

# ST APPLICATIONS

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The Magazine for Users of Atari ST, STE, Falcon and TT Computers

Issue No. 46, October 1994

## THIS MONTH

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- \* Migraph Scanner Extras
- \* DTP Books
- \* GnuPlot
- \* Midi Quest Junior
- \* KXP4400 Printer

### Articles

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- \* Paul Rossiter Profile
- \* Beyond GFA Basic
- \* Classroom Computing

### Regulars

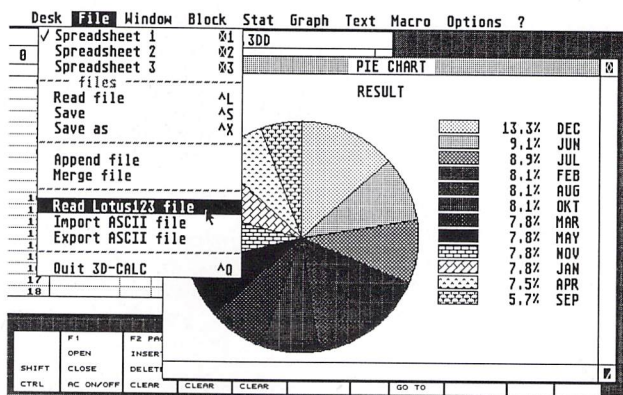
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- \* Shareware Column
- \* Programmers' Forum
- \* Beginners' Forum
- \* Going On-Line
- \* Desktop Discussions
- \* Forum
- \* Grafix Arts
- \* Catalogue Update 14.8

## Migraph Scanner Extras

Derryck Croker takes a look at some of the accessories available for Migraph hand scanners: a scanning tray that helps avoid the jaggedness and distortion caused by free-hand off-line scans, and a useful merging facility to knit two side-by-side scans together; plus a quick and easy program for collecting digitised output from the scanner and delivering it to disk.

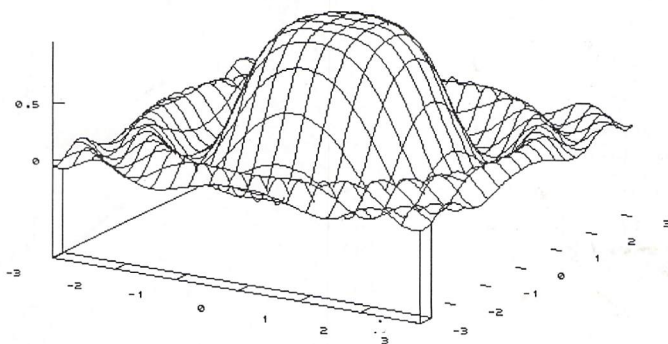
## 3D Calc Plus

If you need a friendly statistical analyst to produce eye-catching graphs and charts to liven up your reports or your school/college projects, then this new ST spreadsheet program may be just the thing. Not content with being a boring old spreadsheet with thousands of cells and maths functions galore, it also incorporates a variety of



presentation graphics features such as bar and line graphs, pie charts and multiple range graphs, in 3D if you want, all with definable shading and line styles. Reviewed by Peter Crush.

## A Gnu Approach...



## ...to Graphing

Justin Read offers advice on getting started with the freeware plotting program GnuPlot, moving up from the basic commands to more complex equations, giving a step-by-step guide to building a text file, and providing some solutions to a few problems you might encounter.

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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.

## More From All Formats

The organisers of the *All Formats Fairs* have recently announced their schedule of events for the remainder of 1994. Their running total now exceeds 160 events and they are the only organiser of this type of event to hold fairs in England, Scotland, Northern Ireland and Wales. What's more there's usually a fair somewhere in the UK every single weekend. To date, the fairs held at the National Motorcycle Museum in Birmingham have become the best known and best attended. Here's the lineup:

- October 2nd NAC (Royal Show-ground), Stoneleigh
- October 9th Tolworth Recreational Centre, A3 Surbiton
- October 16th Ulster Hall, Bedford Street, Belfast
- October 23rd Woodside Hall, St George's X, Glasgow
- October 29th Haydock Park Racecourse, J23 M6
- October 30th National Motorcycle Museum, Birmingham, J6 M42
- November 5th Brentwood Centre, off A12 J28 M25

