!

Please send your letters on disk if possible. Disks will be returned with a PD of the writer's choice. Longer submissions may appear as articles, in which case you will receive payment at our standard page-rate.

Key:

The following codes are used for each Forum entry:

J Pringle – Forum STA 20: Author who first raised the subject, and in which issue.

Q Question

A Answer

I General information or 'Input', advice, discussion, hints and tips, etc., with or without reference to previous Forum pieces.

● Editorial reply

Psion File Exchange

Mike Playle – Forum STA 39
John Richards – Forum STA 40
Derryck Croker – Forum STA 40

I After several months of frustration, success first time with Vanterm after only a cursory check of the setting and a click on the appropriate baud rate. Files now wizz back and forth without inhibition. The problem presumably lay with Uniterm (or more probably my use of it). By way of experiment this letter has been transferred from Psion Word to Redacteur and thence to the printer. Effortless! Many thanks to all who offered advice.

Mike Playle

Magazine Tricks

Colin Bramich – Forum STA 41

Q In your answer you describe how STA is produced and the first thing that strikes me is that if you want the definition to be 600dpi you need to recreate the fonts you use. Among other things is the length of time it takes you to print out the magazine (camera ready artwork), how you complain about PageStream making a mess of TIF files, and how you still need to cut and paste manually because DTP files are too big for floppies.

At this point I think you probably know what I am going to say: Calamus SL! As you know Calamus SL would solve all your problems with vector fonts, imagesetter output through a bureau, and so on. Sometimes it is possible to leave the insertion of TIF files to the bureau and in any case only one floppy is never enough for a magazine. The solution to this problem is splitting the magazine into as many parts as necessary, each part small enough to fit on one floppy. Another solution could be using floptical disks.

I really find it hard to understand why you are still using limited programs such as Timeworks and PageStream when there is such a great program like Calamus SL available, unless it's purely for financial reasons.

I use Calamus SL all the time, in fact I run my own DTP and Computer Graphic Design business, and I will be more than happy to make your work of producing ST Applications a bit easier by setting the magazine from your material and providing you with 1270dpi film ready for printing or on floppies so you can output it to film yourselves. And all this for the minimal cost of £355 for 29 A3 films, which you incur in any case, plus £20-30 per page for setting. I believe this would improve the quality of the printing of ST Applications, therefore making the graphics and especially the screen shots clearer.

I enclose my leaflet designed using Calamus SL and DA's Vektor Pro so that you might be tempted at least to think about my offer. Although the idea to write to you genuinely came from reading "Magazine Tricks", I could not resist the temptation to try and get involved in the very making of the best magazine for Atari computers and connected hardware and software; it would be an honour for me and I am not kidding.

The system I use includes a TT c/w 10Mb RAM, 17" multiscan monitor, 135Mb hard disk, scanner, HP DJ 500C and a secondary 1040 STe which my husband is trying to "LAN" to the TT. (The two are already Midi connected.)

Tiziana Romagna
ARTention to Detail

● Errm. Yes, it's always looked a bit daft for an Atari magazine not to use what is widely considered to be the best Atari DTP software. But there were, and still are, some good reasons for dismissing Calamus.

When we bought Calamus soon after it was launched in the UK the prospects for it, if not the price, looked good. The first hurdle was that when used in combination with a Vortex hard drive and Atari SLM804 laser it locked up after printing the first page. The UK publishers Signa Publishing never managed to solve this problem. They didn't try very hard either – not that this ever stopped them from justifying their high prices by pointing to their exemplary customer care record. Porsche price lists more like...

The final nail in the coffin was the quality of its output to a 300dpi printer. At 12-point

and above Calamus produced remarkably good results that could easily be used in place of 1270-dpi bromides. But, at 9-point and below, body text was grossly over-black. Fine in small quantities, but quite unsuitable for solid columns of body text destined to be web offset printed. This all results from Calamus, Calamus SL included, not "hinting" fonts so that the proportions are adjusted as the point size changes.

Things get a lot better when output is sent to a typesetter of course, but this was a premium price option and there are only three Calamus bureaus. Not much fun when things go wrong at the last minute.

In the end we found that hand-crafted bitmapped fonts printed on a DeskJet produced perfectly acceptable results (though the pictures had to be typeset) without spending half the cost of a new printer on typesetting every month. The argument that we would cover the cost of typesetting from the saving on no longer having to have film made up from our camera-ready copy isn't compelling. First, the discount for supplying film instead of CRC is nothing like £355; and secondly this creates a new set of problems with photographs and customers' advertisement copy.

We could go on. The arguments against Calamus are far from being conclusive - many professional magazines are produced using it in countries where Calamus is widely supported. But, having been driven down another path by the poor performance of the first release of Calamus, if we are going to change DTP software we may as well update the hardware at the same time...

Which LZH?

I I have just got ST Applications 41. It is getting better and better!

This time I have a small remark about Beginners' Forum: Mark Baines should think twice before writing that LZH1 should be avoided. In fact it is still the preferred method for many PD libraries, mainly because of the effectiveness and small size of UNLZH172.PRG. Personally, I have used both ZIP2.4 and LZH2.99 for some time, but I still prefer good old LZH1.13 for my own archiving purpose.

I appreciate very much that the ST Club also keeps using it on the DMG disks. Generally speaking about ST software I realise more and more that software from the great ST period (1988-1992) might be the best we can get in this world. Or in other words: 'New houses are not necessarily better than old ones'.

Paul Dion

● For user s of BBS systems the most recent versions of LZH and STZIP are undoubtedly the best choices as they need only download the archiving utility once. ARCShell has a good batch mode extraction option that is very useful on a hard drive and still usable on a floppy based system with some forethought.

For distributing files on floppies, where the means to extract the files must be supplied on each disk, LZH1.13 remains the best choice thanks to the small size and speed of UNLZH172.

Self-extracting archives would be the more obvious choice (most cover disks use these) but the absence of a batch extract utility makes them tiresome for experienced users. They are also limited in that it is not possible to quickly see what files are in the archive, nor is it possible to selectively extract some files. The final problem is that tagging around 4K of self extraction code to the beginning of the 20 or so LZH files on an average disk would eat up an extra 80K of disk space; UNLZH and its doc file take up just 24K.

TOS 2.06 STFM

Q I have just installed TOS 2.06 in my STFM, and after playing around with it for a few hours found a bug in it, and would like to know if there is an AUTO program that will clear it up. I must explain my setup first so that you can see that I have three TOS versions in my ST (yes 3 TOS versions), these being TOS 1.2, 1.4 and 2.06 that I put in today. TOS 1.2 and 1.4 are blown into six 512 Eproms, and take up the six ROM positions in my ST. These two versions of TOS are switched in and out by a simple mod that a friend and I did some time ago. As I said, I have now added TOS 2.06 to this and all works well, I can switch between three TOS versions so that I have complete compatibility with all the software that I have.

My problem is this with TOS 2.06: when I read a text file or try to copy a file from drive B:, TOS 2.06 tells me that the file is bad, but when I copy it with the other two versions of TOS this does not happen. This only happens when the disk that I am reading is write protected. When I read the same said text file from the hard drive all is fine under TOS 2.06. My TOS 2.06 is the solderless version with a switch on it which I got from Analogic in Kingston. If anyone has any answers to this problem I would love to know.

I am pleased with the upgrade and find that the desktop icons have come in very useful when loading programs without having to open a folder.

Iain Carr

Applications and Printer Drivers

John Ash - Forum STA 41

I The Canon PJ1080A and Integrex 132 printers are both inkjets based on the same case and mechanism, the Integrex having been adapted to give twice the horizontal resolution. Text printing is very limited in both quality (5x8 matrix) and scope (only draft, no descenders); an FX or JX 80 driver should just about work for plain vanilla text but will need to be adapted for anything else, as most of the text style commands are non-standard. The situation is not a lot better for a graphics-based text driver: the maximum theoretical matrix available (hxv) would only be 7x16 for the Canon and 14x16 for the Integrex. In my opinion the text quality is not good enough for document work and is only suitable for listings and such.

Where these machines do score well is in colour graphics printing, they were streets ahead of anything that was available at the time and even today they will still out-perform the very latest dot matrix machines. Some years ago I wrote a dedicated colour graphics utility that gives full control over printing low res screens and clips - JET_DUMP 2.03. This has been available commercially up until now, but since it is getting well past its sell-by date I'll release it as Shareware. Anyone who would like a copy should send a blank disk and a couple of stamps to EasyPill Software. I've not looked at modern inkjets but would imagine that the software for these would not be suitable for the early Canon machines, as print head technology has changed considerably since those days.

EasyPill Software
20 Hawkesworth House
Cavendish Road
London SW4 8NA

I Many Thanks for the offer to look into the mysteries of the PJ1080A Printer for me. Things are not that bad, indeed since I wrote some movement has been made. All help and advice however will be gratefully received.

The machine came with its own dedicated print dump software 'Jet Dump' marketed by John Wills, Image Art. This is very useful and together with the Swatch program enables accurate colour output with the files supported: Neo and Degas Elite.

The task I set myself was simply to try to get as many of the art packages in my possession as possible to support this printer. The driver and Install.Acc. from DRG.21 enabled Degas Elite and Quantum Paint to print, although Quantum does some strange things to the colour rendition.

However, having got the bit into my teeth, I was determined to get anything that showed colour pictures to print them. As I had been using both Jeremy Hughes' Imagecopy and Martyn Dryden's BJ Chrome on my BJ10 for the past year or so, I have developed a fondness for the versatilty of these print programs, especially the graphical sizing and positioning facility of BJ Chrome. I wrote to Martyn to ask his opinion, and he replied that whilst not impossible, given printer details, he was not exactly totally enamoured with idea.

Meanwhile. having contacted Canon, who in turn directed me to Integrex who now handle this machine together with their own version known as the 132 Colourjet, I was able to obtain a manual. This is a mighty tome with 60-odd pages of programming data, some examples of which I also enclose.

In my innocence I visualized simply opening a programme of choice and using a text editor or programing facility, simply changing the appropriate codes for line feeds, carriage returns, etc., one for one. Is it that simple for

one that knows, or am I (as I suspect) completely out of my tree?

John Ash

X-Boot!

I The manual says that one can cause a program to be auto-started from a RAM disk even though it will only be installed and have the program copied to it after Xboot terminates. One is supposed to type in the complete path name on the path line of the Xboot file Selector and the file name in the file name field, and then click on ›OK‹ with the mouse while holding down the Control key.

I set up Xboot to install a Maxidisk RAM disk and to copy a program to it, but I could not get Xboot to auto-start the program from the RAM disk. The problem was that after typing the path and file names and clicking on ›OK‹ as stated above, they merely reverted to what was there before I typed anything!

The secret is to do as follows:

a) Create the Xboot "set", but do not attempt to specify the auto-start path and file names.

b) Click on the set name and exit from Xboot. This should cause the RAM disk to be installed and the program to be copied to it; verify that this is so, but do not run the program.

c) Load Xboot again by clicking on its name in the boot partition. Do NOT try to do so by resetting the computer either from the keyboard or by pressing the Reset button.

d) Click on the set name and then on the auto-start button of Xboot. You should find that the path and file names can now be entered successfully as per the manual.

e) If you re-save the set, you will find that in future you can auto-start the program merely by clicking on the set name and exiting from Xboot as usual.

Why, oh why, did the manual not say so? When I asked Hisoft about it, they kept my stamped addressed envelope and did not reply, even though I am a registered user and have paid for their "Silver Service"!

I wanted to be able to run a program from a RAM disk because I have one which can only be run successfully from a root directory. I did not want to store it (and the files it needed to use) in the root directory of a hard disk partition, but in a folder along with other programs like it. I like to use folders and sub-folders with meaningful names so that they form an index to the contents of the partition.

L W Dewhurst

Moving On?

I What could have kept me with the ST? Perhaps a machine based on the STE with a 1.4Mbyte floppy, 2Mbyte RAM, built in hard disc, monochrome monitor and real time clock in a Mac Classic style case for a price of about £500.

Having said all this I would still recommend an STE to someone who is new to computing or has a low budget. The only thing I will miss is reading ST Applications. Perhaps with so many of your readers deserting to the PC a sister magazine PC Applications might be worth thinking about. I would certainly subscribe if it was to the same high standard as ST Applications. I wish you all the best in the future and I hope ST Applications survives in the dwindling ST market.

David Flack

● Yes, there must be some potential for repackaged STs. In a way, it's a shame that Atari don't sell off the rights to TOS machines and push on with their games machine aspirations. For instance, musicians still love their STs, amateur musicians love them even more thanks to the latest Atari price cuts and the thriving secondhand market. A professional consumer electronics concern (Amstrad?) could well have a profitable time with a cheap and cheerful re-boxed Mega STE (2MB RAM, HD FDD and 65MB HDD) with pre-loaded ready-to-go MIDI software. Just add on some garishly coloured Stop, Start and Play keys, put a blanking plate over the ports to stop it looking too much like a computer, and add an almost missable 'Atari Inside' logo. With the right approach Atari could turn in a nice profit on ST/Falcon hardware without ever having to make or sell another machine while still reserving the rights to come up with a TOS+Jaguar. Incidentally, The latest EEC regulations require computer monitors to have a tilt and swivel base, so Mac Classic-type designs are no longer allowed.

PC Applications: we've thought about it, and even done some planning for it, but the ST market has kept us so busy we've not had a chance to take the idea any further!

Q I am a long-time subscriber who has sadly given in to the lure of a powerful Macintosh. I shall most probably continue my subscription for the time being. Despite being snowed under by the additional Mac magazines, there will continue to be space for ST Applications, which has been a gold seam among the general Atari compost.

Perhaps I'm mistaken, but I sensed a hint from a reply to a letter in an earlier issue that you would consider a Mac PD Library. Is there any likelihood?

Martin Winbow

● No. The days of Mac/PC floppy disk based PD/Shareware libraries have been numbered for the last couple of years. Why bother buying software on floppies when for the price of ten Mac/PC disks you can get a CD ROM with 600MB of files? Not that many shareware CD ROMs will be sold by libraries once the news stand magazines get in on the game.

If a handful of cover-mounted monthly CD ROMs of new software isn't enough for PC and Macintosh users then (very slowly) dropping telecom charges and new cable networks will result in a rapid increase in the popularity and cost effectiveness of on-line systems. Though it will take a revolution in the software used by such systems before they are de-jargonised enough to appeal to non-computerphiles who simply want an upgrade to their spreadsheet and get hold of a copy of a shareware utility. (Atari captured a niche market in the 80's by fitting MIDI ports as standard to the ST. Maybe a reborn, re-priced Falcon with a telephone socket and built-in software modem would do the same.)

CD ROMs

Q Could someone please tell me if there are any CD ROM disks for the Atari range of computers other than the Gemini Atari CD ROM? And is the Gemini CD ROM disk usable with a normal CD ROM drive for the PCs (not SCSI)?

Thomas Nilsen

● There are a couple of German CD ROMs of shareware software from Germany. System Solutions (081-693-1919) should have them available.

Atari users who want to access high quality image files will find a cheap SCSI CD ROM to be a good investment as it gives access to both PhotoCD, and collections of PC/Mac CD ROM art disks from GIFs galore up to the commercial quality images sold by photograph libraries. There are also CD ROM collections of MIDI files and text files that can be accessed by Atari users with a CD ROM drive. All Atari CD ROMs can be read by PC and Macintosh CD ROM drives.

For the average home Atari user, CD ROMs are just an annoying reminder of what could have been - remember the Atari CD ROM of 1988? The efficient nature of ST software means that you can probably archive all of the ST PD/Shareware software ever written onto three CD ROMs and all of the commercial products may fill another one!

IDE Drives

Q Is there any way for me to save some money by fitting a cheap PC IDE hard drive to my ST? These drives are a lot cheaper than SCSI drives but have the same sort of specification as SCSI drives.

● IDE drives have PC-specific interfaces so there is no sensible way of using them on an ST or Falcon. Well that's what we thought until this turned up on the latest issue of Inside Info from ACE in Australia:

"On hearing a rumor about a Hard drive adaptor that could take IDE hard drives I have been trying get full details. The company who makes them does not have anyone who speaks English. So here is the information I have. Called the "AT BUS TOS Card 2.06" it has TOS 2.06 built in and supports up to 8 SCSI devices, up to 8 ACSI drives, and up to 2 IDE drives. It will work with any ST."

More news when we get it.

Hard Drive Tips

I I am on the lookout for hints and tips on using my new hard drive. One tip I need in particular is this: should I park the drive heads

GFA Basic Speech

A Your column "Using GFA Basic" in issue 41 of ST Applications, contained a query regarding two speech programs, and how to access them from a GFA Basic program. I hope that the contents of the enclosed disk (see next month's Disk Mag, DM.42) will help. The program GFASPEAK.BAS is written in Version 2 of GFA Basic. I have therefore added /SPEECH/GFASPEAK.LST, dumped from GFA Basic Version 2.

The text of the Basic program has a lot of useful comments, which should be read before attempting to use it. In particular, you will see that you need to run /SPEECH/SPEAKER.PRG (which is a "Terminate and stay resident" program) before ever you load the GFA Basic interpreter. SPEAKER.PRG enables the use of the TRAP #8 vector, which is normally unused; nothing very noticable happens when it is executed, but if it is not executed, GFASPEAK will crash! It does not have to be put in an AUTO folder.

The words spoken by GFASPEAK can be altered. Also further words are spoken if one assigns another string to A$ after the present call to Freeaddr, and then does the LPOKE again, followed by another call to Freeaddr.

With regard to Alan Kennedy's query, the reason why floating point numbers sometimes produce inexact results is that the mantissa is held internally as a binary fraction, but many decimal fractions cannot be expressed exactly as binary fractions! This is still so whether one uses single or double precision. Never expect to get exact results from floating point variables and numbers! The best thing to do is to use more significant figures than one needs, and round the result to a lesser number of significant figures.

In commercial work involving, for example, sums of money, floating point numbers are rarely if ever used. One can, as you said, use integers and keep track of the decimal point oneself. However the traditional language for this kind of work, Cobol, has a type of variable which keeps track of the decimal point automatically, while (in effect) always using whole numbers internally. Most micro computer users have probably never encountered such variables!

The other thing to remember is that even if one uses integers, when they are divided by each other, they may produce a remainder, so the result is not an exact integer. If the result is assigned to an integer variable, one needs to know whether the value has been truncated or rounded; if truncated, one may oneself need to apply rounding.

When using arithmetic or mathematics of any kind on a computer, one does need to have a fair idea of what rounding and truncation errors may occur, and what their cumulative effect may be. It is not enough to use a method which is merely correct theoretically; one has to consider, amongst other things, what may be the magnitude of the numbers used, and the precision with which they are held. For example, if two large numbers are nearly equal to each other, and one divides something by their difference, the precision of the result may be very poor; this is because the number of significant figures in their difference is quite small! I remember reading of a program for curve-fitting which though theoretically correct, produced results which were not correct even to one significant figure!

Leslie W Dewhurst

A Regarding J. Brown's question in the GFA Basic section of issue 41, to get the Fast Basic Speak module to work with GFA Basic I use the code listed below.

K A Unsworth

```
Procedure Init
    Trap8%=Lpeek(160)                       * see what the trap 8 vector
                                            * holds and save it
    Exec 0,"speaker.prg","",""              * load speak module but don't run
    If Trap8%=Lpeek(160)                    * if vector not changed then
        Speakerloaded%=0                    * module not loaded Else
                                            * ie can't find file
        Speakerloaded%=1
    Endif
    Dim Cod%(5)                             * reserve 20 bytes of memory
    Say%=Varptr(Cod%(0))                    * find start address
    Poke Say%,&H20                          * Poke machine code program
    Poke Say%+1,&H3C                        * that will pass string to
    Poke Say%+2,&H0                         * say to speak module.
    Poke Say%+3,&H0
    Poke Say%+4,&H0                         * move.l 1,d0
    Poke Say%+5,&H1                         * move.l (pc)+6,a0
    Poke Say%+6,&H20                        *       ^^^^^ Say%+14
    Poke Say%+7,&H7A                        * Trap  £8
    Poke Say%+8,&H0                         * rts
    Poke Say%+9,&H6
    Poke Say%+10,&H4E
    Poke Say%+11,&H48
    Poke Say%+12,&H4E
    Poke Say%+13,&H75
Return

Procedure Speak
    If Speakerloaded%=1                     * if module loaded
        Sent$=Sent$+Chr$(0)                 * add null to end of string
        Lpoke Say%+14,Varptr(Sent$)         * Poke long address of string
        Call Say%                           * call machine code to say
    Endif                                   * string
Return
```

To say hello use

```
    Sent$="Hello"
    @Speak
```

Imagecopy

I I have some suggestions for Imagecopy 2.
1) Could the Save function include a .CVG extension (i.e. saving as a Calamus Vector Graphic)?
2) Could a Tracing Module be included to trace and so convert Bitmap fonts and perhaps IMG images into vector?

Dennis Donnan

● A future version of Imagecopy may support the importing of GEM and CVG vector files, but there are no plans to put any type of auto-tracing into Imagecopy.

Vector graphics have largely fallen from after every session, or only when the machine has to be moved? The program I used for parking the heads - HDX.PRG - gave me the feeling that I was committing a sin when I used it. Which is the best program for parking heads without much fuss?

Derek Smith

● There is little that you need to know about using your hard drive apart from the obvious tasks of regular backups and keeping file fragmentation under control, plus the advisability of using a boot-manager to prevent accidental lockouts caused by conflicting or corrupt Auto folder programs and accessories.

Most modern SCSI drives have an autoparking facility that parks the heads when the drive is switched off; there should be no need to park the heads with software (SHIP.PRG is usually used rather than HDX.PRG). Check with the supplier of your hard drive to make sure that the drive mechanism is autoparking. You can usually hear an autoparking head parking the drive: listen out for a dull 'chink' type of sound a second or so after the drive is switched off.

favour now that we have machines capable of loading, displaying and printing true colour artwork. Vector formats will of course remain favourites for natural line drawing formats (CAD, technical illustrations, charts, signs, and many types of logos), but for work of any other sort the move is very much towards near-photographic electronic bit-images.

The biggest problem with vector graphics was always that they never looked natural. For unnatural objects such as a Visa logo this was never a problem, but attempts at a vector version of the classic tiger face clip art never looked as natural as the original 72-dpi bit image!

Write Driver

Q Does anyone know where I can get a printer driver for the HP DeskJet 510 (500) for my ancient Atari 'Microsoft Write' program?

Dave Corbett

Watch Logo

Q Help! Does anyone have the Neighbourhood Watch logo as clip art please? Or could someone scan it if I supply the originals? We need it for our newsletter.

Trevor Thompson
38 Woodpecker Drive
Hailsham
East Sussex, BN27 3ES

Publisher 2

Q In Timeworks Publisher I have added a few fonts which I aquired from the FaST Club. On my floppy disk set-up there were no problems, but on the hard drive installation the fonts appear tall projecting up out of the frame. I altered various parameters without any effect. What could be the cause? The fonts giving me this problem are Haddon 11pt, Monsal 12pt, Crich 13pt, and Snake Pass 13pt. The other Haddon and Monsal fonts are OK. I used Fontkit 4 to compare the fonts to see where the differences were (apart from the point size of course). I hope you can help.

Derek Smith

● Timeworks Publisher handles fonts in the same way regardless of whether you are running from floppy or hard drive. Make fresh copies of your floppy system to your hard drive, update the Assign.Sys file to point at the new Gemsys folder, make sure that GDOS (and Fontxpander if used) are in the Auto folder, re-boot, run Fontwid.App, and run Publisher.