- November 6th Brunel Centre, Temple Meads, Bristol
- November 13th University Union, Park Place, Cardiff
- November 19th Haydock Park Racecourse, J23 M6
- November 20th NAC (Royal Showground) Stoneleigh
- November 26th Northumbria Centre, Washington, District 12
- November 27th Woodside Hall, St George's X, Glasgow
- December 3rd Haydock Park Racecourse, J23 M6
- December 4th National Motorcycle Museum, Birmingham, J6 M42
- December 11th Ulster Hall, Bedford Street, Belfast
- December 17th Northumbria Centre, Washington, District 12
- December 18th Woodside Hall, St George's X, Glasgow

All fairs run from 10am to 4pm and admission costs £4 for adults and £2 for children up to 2pm. After 2pm the admission charge is £2 for everyone.

## Jaguar News

The Jaguar continues to dominate the news with the revolutionary 64-bit games console now accounting for 70% of Atari's total sales revenue. However, it is good to see that computers are still accounting for about one third of their takings, generating a big enough turnover to prevent them from leaving the home computer market completely, at least in the short term.

Probably the best news for UK gaming enthusiasts is that the Jaguar is now readily available. Rumbelows sent out stock to all 370 of their stores over a month ago and are currently retailing the console at £249.99 (£20 above RRP). In an attempt to pull in the customers, they are offering Jeff Minter's *Tempest 2000* at half price if purchased along with a Jaguar. In addition, customers are being given the opportunity to 'test drive' the latest Jaguar games free of charge in their Games Arena departments. Meanwhile SDL have received their second shipment and reduced the price to £229 after a temporary increase to £249 was necessitated by the cost of air freight on the first consignment. Two other distributors, ZCL and Taurus Distribution, have also received stocks recently.

The line up of games for the Jaguar is steadily increasing. Currently *Crescent Galaxy*, *Evolution - Dino Dudes*, *Tempest 2000*, *Brutal Sports Football* and *Wolfstein 3D* are readily available from most stockists.

Other titles due before Christmas include *Doom*, *Club Drive*, *Iron Soldier*, *Alien vs Predator*, *World Class Cricket*, *Ultimate Brain Games*, *Casino Royale*, *Wild Cup Soccer*, *Powerslide* and *Virtuoso*.

As expected, Atari have announced that it is stepping up production of the Jaguar with the addition of a second manufacturing plant in addition to IBM's facility in North Carolina. The first units are already rolling off the production lines at Comptronex's Colorado Springs factory. The additional capacity should allow Atari to meet its original sales forecasts for 1994 and has been brought on line in order to meet the usual peak demand in the run up to Christmas.

The latest add-on to be announced for the Jaguar is a voice/data modem by Phylon Communications which allows two players to compete against each other over the phone lines. *Doom*, *Iron Soldier* and *Club Drive* will be the first titles to support the new hardware. No release date or price was given. Also on the horizon is a networking system which will allow up to 32 players to compete against each other. It will be released in The States towards the end of the year but no details of specifications or price were available as we went to press. Currently the only add-ons available for the Jaguar (in the UK) are an RF/TV switchbox, composite video monitor cable, scart cable and AC power adaptor.

## 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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## Subscription Rates

### United Kingdom:

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### Air Mail to Europe World

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 12 issues + 6 D/Mags : £40.00 £48.00

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.43, will be dispatched with issue 46 of *ST Applications*.

## Amiga Latest

It is now several months since Commodore International went into voluntary liquidation. Meanwhile Commodore's European subsidiaries have been closing down at an alarming rate owing to the firm's uncertain future. The entire European operation now consists of the UK, Germany, Italy and Denmark. Two bids were received by the liquidators towards the end of last month. Samsung, the electronics giants, are interested in buying the rights to Amiga technology and Commodore's research and development facilities but are not understood to have any interest in the existing product line. The management of Commodore UK are vying for all rights to Amiga technology

and obviously intend to continue production and future development of existing lines. No other parties are expected to lodge bids and a final decision is expected shortly after we go to press. If the UK management buyout succeeds, they are likely to concentrate their activities in the UK, appointing overseas distributors rather than opening up their own subsidiaries or taking over existing ones. The latest news from Commodore UK is that they are finally out of stock of Amigas. If their bid is accepted, they expect to have more machines in the shops in time for Christmas. If Samsung emerge as victors, it is likely that the Amiga will disappear for good.