This should solve your problem. It sounds as if your Screen.Wid and Publish.Wid files (as generated by Fontwid.App) are awry in some way, or perhaps the equivalent screen font files were not copied to the hard disk. You certainly do not need to alter any of the font parameters.

FALCON FORUM

Speedo Drivers

I Oh dear, didn't enough of us Falcon owners write to you (Issue 41, "Wot, No FF?")? I am a relative newcomer to the Falcon world and as I can't join the CIX forum, Falcon Forum seems a good idea, and I do have a few questions.

My Falcon came with SpeedoGDOS. Great, I thought, especially as I fired up Atari Works - all those lovely scalable fonts. But the problems start with printout, I have a Canon BubbleJet BJ-20 (a Norwegian BJ-10 with sheet feeder and Epson LQ, IBM Prowriter and BJ emulation). The only Speedo print driver I can get to work is the Star NB24-II; the Epson and BJ drivers don't want to know. Fine, you say, what's the problem? The Star driver outputs at 180dpi against the BJ-20's 360dpi, and it treats some of the graphics from AtariWorks in a bad way (leaving gaps), and finally it seems to want to throw a form-feed at the end of each page yielding lots of blank sheets of paper. Nothing catastrophic, just annoying. Question: has anyone else experienced quirkiness driving a BJ printer from SpeedoGDOS? And secondly, where do the drivers come from? Is there a large PD collection of drivers just waiting to be tapped? Can you write them yourself?

Now a Falcon-specific question: how do you control the colour icons on the desktop? Can I get more? Can I edit them? (WERCS doesn't like them...)

And lastly, I was interested to read that the Daatascan hardware/software worked on the Falcon. I have a Pandaal hand-scanner that I use on my old ST. I connected it up and yes, it does work, but with two caveats. Firstly, if you want the desktop view of the scan and the real-time tracing of the scan to look representative, you need to be in 640x400 resolution (i.e. the ST High emulation). Secondly, I use a VGA monitor and the aspect ratio of the scan is too squashed (too wide for its height) - I guess it's all to do with the different pixel sizes, etc., that we hear so much about...

John M Perry

● Sadly, SpeedoGDOS drivers all come from Atari and there is no sign yet of any ongoing support with new and updated drivers. You'll need to be a programmer with a copy of the GDOS driver developer kit to get very far with writing your own GDOS drivers.

Falcon Mod's

I Here I am, at last, with my new, shiny, music work-station: a Falcon030 14MB, a 1GB hard disk, an NEC 3V multisync monitor, and Cubase Audio due to arrive shortly. I started dreaming about tapeless recording some eight years ago when I dabbled with my Akai sampler synched to a Tascam eight track, and now it's here! Thanks, Atari!

Before I took the Falcon home I asked my technician to carry out the audio modification specified by Steinberg: lowering the input gain (by 6dB) and removing the bass boost on the output. I then connected my CD player to the "mic" input and booted DigiTape to check level compatibility. It was at this moment I got a very instructive lesson on the subject of overload! I reconnected my setup and had the CD signal going through a mixer, only to learn that the input gain of the Falcon was still at least 20dB too high.

A quick phonecall to the Swedish main agent only increased my agony - the circuit layout sheets are not obtainable to anyone but one authorised service centre! There was, at this point, no way my technicial friend could assist me in reducing the working level of the input amplifier. (I was, of course, given the advice to add a couple of resistors on the input stage, but suspecting this amplifier to be of rather cheap quality, I thought it would be wiser to reduce the gain of the input amp itself.)

Finally, however, I got hold of the schematics documentation, even though I am not supposed to be given such information... Shame, Atari!

After two hours of experimentation, my techie and I managed to get the input levels right (close to -10dB, consumer audio standard). This modification puts my computer right where it should be; as the main part of my recording setup. The sound is brilliant, and A/B-testing between source and hard disk recorded material doesn't disgrace the Falcon at all! I've been a professional musician for some twenty years and made quite a few recordings on the way, and I really cannot hear any sonic deterioration on my hard disk recordings when compared to the original. Well done, Atari!

I would like to share this information with all Falcon users out there. The above mentioned modification, both Steinberg's and my own, should read as follows:

* To remove the bass boost on the output: Same as Steinberg's mod.
* To reduce the speaker amplifier gain: Same as Steinberg's mod.
* To reduce the input gain by 6dB: Second line should read: Change R66 and R87 for 100K to 1.8K. Otherwise this paragraph is correct.

This modification sets the input level in the region of -10dB. If you work with semi-professional equipment this level will probably apply to all your other stuff.

Someone had to find this out sooner or later (and I certainly don't think I'm the first to do so), but I'd like to spread the news all the same.

Beware! This sort of work should definitely be carried out by a qualified technician, since it includes replacing teeny-weeny components. Besides, it would affect the warranty as well.

The software is already here - why not make the best of the hardware!

Sven Bornemark, Sweden

Programmers' Forum

In this month's edition of ST Applications' regular programming column, we find out what can be done with one of the ST family's most obscure hardware features.

Seeing the light

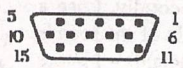
To start with: an apology. Readers without either an STE or a Falcon will be unable to directly make use of the code presented in this article, as it uses one of the extra pieces of hardware introduced with the STE, but I hope the article will make an interesting read anyway. Next month's column will be of more general interest, as usual.

The hardware in question is the extended joystick system. This comprises two ports on the left-hand side of the machine, interfacing hardware and controlling registers in the memory-mapped peripheral space. The ports provide for the connection of up to four additional standard joysticks, two 'paddles' or analogue joysticks, a lightpen, and an additional keypad, though not all of these can be in use at once. Further details on the hardware and the memory-mapped registers can be found in Boxes 1 and 2.

Box 1 - Enhanced Joystick Ports

Both the STE and the Falcon machines provide two enhanced joystick ports in addition to the two ports present on all ST machines. These allow for the connection of paddles, keypads or a lightpen. These are connected via high-density 15-pin D connectors, with the following pin specification:

Enhanced Joystick Port



	Port A		Port B		
Pin 1	Up	Joystick 0	Pin 1	Up	Joystick 2
2	Down	Joystick 0	2	Down	Joystick 2
3	Left	Joystick 0	3	Left	Joystick 2
4	Right	Joystick 0	4	Right	Joystick 2
5	Y	Paddle 0	5	Y	Paddle 1
6	Fire	Joystick 0	6	Fire	Joystick 2
7	Vcc		7	Vcc	
8	No connection		8	No connection	
9	Gnd		9	Gnd	
10	Fire	Joystick 1	10	Fire	Joystick 3
11	Up	Joystick 1	11	Up	Joystick 3
12	Down	Joystick 1	12	Down	Joystick 3
13	Left	Joystick 1	13	Left	Joystick 3
14	Right	Joystick 1	14	Right	Joystick 3
15	X	Paddle 0	15	X	Paddle 1

Atari provide scant documentation on the specification for devices to be connected to these ports. The joystick elements are likely to be compatible with the standard Atari joystick, but there is no discussion of the nature of the paddle hardware.

The enhanced joystick ports are not restricted to input only. Pins 1 to 4 of each port can also be written to, providing a simple I/O facility. Falcon screen expanders like BlowUp030 use these ports both to power the video hardware and to control it via the output lines.

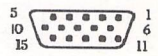
In this article, we will discover how to attach a simple lightpen to the extended joystick port and use it to control the mouse pointer. The software is designed to be transparent, so allowing the lightpen to be used instead of a mouse in almost all applications.

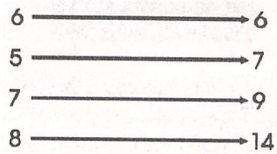
Construction

The lightpen hardware is constructed from a kit supplied by Maplin Electronics (0702 554161; catalogue available from WH Smith) - see Box 3 for more details.

The kit should be assembled according to the instructions provided. It is important to use screened cable for the connections between sensor, PCB and computer, as any noise pickup will cause major problems. The connection to the 15-way plug should be made as follows (terminal numbering on the PCB follows that in the Maplin documentation):

Lightpen Terminal — *Enhanced Port A*



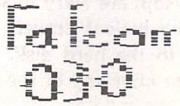


Note that the excellent design of the Falcon and STE case prevents the Maplin D connector from fitting into the enhanced joystick port sockets. To get around this problem, a pair of pliers should be used to bend the flange of the plug. The software assumes that the joystick is connected to port A, the forwardmost of the two sockets, so be sure to bend the plug to fit the correct socket!

Setting up

This is straightforward, as there is only one adjustment point on the circuit. Listing 1 contains Lattice C source code for a program that allows the progress of the lightpen over the screen to be visualised and tracked by plotting black lines. To get started, turn the computer off, plug the lightpen into port A and then boot the system. Listing 1 is designed to be run in monochrome with the standard screen colours: black text on white background.

Set RV1 to the midpoint of its range, turn the monitor controls to high brightness and contrast, and then while moving the pen back and forth over the centre of the screen, adjust RV1 until black lines begin to appear on the screen. At this point, the wiper of RV1 will probably be at about +0.6V with respect to ground. The pen will need to be very close to the screen, or even touching the surface, so it is important to ensure that the phototransistor is sufficiently recessed within its case to prevent scratching. You should now be able to draw freehand on the screen (see Figure 3 below)!



A quick wave of the lightpen...

Box 2

Software Interface

The enhanced joystick port hardware is represented in the TOS memory map by eight words based at address $FFFF9200. Two of these words carry the raw signals from the joystick elements of the ports, and the remainder provide processed information for the more specialised devices (paddles and lightpen).

Joysticks

$FFFF9201 Joystick data (4 bits)

Bit 0: pin 6 port A
Bit 1: pin 10 port A
Bit 2: pin 6 port B
Bit 3: pin 10 port B

$FFFF9202 Joystick data (16 bits)

Bit 0: pin 4 port A
Bit 1: pin 3 port A
Bit 2: pin 2 port A
Bit 3: pin 1 port A
Bit 4: pin 1 port B
Bit 5: pin 2 port B
Bit 6: pin 3 port B
Bit 7: pin 4 port B
Bit 8: pin 14 port A
Bit 9: pin 13 port A
Bit 10: pin 12 port A

Bit 11: pin 11 port A
Bit 12: pin 14 port B
Bit 13: pin 13 port B
Bit 14: pin 12 port B
Bit 15: pin 11 port B

The lines connected to bits 0 to 7 of the byte at $FFFF9203 can also be written to, with the result that pins 1 to 4 on each port form a bidirectional data path.

Paddles

$FFFF9211 Paddle 0 - X position (8 bits)
$FFFF9213 Paddle 0 - Y position (8 bits)
$FFFF9215 Paddle 1 - X position (8 bits)
$FFFF9217 Paddle 1 - Y position (8 bits)

The nature of the paddle signal is obscure.

Lightpen

$FFFF9220 Lightpen - X position (Lowest 10 bits)
$FFFF9222 Lightpen - Y position (Lowest 10 bits)

The lightpen signal is turned into a pair of coordinates that indicate the screen position of the pen. See the text for more details.

Data processing

The position of the lightpen is indicated by the two words at $FFFF9220 and $FFFF9222. As Listing 1 shows, the values read from these locations require a little processing to turn them into normal pixel co-ordinates.

The y co-ordinate can be obtained directly from the hardware value by stripping out the unused parts of the 16-bit word. The x co-ordinate is rather more involved. First, the irrelevant top 6 bits are stripped off. The resulting value starts at 8 at the left of the screen, rises by 4 every character square until the right hand edge of the screen, where it dives to 0. This rather odd behaviour is mapped onto a normal pixel x axis by the calculations inside the while loop. The putpixel() call used to plot the line is a programmer-friendly Lattice macro interface to the Line-A plot pixel function.