## Axe Falls On User!

In a surprise announcement, it has been confirmed that *Atari ST User* is to disappear from the news stands. A few weeks ago, Clive Parker of rival magazine *ST Format* said on CIX that *Atari ST Review* was about to be closed down. Shortly afterwards, *ST Review's* Editor Vic Lennard went on-line to put the record straight. It transpired that Clive had got his wires crossed and that it was in fact *Atari ST User* which was on the way out.

Although the ST market is in decline, it was not expected that any of the three glossies would pull out at this point. The fact that the two Europress titles sell over 36,000 copies per month between them compared to 45,000 copies a month for *ST Format* makes it difficult to see what advantage can be gained by dropping either title. Certainly a significant number of *ST User* readers will switch to *ST Review*, but there is most likely a large

number who already buy both the Europress publications, so it is fair to say that although *ST Review's* circulation will increase, it is unlikely to match the previous combined total for the two.

It is also an unusual decision to axe the title with the higher sales! However, *ST Review* is widely acknowledged as being the stronger title of the two in terms of editorial, so we must assume that this had something to do with the decision. I say assume, because despite several attempts, I was unable to get through to Europress Enterprise's Managing Director for his comments. After more than eight years and 106 issues, *Atari ST User*, the longest running ST magazine, will be published for the last time on 3rd October. Regardless of your opinion of *ST User*, you must agree that it's a sad day when any ST magazine closes down.

## JCA Go 3D With Stereo CAD

*JCA Europe* have announced the immediate availability of *Stereo CAD*, an object orientated stereogram creator. *Stereo CAD* allows you to create your own 3D pictures in black and white or colour. It allows you to create 3D 'sliced' objects such as spheres, pyramids, tubes, stars and prisms. Pictures may be imported and exported as Degas PII screens and stereograms may be positioned in front or behind the page. Imported pic-

tures may be used as backdrops to the stereograms or for direct conversion to stereograms. Scalable, rotatable text can be added to drawings, and shapes can be scaled and rotated as required within your scene. *Stereo CAD* runs on any Atari system with a colour TV or monitor. The package costs £29.95 and is available from *JCA Europe Ltd*, 30a School Road, Tilehurst, Reading, Berks. RG3 5AN; Tel: 01734 452416; Fax: 01734 451239.

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which is ready to network without any expensive hardware add-on's. The system comes in PEROM form on the cartridge so if you want to change the startup configuration at all then it is simple to do so. This also means that any enhancements to SMS2 can be provided on disc without the need to return the SMS2 cartridge.

It must be pointed out that SMS2 does not run GEM or TOS programs. It is a distinct and separate operating system which provides a powerful and yet flexible form of computing. There are already a number of commercial programs and a good range of PD software which is available now and is SMS2 compatible.



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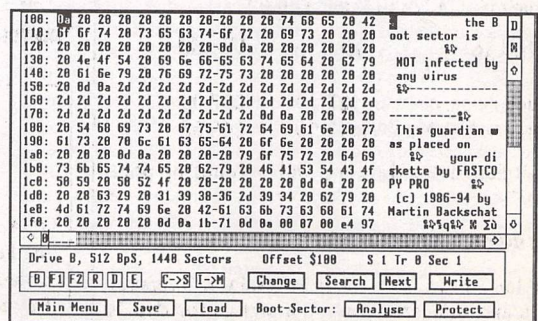
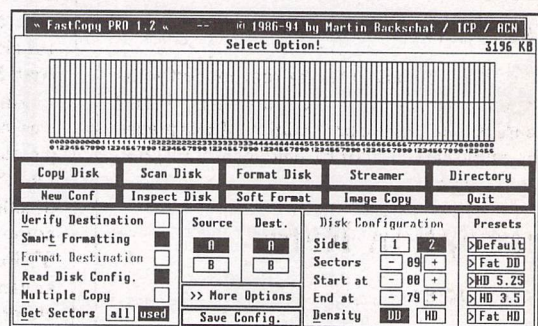
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# News In Brief

## Euopress and MGW

Euopress Publications, publishers of *ST Review* and *ST User*, recently announced a tie-in with the ITV computer show *Movies Games and Videos*. They are to produce a monthly magazine of the same name with the first issue due out at the end of this month. The TV show attracts around three million viewers and the magazine will cost £1.99 and have an initial print run of 60,000 copies.