The microswitch used to replace the left mouse button is wired in to one of the joystick lines (Joystick 1 Right), chosen arbitrarily. The operation of this can be demonstrated using the C program in Listing 2. This provides a continuous display of the contents of the registers associated with the extended joystick ports. Closing the microswitch should change the value in $FFFF9202 from $FFFF to $FEFF. This test program also shows the raw data produced by the lightpen, which might be useful for debugging.

The point

Having got a working lightpen, we now need to turn to the software required to make it function in place of the mouse. The core routines and fundamentals of this process are described in some depth in the Programmers' Forum of STA13, so only a potted summary will be given here.

Replacing the mouse cleanly involves hooking into the VDI mouse movement vector using the vex_motv() function. This allows a program to preprocess the mouse position data before it is handed to the VDI mouse code that displays the pointer and controls interactions with the AES. In this case, the vector handler will ignore the proposed mouse position generated by moving the mouse, and instead substitute lightpen data.

The problem is that the vex_motv() vector is only called when the system thinks the mouse has been moved. If the user is waving a lightpen around, they will not want to have to move the mouse to get the machine to register the lightpen's position. To get around this problem, the program must resort to sleight of hand.

Every time a packet of data is received from the keyboard processor, it is analysed to see if it is a keypress, a mouse movement or a joystick waggle. Different types of data are parcelled off to specific packet handlers which process them. The addresses of these packet handlers are obtainable using the XBIOS function Kbdvbase().

To fool the system into thinking that the mouse has moved, all the program has to do is to call the mouse packet handler with a0 pointing at a mouse movement packet. The packet also includes data on the mouse button

Box 3 - Lightpen Hardware

The lightpen hardware was obtained from Maplin as a kit (code number LK51F, price £10.95). This contains all the components for the project, together with a circuit diagram, full instructions, PCB and plastic case. The circuit was designed to work with the 8-bit Atari or the Commodore Vic20/C64 machines, and the kit documentation includes some sample BASIC programs for the old Ataris. All that is needed to make the design compatible with the Falcon or STE is an appropriate connector. The kit includes a 9-pin D plug; this must be replaced by a 15-pin high-density D plug (Maplin code JW77J).

The theory underlying the operation of the lightpen is as follows. A monitor picture is built up line by line by scanning an electron beam across the screen. After the last line, the beam returns to the top of the screen and begins again. This process is repeated upwards of 50 times per second, depending on the monitor and video mode. Owing to the persistence of the phosphor on the monitor tube and the slowness of the human visual system, all that is seen is a steady picture.

However, a fast phototransistor is not so easily fooled. With suitable amplification, it is possible to detect the passage of the electron beam across the face of the sensor. The lightpen circuitry shapes this signal into a logic pulse which is seen by the computer. By considering the delay between the start of the screen update and the receipt of the lightpen signal, it is possible to work out the position of the lightpen.

The Maplin lightpen kit consists of the amplification and pulse-shaping hardware on a small PCB. This is connected to a phototransistor and the computer via lengths of screened cable. Power is taken from the computer port. Since the phototransistor has a glass lens, it is housed within an empty Bic biro case, slightly recessed to prevent scratching of the screen. If the transparent variety of biro case is used, some insulating tape wrapped around the outside of the case at the sensor end can be useful in reducing stray light interference.

The circuit also makes provision for a button to indicate selection of an object under the light pen. To do this, one of the joystick port lines is grounded via a momentary push-to-make switch. No switch is included in the kit, so a suitable microswitch (eg Maplin GW66W) should also be ordered.

state, so the program can subvert the VDI button handling at the same time.

Finally, the package also needs a way to monitor the changing values in the lightpen variables. Since the lightpen will only yield one position on each frame of the monitor display, it seems most economical to link sampling of the lightpen registers to one of the many interrupts associated with the screen refresh.

Implementation

Having looked at the design themes, we turn to the code to achieve the desired effect. The package is implemented as a desk accessory that enables switching between the mouse and lightpen as input devices. Switching is available in two forms: either indefinitely or in a special trial mode which engages the lightpen input for a short period (about a minute) before reverting to mouse. The trial mode is useful for testing screen layouts which may or may not work well with the lightpen.

The accessory is made up of C and assembly language modules: Listings 3 and 4 respectively. These should be compiled and assembled, and then linked together using Listing 5 (modified if necessary to reflect the local environment). Following a reboot, the desk menu should contain the 'Lightpen Driver' item.

To see the lightpen in action, simply activate the accessory; click on the Lightpen button, and then press Return to activate the trial mode (see Figure 4). Assuming that the hardware is set up properly, the mouse pointer should track the lightpen over the screen. Closing the microswitch should imitate the effects of a left mouse button click.

A few moments playing with the lightpen will quickly reveal a couple of the limitations of the unit. First, and rather obviously, the pen only works in light areas of the screen. Secondly, the horizontal resolution of the pen is restricted to character squares, giving a rather jerky movement. This is due to the Atari hardware, not any property of the lightpen itself.

The code

The C module handles the normal GEM initialisation and desk accessory set-up protocol. The majority of the code is absolutely standard desk accessory stuff, which should be familiar to most readers by now. The simple dialogue box is embedded within this module for simplicity.

In addition to installing a vex_motv() handler as discussed above, the program also hooks into the mouse packet vector and installs a vertical blank handler. These processes are performed by the install_hooks() function from Listing 4. This is called in supervisor mode using the XBIOS Supexec() function.

The other C-callable functions in the assembly language module control the source of the mouse pointer data by manipulating two program flags: 'latch' and 'active_flag'. If 'active_flag' is FALSE, normal mouse operation is engaged. If 'active_flag' is TRUE, the pointer is controlled by the lightpen, for a period determined by 'latch'. If 'latch' is TRUE, the lightpen operates indefinitely, otherwise the variable 'ticker' counts the number of screen refreshes left until control reverts to the mouse.

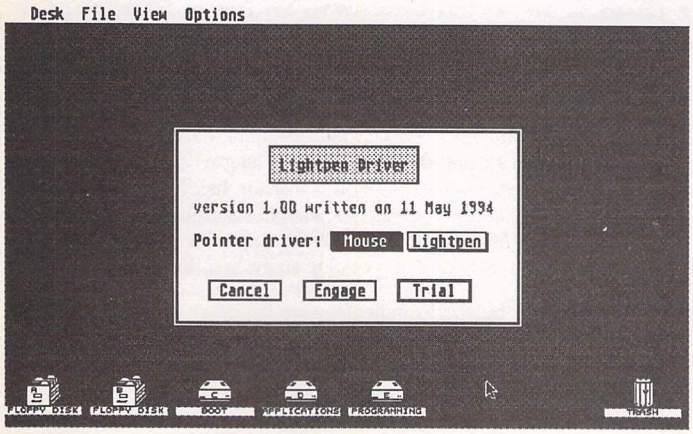
The countdown of ticker is managed by the VBL handler, which also interrogates the lightpen hardware registers to determine the position of the lightpen. The co-ordinates are derived using the same algorithm as in Listing 1, and stored into the 'mx' and 'my' variables. Before returning, a fake mouse package containing the lightpen button info is sent to the VDI mouse packet handler to trigger the mouse movement routines. And that's all there is to it!

Odds and ends

First, neither the hardware nor the software should be thought of as finished items. Although the hardware works reasonably well, there are some areas where it could be improved. The microswitch that mimics the mouse left button really should be debounced using some extra circuitry. Also, the circuit drifts a little with temperature, and is rather sensitive to noise, as evidenced by occasional pointer jumps when the microswitch is used.

The hardware has been tested on a SM124 mono monitor and an SVGA monitor in monochrome, but not in colour. It is possible that some of the x axis scaling code may require adjustment on other monitors - Listing 2 should help work this out.

The software is configured as a desk accessory, but there is no reason why it should not form part of a normal application. Extra code will have to be written to unhook the program from the VDI and system vectors grabbed during the installation phase. For those wanting to use the lightpen at the same time as a mouse, the code in this article could be merged with that produced for the joystick-mouse project (see Programmers' Forum columns in STA 22,23 and 31).



◁ The desk accessory that allows the lightpen to be used in place of the mouse in any application.

Although the software is written for Lattice C, it should be easy to port to other compiler systems. As usual, bear in mind that the package assumes 32-bit ints and 16-bit shorts. The assembly language module (Listing 4) is written for the default Lattice function calling conventions: all function arguments are stacked from right to left, and extended to 32 bits if necessary; registers d0-d1/a0-a1 can be trashed, all others must be preserved; functions return results in d0; all symbols referenced by C code appear prefixed with an underscore.

Finally, as with all hardware projects, you build and operate the lightpen unit at your own risk. If there is some mistake that turns the lightpen into a 10kV generator that toasts your shiny new Falcon, it is your responsibility, not ours. Our lightpen works fine!

A quickie

If you intend to make use of the keyboard shortcut extensions to the multi-windowing code featured last month, it is probably worth adding some code to ensure that when a menu entry is disabled, so is its keyboard shortcut. This can be done quite easily by adding the following lines to the key_map() function, just before the menu_tnormal() call:

```
if ((menu+pipe[4])->ob_state & DISABLED)
    return(KEY_NONE);
```

Next Month

Next month, *Programmers' Forum* will feature some more questions and tips from readers' letters. Keep the letters coming in - the more we receive, the better the column gets! Hints on any subjects, or questions about programming problems should be sent to the address below. All contributions, no matter how simple or advanced, are most welcome. Please include your address on the letter, so I can get back to you if anything in your contribution is unclear. Email addresses are useful too.

One last point, about email. Whilst I am very happy to receive contributions by email, please include your real name in the message, as cryptic alphanumeric user identifiers are not terribly useful. Please send a disk or email if there are large chunks of text or ASCII source code: I have no time to retype lots of material. Naturally, disks will be returned if an SAE is included.

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Listing 1
=========

```
/*
** Listing 1.
** Programmers' Forum STA 43 (July 1994)
**
** Test program for tracking the path of the
** lightpen around the screen by plotting a
** line on the screen. Press shift, control
** or alt to exit.
**
** Compiler system: Lattice C v5.60
** Compile options: -cargfku
**  Meaning: Enable ANSI mode, disable trigraphs, enable
**           non-ANSI keywords, assume unsigned chars
** Link with C.O and LC.LIB
** Written on 13th September 1993.
*/


#include <linea.h>
#include <osbind.h>
#include <portab.h>
#include <stdio.h>

int main(int,char **,char **);

/*
** The program starts here...
*/

int main(argc,argv,envp)

int argc;
char **argv, **envp;

{
    int f;
    void *oldSSP;
    volatile unsigned short *px, *py;
    unsigned short x, y;

    linea0();
    hidemouse();
    printf("\033E");
    px = (volatile unsigned short *)(0xFF9220);
    py = (volatile unsigned short *)(0xFF9222);
    oldSSP = Super(0L);
    while (Kbshift(-1) == 0)
        {
        x = (*px & 0x3FF);
        y = *py & 0x3FF;
        if (x == 0)
            x = 0xA4;
        x -= 8;
        x *= 4;
        for (f=0; f<16; f++)
            putpixel(x+f,y,1);
        }
    Super(oldSSP);
    showmouse(1);
    return(0);
}
```