## Floppyshop Get Easy Stitch

Floppyshop have recently taken over the distribution of Chris Skellern's *Easy Stitch Package* from Emerald City. *Easy Stitch* (reviewed in issue 43) is a cross stitch generator program designed as an aid to those wishing to create their own embroidery designs. The latest version has seen a number of minor bug fixes and small improvements over the version reviewed in issue 43. In addition, the product has been repackaged and now retails at £19.95. Contact Floppyshop, PO Box 273, Aberdeen AB9 8SJ; Orderline Tel:/Fax: 01224 312756, Technical Support Tel:/Fax: 01224 586208.

## Summer CES To Go!

The Summer CES in Chicago is widely acknowledged as being the major launchpad for new pro-

ducts in the leisure computing industry. However, this year's event was the last of its type. Whilst the January event in Las Vegas is set to remain, the May event has been replaced by the CES Interactive, a new event by the organisers of the Chicago CES, which is to be staged in Philadelphia. A rival event Electronic Entertainment Expo (E3), which is backed by certain elements of the US computer press, is scheduled for the same dates (11th to 13th May) next year in Los Angeles. Both events are claiming widespread support from within the industry but it is highly unlikely that there is scope for them both to succeed.

## Euro User Group For MIDI Enthusiasts

European MIDI User is a new user group for all types of MIDI musicians from the home musician (including computer and multi-

media users) to gigging and professional musicians. Membership entitles users to technical support via their bi-monthly newsletter as well as support via telephone, fax and Compuserve. For a free copy of their launch magazine and membership application details, contact European MIDI User, 46 Hampton Close, Herne Bay, Kent CT6 8BZ; Tel: 01227 742790; Fax: 01227 742791; Compuserve: 100136,3365.

## ST Format

Future Publishing have announced that *ST Format* is still a core magazine with a future within the group. The latest ABC figures for *ST Format* show the magazine's readership dropping to 38,671, down from 43,469, but this is still seen as a healthy figure and is larger than the combined readership of *ST User* and *ST Review* before the latest changes at Euopress.

## NameNet And PhoneDay

Roger Derry's name and address management program, NameNet, has been updated to take into account the new telephone area codes introduced on 1st August. For those of you who are not already aware of what PhoneDay entails, here's a brief rundown. All area codes in the UK will change from 16th April 1995. This is being done in order to accommodate the increase in demand for new telephone numbers. In most cases it just means adding a 1 after the 0 in the dialing code, although the codes for Bristol (0117 9), Leeds (0113 2), Leicester (0116 2), Nottingham (0115 9) and Sheffield (0114 2) bear no resemblance to the old numbers. Non geographical codes such as 0800, 0345 and various mobile phone numbers will remain unchanged. Both old and new area codes are in operation at present in order to ease in the change, but the old codes will be discontinued from 16th April 1995, so it is essential that you update all stored telephone numbers on computer and in the memories of your telephones and fax machines.

The latest release of NameNet is supplied with a data file which allows old numbers to be converted automatically either 'on the fly' or permanently at the user's discre-

tion. In addition, the introduction of caller identity services later this year is also catered for by NameNet. This is a service which allows the receiver of a call to tell which number the call has originated from, before they pick up the receiver. Users whose telephone number is ex-directory may wish to suppress this information and NameNet 3 allows you to add the suppression code when dialing out. This may be done on an individual or global basis.

Registered users of both the Shareware and Professional versions can obtain the upgrade to v3 by returning their master disk to Roger Derry, 38 Leopold Road, Bristol BS6 5BS. Registered users of the Shareware version should also enclose £5 for the upgrade. Users of the Professional version should enclose an SAE or £1 in stamps.

The Shareware version of NameNet is still available from Roger Derry for £15 and the Professional version costs £39.95 from System Solutions. A usable demo is available for £2 from Roger Derry or free as the 'engine' of the Falcon FacTT File (membership application form from FFF, 11 Pound Meadow, The Green, Whitchurch, Hampshire RG28 7LG).