Listing 2
=========

```
/*
** Listing 2.
** Programmers' Forum STA 43 (July 1994)
**
** Test program for debugging the lightpen
** hardware. It simply displays the values
** held in the hardware registers associated
** with the extended joystick ports. Press a
** shift key to exit.
**
** Compiler system: Lattice C v5.60
** Compile options: -cargfku
**  Meaning: Enable ANSI mode, disable trigraphs, enable
**           non-ANSI keywords, assume unsigned chars
** Link with C.O and LC.LIB
** Written on 15th May 1994.
*/


#include <stdio.h>
#include <osbind.h>

int main(int,char **,char **);

/*
** The program starts here...
*/

int main(argc,argv,envp)

int argc;
char **argv;
char **envp;

{
    void *oldSSP;
    printf("\033E\n");
    oldSSP = Super(0L);
    while (Kbshift(-1) == 0)
        {
        printf("\033H");
        printf("$FF9200 = $%04X\n",*(volatile unsigned short *)(0xFF9200));
        printf("$FF9202 = $%04X\n",*(volatile unsigned short *)(0xFF9202));
        printf("$FF9210 = $%04X\n",*(volatile unsigned short *)(0xFF9210));
        printf("$FF9212 = $%04X\n",*(volatile unsigned short *)(0xFF9212));
        printf("$FF9214 = $%04X\n",*(volatile unsigned short *)(0xFF9214));
        printf("$FF9216 = $%04X\n",*(volatile unsigned short *)(0xFF9216));
        printf("$FF9220 = $%04X\n",*(volatile unsigned short *)(0xFF9220));
        printf("$FF9222 = $%04X\n",*(volatile unsigned short *)(0xFF9222));
        }
    Super(oldSSP);
    return(0);
}
```

Listing 3
=========

```
/*************************************************************
**                                                          **
**                    Lightpen Driver                       **
**                    ===============                       **
** (C) Jon Ellis, 1994  All commercial rights reserved      **
**                                                          **
** Accessory allowing switching between mouse and lightpen  **
** control of the mouse pointer.  Adapted from the graphics **
** tablet code published in STA 13.                         **
**----------------------------------------------------------**
** Creation: v1.00  23/09/93 JHE                            **
**----------------------------------------------------------**
** Filename: PEN.C            Version: 1.00  Date: 21/05/94 **
** Compiler: Lattice C v5.60  Options: -cargfku -ms -v      **
*************************************************************/

#include <aes.h>
#include <osbind.h>
#include <portab.h>
#include <vdi.h>


/*
** Resource object symbols...
*/

#define MOUSE 4
#define LIGHTPEN 5
#define CANCEL 6
#define ENGAGE 7
#define TRIAL 8


/*
** Resource data from DERCS...
*/

static TEDINFO rs_tedinfo[] =   {
        {"Lightpen Driver", "", "", IBM,6,TE_CNTR,0x1111,0,-2,16,1},
                                };

OBJECT dial_tree[] = {
/*0*/   {-1,1,8,G_BOX,0x0,0x10,(void *)0x21100,1,1,40,2059},
/*1*/   {2,-1,-1,G_BOXTEXT,0x0,0x0,&rs_tedinfo[0],11,1,17,2},
/*2*/   {3,-1,-1,G_STRING,0x0,0x8,"version 1.00 written on 21 May 1994", 2,4,35,1},
/*3*/   {4,-1,-1,G_STRING,0x0,0x0,"Pointer driver:", 2,6,15,1},
/*4*/   {5,-1,-1,G_BUTTON,0x11,0x20,"Mouse", 18,6,8,1},
/*5*/   {6,-1,-1,G_BUTTON,0x11,0x20,"Lightpen", 27,6,9,1},
/*6*/   {7,-1,-1,G_BUTTON,0x5,0x0,"Cancel", 4,9,8,1},
/*7*/   {8,-1,-1,G_BUTTON,0x5,0x0,"Engage", 15,9,8,1},
/*8*/   {0,-1,-1,G_BUTTON,0x27,0x0,"Trial", 26,9,8,1},
};


/*
** Global variables: Fundamental GEM package
*/

short ap_id;                            /* AES application identifier   */
short menu_id;                          /* Menu entry identifier        */
short AES_handle;                       /* The VDI handle of the AES    */
short handle;                           /* VDI workstation handle       */
short char_width, char_height;          /* Dimensions of character cell */
short screen_width, screen_height;      /* Dimensions of screen         */
short screen_planes;                    /* Number of colour planes      */


/*
** Global variables: Program specifics.
*/

OBJECT *box;                            /* Pointer to dialogue box tree */
short sx, sy, sw, sh;                   /* Position and size of box     */
short active_flag;                      /* Semaphore for lightpen use   */
short latch;                            /* Lock in to lightpen use      */
short max_x_pixel;                      /* Size of the screen           */
short max_y_pixel;
int (* old_mover)();                    /* Old mouse movement vector    */


/*
** Symbols to be collected from the assembly
```

```
** language module...
*/

extern int install_hooks(void);
extern int move_ptr(short,short);
extern void try_lightpen(int);
extern void use_lightpen(void);
extern void use_mouse(void);



/*
** Internal function prototypes...
*/

int main(int,char **,char **);
void do_dialogue(void);
void initialise(void);


/*
** Begin here with normal desk accessory
** initialisation and installation.
*/

int main(argc,argv,envp)

int argc;
char **argv, **envp;

{
    short pipe[8];

    initialise();
    while(TRUE)
        {
        evnt_mesag(pipe);
        if (pipe[0] == AC_OPEN && pipe[4] == menu_id)
            do_dialogue();
        }
    return(0);
}


/*
** Function to perform the work required at
** the initialisation stage. This includes
** preparation of the resource tree and
** variables concerned with the GEM interface,
** and the installation of the system hooks.
** There are no arguments and no returns.
**
** Usage:   void initialise(void);
*/

void initialise(void)

{
    short work_out[57], dummy;
    short work_in[11] = {1,1,1,1,1,1,1,1,1,1,2};
    int f;

    ap_id = appl_init();
    box = dial_tree;
    for (f=0; f<9; f++)
        rsrc_obfix(box,f);
    menu_id = menu_register(ap_id,"  Lightpen Driver");
    form_center(box,&sx,&sy,&sw,&sh);

    AES_handle = graf_handle(&dummy,&dummy,&dummy,&dummy);
    handle = AES_handle;
    v_opnvwk(work_in,&handle,work_out);
    max_x_pixel = work_out[0];
    max_y_pixel = work_out[1];
    screen_width = max_x_pixel + 1;
    screen_height = max_y_pixel + 1;
    vq_extnd(handle,1,work_out);
    screen_planes = work_out[4];

    active_flag = FALSE;
    latch = FALSE;
    vex_motv(handle,move_ptr,&old_mover);
    v_clsvwk(handle);
    Supexec(install_hooks);
}


/*
** Function to handle the display of the program's
** dialogue box. This allows a choice between the
** mouse and the lightpen as an input device. Both
** temporary and permanent installation of the
** lightpen are catered for. The user's selections
** are effected by calls to routines in the low-
** level package. There are no arguments and no
** return values.
**
** Usage:   void do_dialogue(void);
*/

void do_dialogue(void)

{
    int exit_obj;

    (box+MOUSE)->ob_state &= ~SELECTED;
    (box+LIGHTPEN)->ob_state &= ~SELECTED;
    (box+(active_flag == FALSE ? MOUSE : LIGHTPEN))->ob_state |= SELECTED;
    form_dial(FMD_START,0,0,0,0,sx,sy,sw,sh);
    objc_draw(box,ROOT,MAX_DEPTH,sx,sy,sw,sh);
    exit_obj = form_do(box,0) & 0x7FFF;
    (box+exit_obj)->ob_state &= ~SELECTED;
    form_dial(FMD_FINISH,0,0,0,0,sx,sy,sw,sh);
    if (exit_obj == ENGAGE || exit_obj == TRIAL)
        {
        if ((box+LIGHTPEN)->ob_state & SELECTED)
            if (exit_obj == ENGAGE)
                use_lightpen();
            else try_lightpen(5000);
        if ((box+MOUSE)->ob_state & SELECTED)
            use_mouse();
        }
}
```

Listing 4
=========

```
*************************************************************
**                                                         **
**                   Lightpen Driver                       **
**                   ===============                       **
** (C) Jon Ellis, 1994  All commercial rights reserved     **
**                                                         **
** Low-level driver routines for the Falcon/STe lightpen   **
** package. Modified from the original graphics tablet code **
** published in STA 13.                                    **
**---------------------------------------------------------**
** Creation: v1.00  23/09/93 JHE                           **
**---------------------------------------------------------**
** Filename: DRIVER.ASM       Version: 1.00  Date: 21/05/94 **
** Assembler: asm v5.60       Options:                     **
*************************************************************


          CSECT     TEXT,0


**
** Exported symbols...
**

          XDEF      _install_hooks
          XDEF      _use_lightpen,_try_lightpen
          XDEF      _use_mouse
          XDEF      _move_ptr


**
** Imported symbols...
**

          XREF      _old_mover
          XREF      _active_flag,_latch
          XREF      _max_x_pixel,_max_y_pixel


**
** Internal symbols...
**

XBIOS               equ       14
Kbdvbase            equ       34

nvbls               equ       $0454
_vblqueue           equ       $0456
Button              equ       $FFFF9202
LightX              equ       $FFFF9220
LightY              equ       $FFFF9222

XBRA_magic          equ       'XBRA'
XBRA_id             equ       'LPEN'


**
** Function to install the low level routines. This
** MUST be called in supervisor mode.  There are
** no arguments, and a constant return value of 0.
**
** Usage:   result = install_hooks();
**
**          int install_hooks(void);
**

_install_hooks:
          move.w    #Kbdvbase,-(sp)     Get the vector block.
          trap      #XBIOS
          addq.l    #2,sp
          move.l    d0,a0
          move.l    16(a0),tickle       Save the old handler address.
          move.l    #deadzone,16(a0)    Write in our routine's address.
          move.l    _old_mover,d0       Make proper XBRA prefixes.
          move.l    d0,_move_ptr-4
          move.l    _vblqueue.w,a0      Fetch pointer to VBL list.
          move.w    nvbls.w,d0          Fetch length of VBL list.
1$        beq.s     3$                  Bomb out if no VBL slots available.
          tst.l     (a0)+               Is the slot occupied ?
          beq.s     2$                  No, so install our code.
          subq.w    #1,d0               Bong the counter...
```

```
        bra.s   1$                  ...and loop again.
2$      move.l  -(a0),VBL_tick-4    Save the old value (not necessary).
        move.l  #VBL_tick,(a0)      Install our VBL vector.
3$      clr.l   d0
        rts


**
** Function to wire in the lightpen to drive
** the mouse pointer. This is done simply by
** releasing the semaphore with no countdown
** protection. No arguments or return values.
**
** Usage:   void use_lightpen(void);
**

_use_lightpen:
        st      _latch              Engage lightpen indefinitely.
        st      _active_flag        Turn on package.
        rts


**
** Function to try out the lightpen. This is
** done by using the lightpen driver for a
** period of time, using the refresh timer to
** automatically close down the package. The
** argument is the number of video frames before
** reversion to the mouse driver.
**
** Usage: try_lightpen(delay);
**
**      void try_lightpen(short);
**

_try_lightpen:
        move.l  4(sp),d0            Fetch the frame count.
        move.w  d0,ticker           Copy into the countdown register.
        clr.w   _latch              Use timed package.
        st      _active_flag        Release the test routine.
        rts


**
** Function to restore normal control to the mouse
** hardware.  No arguments or return values.
**
** Usage:   void use_mouse(void);
**

_use_mouse:
        clr.w   _active_flag        Stop the test routine now.
        clr.w   _latch              Ensure package shut down.
        rts


;=============================================================
**
** Low level routines...
**

**
** Handler that moves the mouse pointer according to the
** information placed into the local variables mx and
** my. These variables are driven by the timer interrupt
** that interrogates the hardware. The routine receives
** a proposed x and y position in d0.w and d1.w but
** simply overwrites these with our own x and y before
** handing off to the system handler.
**

        dc.l    XBRA_magic
        dc.l    XBRA_id
        dc.l    0

_move_ptr:
        tst.w   _active_flag        Are we active ?
        beq.s   track               No, just track AES mouse movement.
        move.l  mx,d0               Fetch the x and y in one go.
        move.w  d0,d1               Transfer the y value.
        swap    d0                  Put the x value in the right place.
old_move move.l _move_ptr-4,-(sp)   Jump on to existing handler.
        rts
track   move.w  d0,mx               Keep track of mouse position.
        move.w  d1,my
        bra.s   old_move            Hand off.


**
** Low-level mouse IKBD vector handler that prevents
** real mouse movements from disturbing those generated
** by the lightpen. If the package is active, the mouse
** information is simply thrown away.
**

        dc.l    XBRA_magic
        dc.l    XBRA_id
tickle  dc.l    0

deadzone tst.w  _active_flag        Is the lightpen active ?
        bne.s   1$                  Yes, throw away the mouse info.
        move.l  tickle,-(sp)        No, do a jump to the system handler.
1$      rts
```

```
**
** VBL timer handler that is used for two purposes.
** Most importantly, it interrogates the hardware to
** determine the position of the lightpen and the state
** of the button, and then tickles the mouse packet
** handler. Secondly, in the trial mode, it counts
** down the period of time left before control reverts to
** the mouse.
**

        dc.l    XBRA_magic
        dc.l    XBRA_id
        dc.l    0

VBL_tick tst.w  _active_flag        Is the lightpen package active ?
        beq.s   no_VBL              No, just jump to old handler.
        tst.w   _latch              Is the lightpen engaged permanently ?
        bne.s   find_pen            Skip on if so.
        sub.w   #1,ticker           Decrease the countdown by one.
        bpl.s   find_pen            Do the work now if all OK.
        clr.w   _active_flag        Timed out, turn off routine.

find_pen move.w LightX,d0           Fetch the x coord from the hardware.
        and.w   #$03FF,d0           Mask off undefined bits.
        bne.s   1$                  Skip on if non-zero.
        move.w  #$A4,d0             Correct value for right of screen.
1$      subq.w  #8,d0               x -= 8
        lsl.w   #2,d0               x *= 4;
        move.w  LightY,d1           Fetch the Y-coordinate,
        move.w  d0,mx               Save current position.
        move.w  d1,my
        move.w  Button,d0           Fetch the button state.
        not.w   d0                  Make it so bit set when button down.
        lsr.w   #8,d0               Shift until LSB = button state.
        and.w   #$01,d0             Mask off all the junk.
        move.w  d0,fire             Save the button state.

; This is the key to the routine, the faking of
; a mouse packet arriving from the IKBD.

        lea     fake,a0             Address our fake IKBD packet.
        move.w  fire,d0             Fetch the button state.
        add.w   d0,d0               Left button is bit 1.
        or.b    #$F8,d0             Add in the header prefix.
        move.b  d0,(a0)             Make a packet.
        move.l  tickle,a1           Give it to the system routine
        move.w  sr,-(sp)            to process. Need to lock out other
        ori.w   #$0700,sr           interrupts during this, as collision
        jsr     (a1)                of two MFP context interrupts will
        move.w  (sp)+,sr            lock up the machine.
no_VBL  rts


;=============================================================
**
** Variables for the core routines.
**

mx      dc.w    0                   Current mouse position.
my      dc.w    0
fire    dc.w    0                   Current button state.
ticker  dc.w    0                   Countdown timer for test code.

;
; Fake mouse packet.  The first byte is a header
; byte of $F8 ORed with the button status, bit 0
; is right button, bit 1 is left.  The bits are set
; if the button is down.  The second two bytes are
; the incremental movement in the x and y directions:
; values are irrelevant now as we overwrite them later.
;

fake    dc.b    $F8,1,1
        dc.b    0,0,0

        END
```