## VR - The Next Technological Leap?

Over the past few weeks, it has emerged that three companies are developing 'low cost' virtual reality headsets. For those of you who are not familiar with virtual reality, it is the means by which you become totally integrated into a game world as if you were really there and participate in a 3D world from a first person rather than third person perspective. Virtual reality is already in use on several arcade machines but bringing it into the home has been impossible until now, owing to the high costs of the technology required.

Atari announced earlier this year that they were intending bringing out a VR headset for the Jaguar but were evaluating various designs with respect to the safety factor (some people have been known to suffer from disorientation and nausea after playing VR games and the long term effects remain unknown) but have yet to make an official announcement on their decision.

Forte Technologies in The States are to launch VFX1, a VR headset costing around £650. The unit made its debut at the ECTS (European Computer Trade Show) at the London Business Design Centre earlier this month and will initially be aimed at the PC market. It is possible that it may be adapted for use with the Jaguar at a later date. Rather than requiring games to be written purposely for the headset, it merely requires that existing software be converted. Ocean, Electronics Arts and ID Software (the team behind *Doom*) are all said to be converting software for use with the unit.

The second VR headset comes in at a more respectable £499 from US based VictorMaxx who already produce a low cost unit for the Sega and Nintendo consoles. The PC compatible version is set for release this month with the Jaguar version expected in the UK by Christmas. The headset weighs

just one pound and boasts a 62 degree field of vision with a 120,000 pixels per screen display and 3D stereoscopic images. Once again, the system will not require that games be written specifically for it, but will instead require modifications to existing software titles. Publishers who have already announced their support for the new unit, named *CyberMaxx*, include Electronic Arts, Mindscape, Domark and Vertek.

The final offering is from a UK based firm and threatens to make a major impact on the market with its £299 (+VAT) price tag. Once again it is PC based but requires a VGA to PAL conversion card which is available as an optional extra. As the Jaguar is PAL based anyway, there is no reason to suppose that the unit will not be directly compatible, assuming of course that the relevant software support is forthcoming. Manufacturers, London based Magic Media, have been developing the product for 15 months and are expecting it to be available through at least one high street chain before Christmas. MicroProse and Psygnosis are said to be supporting the unit with custom written software although no further details were available as we went to press.

Whatever happens to the above three products, there are certain to be more VR headsets released within the coming months and it is very likely that both PC and Jaguar versions of each unit will be made available. As well as the tremendous possibilities afforded by CD-ROM based games utilising this technology, it also has a practical application in the fields of education, training and science. There is probably nothing stopping VR headsets being used on the ST, TT and Falcon, apart from lack of software support, and with the market in its present decline, such support seems unlikely.

## COMPO'S LATEST

*That's Address 2* is due for imminent release from Compo. This is the first version of the custom written name and address database to be made available in the UK as version 1 was never translated into English. *That's Address 2* understands the correct postcode format for several different countries including the UK, the USA, France and Germany and will prompt you if you enter data in an invalid format. The program allows for six lines of name and address as well as separate fields for country, county and postcode.

A one hundred line notepad allows you to enter any additional information required. In addition, tag fields allow users to be grouped together according to pre-defined criteria. This means that you could create a tag field based on the type of computer owned and search for all customers who own a TT for example. In addition, multi-tags allow for the eventuality of a database entry matching more than one tag. Numerous filters allow you to perform specific searches on your data.

A floppy disk based system can expect to hold about 300 records but there is no limit when used on a hard drive. Compo are currently using *That's Address 2* with databases containing over 10,000 records, so capacity does not present a problem. *That's Address*

*2's* mail merge facility allows filtered records to be mail merged with *Write On* or *That's Write* for personal addressing of letters to customers who match your specified criteria. If you use *That's Address 2* as an accessory from within either of these programs, you can instruct it to export a record which will result in it sending the relevant name and address directly to your word processor. *That's Address 2* costs £39 and requires a minimum of 1 Meg memory, although 2 Meg and a hard drive is necessary for large databases. The program should be available by the time you read this.

Compo are about to release *That's Write 3*. This latest version now supports SpeedoGDOS outline fonts but does not require SpeedoGDOS to be loaded in order to make use of them. This is particularly important to users who are short of memory as they do not have to worry about the substantial memory overhead required to install SpeedoGDOS. In fact you don't even need to own SpeedoGDOS in order to make use of this feature as 14 SpeedoGDOS fonts are included with the package. These can be printed at any size up to a maximum of 144 point (two inches high)! Those of you upgrading from an earlier version of *That's Write* will be glad to know that the old *That's Write* fonts can still be used in the updated program.