Listing 5

```
from
        E:\SYSTEM\LIBRARY\CACC.O
        E:PEN.O
        E:DRIVER.O
library
        E:\SYSTEM\LIBRARY\LC.LIB
        E:\SYSTEM\LIBRARY\LCG.LIB
to
        C:\LIGHTPEN.ACC
```

Classified Adverts

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Please use the form on page 58.

For Sale

Mega ST 2.5MB RAM, 20MB external hard drive, SM124 mono monitor, replacement mouse, all boxed with manuals; original software includes Calligrapher, K-Spread 3, Superbase plus many others, all boxed with manuals, plus HP DeskJet 500 still in warranty, complete with accessories, etc. The lot for £550. Phone Simon on 081 848 7102. (43)

Hard drive components: 40w PSU (12volt/5volt) – £15; 50w PSU (12volt/5volt) – £20; 60mm brushless fan (12volt) – £5. All work perfectly and are designed to power hard drives (except the fan); price includes P&P. Phone David Haider on 061 764 2442 after 5pm and before 11. (44)

IBM PC emulator for the Atari ST computer: Supercharger v1.4. This has a V30 (like 8088) processor, 1MB Ram and 8087 maths coprocessor fitted. It connects to the ST DMA port and can be used with or without hard disk. MSDOS 4.1, Supercharger manual, 3.5" disks, cables and power supply are included. £100. Tel: Peter Grannell on 0782 610398 evenings. (43)

Atari Megafile 20 £80; Zydec hand scanner c/w Daatascan Pro software £75; Psion Printer II £100. Tel: 0484 651687 evenings. (43)

520 STE TOS 2.06 4MB RAM, box + manual, SM124 mono monitor, SM1224 colour monitor, Protar 20MB HD, Cumana 354 external 3.5" drive, Forget-Me-Clock II, joystick: £600. Tel: 081 291 0504. (43)

PageStream 2.2 – latest version – brand new and unused (purchased in haste before deciding to go PC); cost new £159. Sensible offers considered. 0704 894513. (45)

Amstrad FX6000AT Fax/answermachine, approved for connection to telecommunication system. Facsimile Modem Group III. Automatically detects whether to accept a fax or initiate the answermachine. Numerous functions, too many to list here. Will accept offer around £225 or may swap for a hard disk drive (minimum 80meg) or Multsync monitor that can be connected to my Atari STE computer. Hyperdraw from Atari with GDOS disk £10 inc. postage. Timeworks Swiftcalc v1 with graphs and sideways printing facility: two-disk set with manual for £20 inc. postage. HiSoft Knife ST, the disk editor for the ST, £15 inc. postage. All software are original copies, boxed, with manuals. Why not try these instead of the PD software you were considering? Call 031 334 5799 after 6pm if you are interested in any of the above. (43)

Atari ST games £7 each or nearest offer: Graham Taylor's Management, Speedball 2, Lemmings, Mercenary 3, Storm Master. £8 or nearest offer for Football Crazy (Kick Off 2, Player Manager and Final Whistle); £5 each or nearest offer: Blood Money or Puzznil; £3 ono: First Division Manager, North and South, Flip It and Magnose, Onslaught and Asterix. Phone 021 351 4909 eves only. (48)

Poqet PC hand-held PC with 512K PCMCIA card drive. Complete with MSDOS 3.2 and built-in WP, Comms, Address Book, Calendar, Calculator. Worth £290, will sell for £140. Also: GFA 3.5 compiler, advanced programming, GEM utility kit and disks: £45 the lot. Phone 0225 464637 Mon-Thurs after 7pm. (45)

4MB STE in lighthouse tower, TOS 1.62/2.06 switchable, 245MB internal Quantum SCSI drive, ICD host adaptor, external SCSI port: £575. SM144 hi-res monitor £70. Daatascan Pro scanner £60. High density drive kit (inc. drive) £50. External drive £40. HiSoft Basic 2 £30, GFA Draft 3.14 £20, 300 disks of PD software £50. Or £800 the lot! Ring 0225 464637 Mon-Thurs after 7pm. (45)

Steinberg Pro 24 III for £25 plus postage. Also Captive, Falcon and Microprose Gunship £6 each plus postage. Geoff: 0602 253281. (43)

Original software, boxed etc. F09 Retaliator, Hard Drivin' II, Lost Patrol, only £5 each. NeoDesk 2.01, UVK 3.6, Return to Europe (for K.O. II) only £3 each. Trimbase relational database £8. Phone John on 0742 366819. (45)

2.5MB STFM £120, SM124 monitor £50, Case 440/12 modem £30, Forget-Me-Clock II £10, Calligrapher Junior £40, Superbase Personal £50, Microsoft Write £20, Personal Finance Manager+ £15, Fontkit 3.4 £15, Mini Office Spreadsheet £10, UIS 3.3 £10, Mortimer £10, MultiDesk £15, G+Plus £15, Scrabble £10, Using ST Basic on the Atari ST £6, A Users' Guide to Timeworks £6. A. McInally 0292 311119. (44)

C Lab Export £50 (to obtain 64 Midi channels): call 081 883 5744. (43)

105MB hard drive for ST, includes ICD adSCSI+ adaptor, case, PSU and cables. Also includes free 70MB disk which does not fit into same case. £250. Alfa Data 400dpi hand scanner, inc. TouchUp software £60. Phone David on 0734 351783. (43)

2.5MB DS internal 520 STFM TOS 1.4 £150. Microvitec 452 colour monitor £60. Carnegie 105MB hard drive and clock (ICD AdSCSI) £220. HP DeskJet

Authorware

If you would like to see your software featured in the ST Applications Authorware column please send us a review copy of the software and a rough outline of the advertising copy you would like to be printed.

Morse Master

The complete morse trainer and simulator, with realistic 'on-air' emulator and integral editor, with complete control of your listening equipment. In addition to sending, your Atari can also receive and decode Morse from your own key using the supplied interface cable. Send Cheque/PO for £29.99 payable to Boscad Ltd at: 16 Aytoun Grove, Balbridgeburn, Dunfermline, Fife KY12 9TA. Phone (0383) 729584 evenings for technical information.

SynTax

The ST adventure magazine on disk! Reviews, solutions, hints, special features and much, much more. Runs in colour only. Produced bi-monthly. SynTax costs £3.50 an issue, £20 for a year's subscription. Cheques made payable to S. Medley should be sent to: 9 Warwick Road, Sidcup, DA14 6LJ.

Clip Art

Clip Art specifically for Christian and Community Magazines. Seven disks of IMG images for DTP programs supplied with a printed picture catalogue of every image. Cost: £3 per disk plus P&P: total of £23 for the set. Cheques payable to Peter Kempley, KemCom Designs, 21 Chart House Road, Ash Vale, Aldershot GU12 5LS.

Calamus Manual

This self-tutorial guide incorporating sections on frame drawing, entering text, changing fonts and styles, importing text and images, drawing boxes and lines, loading, saving, printing, text rulers, headers and footers and page numbers. Available for £5 (including postage) from: David Waller, The Sandon School, Molram's lane, Great Baddow, Chelmsford, Essex CM2 7AQ. Cheques should be made out to 'Sandon School'.

STTrack

Use up to four light beams with your ST. Measure speed and acceleration. Write data to disk for spreadsheet. Invaluable for Science National Curriculum AT4. High resolution only. Software and manual with full details £20. Cheques payable to: F.J. Wallace, 9 High Elms Road, Hullbridge, Essex SS5 6HB.

Genealogy

Newgen, my genealogy program, runs on any ST(E) or TT and is easy to use; it will print family trees, etc. Send large SAE for details or £17 for program. E G Richards, 2 Peckarmans Wood, London SE26 6RX.

Educational Adventures

For ages 5-13. 88% in ST Format. £12 each. 50p per disk for demo's. CVS, 18 Nelson Close, Teignmouth TQ13 9NH. Tel: (0626) 779695.

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We will sample your sounds from tape to disk. Ideal for demos, games and your own programs. 3-day turnaround guaranteed. Write for free details to: The Lodge, Delly End, Hailey, Witney, Oxon OX8 5XD.

Learning a Language?

ACADEMIC SOFTWARE supply several budget foreign language disks to help you in your studies. Call 0296 82524 any time (stating your address) for a free brochure sent same day. Or write to 128 Ingram Ave, Aylesbury, Bucks. HP21 9DJ. For demo, just send 4 first class stamps or SAE + disk.

Scanner Manager

A specialised database system for all scanner owners, this software has been designed to be very easy and quick to use. For further details contact: Stuart Coates. 9 Links Road, Kibworth Beauchamp, Leicester LE8 0LD.

Graph, Euclid and Stack

GRAPH can draw simple functions, implicit functions, parametric and polar functions and display the gradient functions of any of these. It will also display the solutions to first order differential equations and do a simple plot of complex functions. EUCLID enables you to draw any geometrical configuration including conics, circles, perpendiculars, bisectors, etc. STACK is an arithmetic calculator (HP type) for use with very large whole numbers. It will factorise smallish numbers quite quickly. Cost: £10 for a disk containing the programs, documentation and some examples. Michael Girling, Camel Quarry House, Wadebridge, Cornwall PL27 7HZ.

DEGASART

Demo disk of the above compart tutorial is now available. Please send a cheque/P.O. for £1 or a blank DS disk and an SAE to Keith Markland, 15 Stourton Road, Ilkley, W. Yorkshire LS29 9BG.

Morse/RTTY Transceive

Atari STE - Morse and RTTY transceive. Morse automatically locks to signal including hand sent code and will send at 10, 20 and 40 wpm. Noise filter option. Adjustable mark-space ratio. RTTY automatically locks to

500 £150. Datascan 400dpi hand scanner £40. That's Write 2 £30, Timeworks 2 £30, GFA Basic 3.5 + compiler £30. Fontkit 4 £10. Fontkit 3.4 £5. QuickST 3 £5. Imagecopy £5. Stereomaster sampler £15. 0924 258672 – Cameron. (43)

Easy Text Professional with 17 fonts £25; Calligrapher Lite £10; Atari Sound and Music £10; Atari Basic Programming £10; all plus postage. Ring Trevor 0842 761125. (44)

Third Coast Hard Drive 65MB SCSI, space in case for second drive: £160. 1MB STE £150. SM125 monitor £50. Golden Image Scanner, Touchup and A4 Stich software £55; plus tons of software. Steve 0502 518625. (44)

Falconwing £42 new, 68882 FPU £46 new, 65Mx 2.5in IDE drive incl. Falcon installation kit £100, 4x1 MSIMMS 70ns £110, TOS 2.06 £20, Powerup 2 (32MHz for Falcon) £50, low cost installation available on all items. Software: STalker 3 £20, Datalite 2 £20, XBoot 2 £10; books: Compute Programming in C £8, Compute Tech. Ref. Guide to TOS £8, ST Machine Language £5. 0224 869558 after six or weekends. (45)

AT-Speed 8MHz £70. Phone 0367 710503 after 7pm.

AtariWorks complete with SpeedoGDOS, excellent program as reviewed in these very pages. £60 complete or £40 for AtariWorks alone, £20 for SpeedoGDOS. Phone Ian on 0483 747502.

Reflex graphics card for the Mega ST, extra crystal incl. to give up to 1029x1024 pixel display. Unregistered. £99. Lattice C v5.56 (latest) includes Mass programmers' guide. I will transfer registration to buyer: £60. Also Devpac 3.1 (latest). Adam 081 989 9672 apelled @cix.compulink.co.uk. (43)

Mega ST 4 with 4MB Ram, 45MB internal hard disk, SM125 mono monitor, colour monitor, various original software. £420 ono. Tel: St. Alban's 0727 861150. (43)

Steinberg Pro 24 III brand new, unopened £35 inc. postage. ST Basic Metacomco unused, inc. source book and tutorial £5 inc. postage. Tel 0983 562313. (45)

Vortex 16MHz 386 PC emulator for the Mega STE. Unregistered. Boxed with manuals, as new. Adam on 081 989 9672. (44)

ATonce PC 286 emulator, Norton rating of 8 running at 16MHz. Emulates CGA/EGA/VGA. Includes adaptor for Mega ST. Boxed with disk and manuals. £100. Tel Darren on 0709 895707. (43)

Atari Mega 4 ST £200. Atari laser printer £250. Gasteiner 105MB hard drive. SM124 monitor £75. All boxed with manuals, etc. Also scanner, disks, software. Tel Darren on 0709 895707. (43)

Casio FZ1 shareware sounds, hundreds of superb sounds from the UK, USA and Sweden. Send SAE for free printed list or blank formatted Atari disk with SAE to: Brian Tunnard, 45 Carnoustie, Worksop, Notts. S81 0DB; tel: 0909 486971. (43)

Roland D110 library disk, instant access to over 2,600 of the very best sounds, in a program which runs with your favourite Atari sequencer. £27.00 inc. manual sheet. 0909 486971.

Hollis Research Midiman (for Atari). "Multi-synthesizer editor" controls your synth's knobs and switches remotely, without leaving your sequencer! Comes with 'ready to use' profiles for most major synths and effects inc. Lexicon LX series. Only £25 boxed with manual. 0909 486971.

Bubblejet ink refill service using finest quality "Permanent Black" ink (better print quality than original cartridge). £5 for standard capacity, £7.50 for high capacity, inc. return postage UK. Brian on 0909 486971.

Atari STE 4meg, unused (kept as duplicate back-up machine for music studio). Complete with mouse and manuals, £300 cash, buyer collects. Also various software available if required. Brian on 0909 486971.

Atari Golden Image hand scanner (brand new scanner head) plus "Touch-Up" v1.8 and "Merge-It" software. 256 greyscales at 400dpi, very powerful! £85 + P&P. Brian on 0909 486971.

Psion Series 3 software: Personal Finance (comprehensive but very easy to use). Lotus 123 compatible spreadsheet (on SSD). All manuals, etc., £35 and £45 respectively. Brian on 0909 486971.

Redacteur, current full version including all progs, manual and original packaging. All mint. Prefer exchange for AtariWorks or PageStream (must be fully documented), but otherwise best offer over £40. Ring Keith on 0298 814887. (44)

Unison Eprom programmer: programs 2764(8k), 27128(16k), 27256(32k) and 27512(64k) Eproms. Two ZIF sockets for blowing consecutive, Hi, Low, or HI and Lo bytes – essential for ST cartridges. Plugs into cartridge port. Complete with driver software and manual – £100. Eprom eraser: erases up to 4 Eproms at once, built in timer – £25. Atari ROM cartridges (as sold by CARE), takes two 27256 or two 27512 Eproms. 20 of @ £5.00 each; 27512 Eproms 36 of @ £4.00 each. Will sell separately as above but prefer to sell complete for only £250. Lattice C v5 £30. Phone Worksop 0909 773564 for Martyn. (45)

Atari ST Mega 4 with 12MB Ram (Marpet "XtraRam" – cost £400) and "Autoswitch Overscan" screen expander (cost £40) and "ICD ADSpeed ST" 16MHz accelerator (cost £170) and TOS 2.06 update with 1.04/2.06 switcher (cost £55): I think it's all worth at least £1200 but I need the cash so the best offer over £560 gets it. Also lots more hard/software for sale. Tel Graham on 0222 611463. (44)

Atari ST Mega 4 with Reflex Graphics card and Viking 19" hi-res monitor, absolutely perfect. Ideal for CAD/DTP work, brilliant for Cubase/Logic. Best offer over £499. Atari SLM804 laser printer, just serviced, new drum (£164) plus spare toner (£40): fantastic quality printing for only £399 ono. Tel Graham on 0222 611463. (44)

Floptical drive – 21 megabytes on a 3.5" floppy disk! And it reads and writes ordinary floppies! Only four months old. Cost me £400 – yours for £239 ono. Also £400 worth of Floptical disks (that's 420 megs) for only £150. Graham on 0222 611463. (44)

85MB Gasteiner hard drive. DMA in and through. ID switch on rear. No fan required so it's nice and quiet – £160 or nearest offer. Graham on 0222 611463. (44)

Daatascan hand scanner complete with Daatascan Professional software, OCRJr and scanning tray with Merge-It! £60 complete. Phone Ian on 0483 747502. (43)

Modem Hi-Tec EC2400 v22bis (2400 baud) high-speed modem with MNP 4 and 5 error correction. Complete with manual (and PD software if required). £50 inc. carriage. Phone Ian on 0483 747502. (43)

Seagate 84MB hard disk, bare SCSI unit. £60 inc. p&p. Phone Ian on 0483 747502. (43)

TOS chips v2.05 (UK) £10; v2.06 (US) £10 including manual. Phone Ian on 0483 747502. (43)

Internal Atari 720KB disk drive ex my Mega STE (now 1.44MB) £25 inc. p&p. Phone Ian on 0483 747502. (43)

Mega STE 16MHz, 4MB Ram, 48 MB hard disk and 68881 maths coprocessor fitted. ViewTek greyscale monitor. Golden Image hand scanner with Touch Up, MiGraph OCR and Deluxe Paint. Software includes: Redacteur, Lattice C, GFA Basic Interpreter and Compiler, Fontkit Plus 3, Stereo Master, Warp 9, Imagecopy 2, Cyber Sculpt, 3D Calc Spreadsheet and 21 games (inc. Proflight, Knights of the Sky, Midwinter, Lemmings, Lemmings 2 and Space Crusade the Voyage Beyond). Over 50 disks of PD (inc. TeX, Ghostscript, Opus, GemView, Gnuplot and POV), dozens of ST magazines: ST Format, ST User and ST Applications no's 16–41 with disk mags 35–40 and books on C and 68000 assembler. All in immaculate condition. Offers around £900. Phone Mark on Newcastle 091 252 8768. (44)

Atari STE 4MB with TOS 2.06, high quality mouse, lots of software. Offers. ADSCSI + host adaptor with onboard clock, DMA throughport: offers. Atari developer docs, complete set of six manuals packed with info. Compute's AES/VDI/TOS programmer series, in my opinion the best available programming references: offers. Adam on 081 989 9672. (44)

19" monitor and interface card. Genuine Atari board for Mega ST's.

incoming signal up to 100 bands and will send at 50 and 25 bands. Both programmes have split screen type ahead buffers and are extremely easy to use: just fire up and you live. These programmes are £5 each. Write: Mr. V. McClure, 43 Roman Way, Seaton, Devon EX12 2NT.

Music Tutor Part 1

Teaches you to read music. This interactive course runs on any ST or Falcon in mono or colour, but a MIDI keyboard is required. Costs only £10 including printed manual, postage and packing. From: A. Graves, 81A Cambridge Road, Girton, Cambridge CB3 0PN.

MultiCAD

Vector-driven CAD/DTP program for the ST/STE. Design any kind of engineering drawing/posters/flyers/handbills/business cards/pattern design. Create your own library using the block save facility. Printout on Epson compatible printer 9- or 24-pin. Hi-res mono only. Large and enhanced screens supported. Excellent user support. Features include block cut/copy/paste/rotate/flip/scale, powerful auto repeat primitives and block paste, vector and bit-image text, units in mm/cm/mtr/Km/ins/ft/yds/pixels and user defined, snap-to-grid and snap-to-line, sixteen levels of drawing, landscape and portrait. Send cheque/P.O. for £24.95 payable to J.H.Taylor at: 12 West Drive, Cleadon, Sunderland, Tyne & Wear SR6 7SJ.

SciSet

SciSet is now available for Calamus. SciSet has been completely redrawn and now consists of 20 typefaces: serif, sans serif, italic, oblique, Greek, greek italic and science symbols, all in three weights - light, medium and bold. The letterforms have been designed to be resistant to variations in the printing technology. From: Dr. Graham McMaster, Retsum Computing Solutions, 12 High Street, Turriff, Aberdeenshire AB53 7DS; 0888 62328.

FALCON FACT FILE

The Falcon Fact File is a free-to-join Membership Club set up to encourage users to help users. Application forms can be obtained by sending a stamped self-addressed envelope to:

FFF, 11 Pound Meadow, Whitchurch, Hants. RG28 7LG.

The completed form should be returned with a High Density disk and stamped return envelope. The member's details will be added to the FFF and the disk returned along with a selection of the best Falcon PD and Shareware to fill the disk.

May the FFForce be with you!

Lovely Moniterm Viking 2/91 monitor gives 1280x960 pixels in mono on 19" screen. Complete with driver software, bargain at £400. Call Andy on 0908 50128 evenings and weekends. (43)

Calamus 1.09n £50. 071 435 7664. (44)

Wanted

HP DeskJet empty cartridges or a set with CYMK inks and refills. Contact Graham Nash on 071 234 5098, 9am – 6pm weekdays. (43)

Korg Wavestation SR Editor for Atari ST computer, preferably Steinberg Synthworks. Tel Brian on 0909 486971.

"Psion 3 / Atari STE" program, equivalent to "Mac-Link" and "PC-Link", used to transfer files to/from Psion Series 3 palmtop computer and Atari STE with serial (modem) cable, if there is such a program. Brian on 0909 486971. (43)

Wanted:

ST Teletext Adaptor

Phone: 0245 495635

Reflex graphics card for Mega ST. Phone after 6.30pm 0922 616358. (45)

Hotwire for the STE. 0983 562313. (45)

Stacy wanted. Phone Geoff on Plymouth 0752 880135. (43)

Cubase, reasonably priced, second hand version needed for small special needs school to allow students to produce, and gain National Certificate modules in, popular music composition. Tel 0383 418223. (44)

SM124 mono monitor and cable. Contact D. Sequeira on 081 852 8380. (43)

BBS

DNA BBS. Ireland's first, only and best Atari BBS. On line specialist technical and MIDI help. High speed callers especially welcome. Instant access on first call. A Ratsoft/ST BBS. Call (24hrs) +353-1-549029 (V32BIS). (50)

The Confederation BBS – Support bbs for all "HITCHHIKER" software releases and GFA programmers. All the latest PD/Shareware from Europe and USA as well as Netmail message areas. On line each evening 10.00pm to 7.00a.m., at all speeds up to 2400. Give us a call today and you will not be disappointed as we are the most friendly BBS in the country – dedicated ST BBS only. 0533 413443.

Call the Fractal BBS on 0305 266304. 14400+bps. Now running RATSOFT ST 2 fresh from the States. Any time after 9pm. (R)

The Bird Brain BBS – 0305 860245 10pm to 10am every night; all welcome. (R)

I'll Try That Once! ST-based BBS. Loads of file areas, 60-70 message echos, 10 on-line games. All speeds V326 V426. Give it a go! on 0453 765378 8pm to 8am. (R)

Crystal Tower BBS 081-447-8244 24hrs 300-2400 Baud (Towernet System) Atari ST, PC, Languages, Comms etc + much more. All welcome. (R)

General

Portlink or serial interface for Atari Portfolio computer and/or any other items for swap or cash. Phone Paul on 081 542 8350 evenings or weekend. (45)

Calamus 1.09N/S (please include fonts used) and That's Write/Write On files printed on HP Laserjet 4L. Send SSAE to: K. Hornby, 33 Ingleton Drive, Lancaster LA1 4RA for further details. (45)

Calamus S and 1.09 output on HP Laserjet 4 at 600dpi – 20pence per sheet. Please include fonts with disk and SAE. Stephen Russell, 67 The Avenue, Camberley, Surrey GU15 3NF (0276) 21469. (54)

Cheap Litho printing and scanning service. Send SAE to Stephen Russell, 67 The Avenue, Camberley, Surrey GU15 3NF (0276) 21469. (54)

PDP magazine: a non-profit making venture for the Atari and Amiga owner. A serious publication covering reviews, general computer talk, programming, graphics and lots more. A new international look for 1994. Only 70p for a trial issue: 22, The Birches, South Wootton, King's Lynn, Norfolk PE30 0JG. Make cheque payable to J. Briggs. (53)

Exchange/sell Honda C70 for any software or hardware. Phone Paul on 081 542 8350 weekend/evenings. (45)

Membership of the Cheshunt Computer Club is the essential accessory for your Atari. If you live within reach of Herts then give me, Derryck Croker, a ring on 0923 673719 with your name and address and I will send you details. (R)

Guide Dogs for the Blind Appeal – Please send used postage stamps to help this worthy cause to: 19 Dunloy Gardens, Newton Abbey, Co. Antrim, BT37 9HZ. (R)

Professional typeset from 1st Word disks. Over 100 Faces. Output to high quality PMT. Much better than laser. Also cheap printing A5/A4 single colour. Contact: AZTRAL Games, PO Box 8, Lowestoft, Suffolk, NR32 2AS. (R)

'Alternatives' fanzine – Quarterly. £1 per issue. Issue 9 out now (Autumn), Issue 10 out soon. Send £1 (which includes p+p) and address to Alternaties, 39 Balfour Court, Station Road, Harpenden, Herts. AL5 4XT. Writers, visionaries, artists needed. Details to the above address.

Contacts

Atari contacts wanted in Surrey/South London. Ring Paul on 081 542 8350 evenings or weekend.

Anyone interested in forming a user group for the ST and STE in the area of Prestatyn please ring 0745 825036. Ask for Paul.

The Psychedelic Graphics Generator

Slideshow alternates A & B drives or uses HD. Better bit-plane merge effects than before. New menu with many new functions. Stereo sound with STE's with more than 1 Mbyte RAM.

Minimum requirement: 1 floppy drive, 1 Mbyte RAM, colour monitor.

£10 for two packed disks including help, numerous example screens plus ZONK from:

Dave Henniker, 199 Bruntsfield Place, Edinburgh EH10 4DQ. (State type of ST.)

INVOICE MASTER

Invoice Master 1 is very easy to use. Simple invoice generation with a customer database and quick, straightforward summaries.

Invoice Master II is still easy to use but with more comprehensive features, including automatic statements and account balances. Good sorting, filtering, searching and built in summaries make finding and extracting information a doddle. Ideal for any small business.

Mick Austin
77 Dargate Road, Yorkletts, Whitstable, Kent CT5 3AG.
Telephone: 0227 772334 between 10.00 and 20.30.

Fontpac Plus Newsletter Setter

A set of GEM bit-map fonts for 300dpi printers and hi-res screens, designed for use in reports, CV's, adverts, newsletters and magazines.

There are five typefaces comprising nearly sixty fonts in all, with point sizes ranging from seven to twenty-eight. Included are:

- three 'classic-style' typefaces (Century, Castleton Roman and Souvenir), each with its own 'true italic' version and two of them with a 'Gothic' (sans serif) variation
- an elegant 'calligraphic' typeface (Derwent, based on the 'Foundational' hand) that will add a touch of distinctiion to subheads, headings and boxouts
- an 8-point monospaced font useful for listings and tables
- five alternative Swiss fonts
- an alternative 12-point Bullets font

The smaller point sizes of Castleton, Souvenir and Derwent have all the European accented characters implemented as well as 'f-ligatures', M-dash, N-dash and Maths symbols.

All the fonts have been used in the ST Club magazine *'ST Applications'*. Used in conjunction with a DTP package such as Timeworks Publisher or Easy Text Pro and a text manipulation package such as Textstyle, they will help you produce documents with a distinctly professional look for a very modest outlay.

Price: £14.95 from the ST Club

Price List and Overseas Postage Surcharges

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		Price	Post Rate
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☐ DSUB	Disk Mag subscription (6-issues)	£12.00	Z

Subscriptions - Europe

☐ SSUB	ST Applications sub (12-issues)	£27.00	Z
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Subscriptions - Rest of World

☐ SSUB	ST Applications sub (12-issues)	£37.00	Z
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☐ AAMM	Mouse Mat	£2.49	C
☐ AARB	A5 Ring Binders	£2.25	F

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Set 1

Humanist 246 (condensed, condensed bold) *Gill Sans*
Humanist 246 (light, light italic, medium, italic, bold, bold italic, extra bold, ultra bold) *Gill Sans*
Humanist 529 (medium, italic, bold, bold italic) *Frutiger*
Humanist 586 *(medium, bold) Adsans*
Humanist 801 (narrow, narrow italic, narrow bold, narrow bold italic, condensed light, condensed, condensed bold) *Arial*
Humanist 901 (light, light italic, medium, italic, bold, bold italic, black, black italic) *Arial*
Grotesk 102 (medium, italic, bold, bold italic, condensed medium, condensed italic, condensed bold, condensed bold italic) *Helvetica*
Grotesk 125 (medium, italic, bold) *News Gothic*
Grotesk 704 (condensed light, condensed, condensed bold, condensd extra bold) *Abadi*
Geometric 179 (medium, italic, bold, bold italic) *Avant Garde*
Geometric 361 (light, light italic, medium italic) *Metro*
Geometric 431 (medium, black, bold condensed, black condensed) *Neuzeit Grotesque*
Geometric 883 (medium, italic, bold, bold italic) *Century Gothic*

Set 2

Brush 119 *Forte*
Brush 200 *Brush Script*
Brush 205 *Impress*
Brush 403 *Dom Casual*
Brush 504 *Bison*
Brush 52 *New Berolina*
Brush 622 *Bingham Script*
Brush 624 *Jefferson*
Brush 677 *Staccato*
Brush 690 *Oz handicraft*
Brush 702 *Mercurius Bold Script*
Brush 822 *Swing Bold*
Brush 850 *Klang*
Brush 864 *Monoline Script*
Brush 92 *Biffo*
Brush 98 *Pepita*
Transitional 117 (book, italic, semi-bold, semi-bold italic, bold, bold italic) *Baskerville*

Set 3

Display 124 *Hobo*
Display 165 (regular, italic) *Poster Bodini*
Display 166 *Broadway*
Display 198 *Davida Bold*
Display 405 *Ondine*
Display 416 *Cooper Black*
Display 458 *Handel Gothic*
Display 479 *Vag Rounded*
Display 522 *Lydian*
Display 534 *Lydian Cursive*
Display 638 *Umbra*
Display 658 (regular, bold) *Neuland*
Display 689 *Aldous Vertical*
Display 722 *Albertus*
Display 732 *Clearface Gothic Bold*
Display 743 *Colona*
Display 778 *Davison Americana*
Display 811 *Castellar*
Display 812 (condensed, bold condensed) *Placcard*
Display 828 *20th Century Ultra Bold Condensed*
Display 837 *Old Style Bold Outline*

Set 4

Old Style 107 (roman, italic, bold, bold italic, extra bold) *Times New Roman*
Old Style 112 (roman, italic, bold, bold italic) *Palatino*
Old Style 139 (roman, italic, bold, bold italic) *Bookman*
Old Style 155 (roman, bold) *Goudy Old*
Old Style 157 (light, light italic, roman, italic, semi-bold, semi-bold italic, bold, bold italic) *Plantin*
Old Style 178 (roman, italic) *Goudy Old Style Catalogue*
Old Style 252 (roman, italic, bold, bold italic, semi-bold, semi-bold italic) *Bembo*
Old Style 277 (roman, italic, bold) *Imperial*
Old Style 635 (roman, italic, bold, bold italic) *Berling*
Old Style 779 (roman, italic, bold, bold italic, extra bold) *Ellington*
Old Style 881 (roman, italic, bold, bold italic) *Book Antiqua*

Set 5

Venetian (book, italic, bold, bold italic) *Centaur*
Clarendon 143 (book, italic, bold, bold italic) *Century Schoolbook*
Clarendon 753 (book, italic, bold, bold italic) *Photina*
Clarendon 784 (book, italic, bold) *Bell*
Modern 752 *Joanna*

Set 6

Blackletter 592 *Fraktur*
Blackletter 207 *Engravers Old English*
Egyptian 344 (light, light italic, medium, italic, bold, bold italic, ultra bold) *Rockwell*
Monopitch 311 (medium, italic, bold) *Courier*
Script 282 *Zapf Chancery*
Script 324 *Corsiva*
Script 395 *Embassy*
Script 521 *Englische Screibeschrift*
Script 591 *Nuptial*

Key: STC font family reference is given first in bold, followed by the weights supplied (in brackets), then the industry standard name for this face.

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