The new improved user interface supports many of the features of Multi-TOS and Falcon TOS whilst retaining compatibility with older operating systems. *That's Write 3* has improved its ASCII import and export facility with support for Windows and Mac ASCII files. In addition, images are cached in order to

speed up the loading of documents containing pictures. The mail merge, block marking and paragraph layout have all been improved as well as the search and replace option.

There have been major enhancements to the spell checker and hyphenation. Hyphenation is now performed using the hyphenation points marked in the dictionary and spell checking now shows words in context with a considerable speed-up in the location of alternatives. Numerous other improvements have been made including improved remove functions for font, page layout and paragraph layout. In addition, up to 36 fonts can be loaded subject to memory.

*That's Write 3* requires 1 megabyte of memory as a minimum but this will restrict you in the use of fonts within your documents. Two megabytes and two floppy drives gives you a more flexible system and four megabytes and a hard drive will give optimum performance. *That's Write 3* costs £129 but registered users of *That's Write 2* can upgrade for £35. Users of *That's Write v1.5* and *Write On* can also upgrade for £64.99 and £89.98 respectively. Also worth a mention are two low cost SpeedoGDOS font packs. The Office pack features 100 SpeedoGDOS fonts ideally suited to word processing and the Gold pack has 100 headline and fancy fonts. The font packs cost £49 each. Contact

Compo Software Ltd, Unit 3, Green Farm, Abbots Ripton, Huntingdon PE17 2PF; Tel: 014873 582; Fax: 01480 890787.

## SYSTEM SOLUTIONS NEWS

### System Solutions Get Medusa

The highly specified TT clone, *Medusa T40*, is now available in the UK from System Solutions. The system is based around a 64Mhz 68040 processor with a 32-bit wide system bus running at 32Mhz and has been compared to a top-of-the-range Mac Quadra. It runs all cleanly programmed resolution independent application programs without any problems, despite the fact that most programming languages do not yet support the '040 processor. Here's a few test results performed with Medusa. For reference purposes, the TT system used was a TT030 with 4 Meg ST RAM, 16 Meg TT Fast RAM, 520Mb SCSI hard drive and the Crazy Dots II graphic card. The Medusa T40 was a 'basic' system with 8 Meg of TT Fast RAM.

### Application Comparisons

	Medusa T40	Atari TT
<i>Calamus SL</i>		
Load program	4s	11s
Load and display test document	8s	28s
Print test document at 600dpi on HP Laserjet 4	30s	1:28s
Import an 8.5Mb TIFF image	31s	2:39s
<i>D-Base Phoenix 3.0</i>		
Reorganise D-Base with 32,424 entries	2:56s	11:25s
<i>DynaCADD</i>		
Calculate hidden lines of St Paul's Cathedral	2:50s	13:10s

*Medusa T40* is available now at a cost of £2995 plus VAT.

### DeskTopper and FreeKeys

These are the names given to two of the component parts of a cheaper alternative to a tower system. Simply unscrew the casing screws on your Atari and lift the keyboard free. The keyboard is housed in a stand alone unit called *FreeKeys* and everything else fits neatly inside the *DeskTopper*, giving you a two piece case similar to that used on the TT. *DeskTopper* is particularly spacious with 4.5cm of space above the motherboard to house memory expansion boards, processor upgrades and other add-ons. Above this, a separate compartment houses your existing hard drive(s) and/or other storage devices. There is also space for a fan and additional power supply should these be required. *DeskTopper* and *FreeKeys* require no soldering and come complete with external drive ports for 3.5" and 5.25" drives.

An optional extra called *PowerUp* (not to be confused with the Falcon processor upgrade!) allows you to move the reset and on/off switch to the front and incorporates an IEC mains socket and plug which allow your monitor to be plugged directly into *DeskTopper*. A number of other small parts designed to assist with the installation of hard drives is also included in the kit. Please note that you will require a basic knowledge of electronics in order to fit *PowerUp*.

*DeskTopper* costs £69.95, *FreeKeys* is £39.95 and *PowerUp* £14.95. A number of other optional extras designed for users with particular needs (mount 3.5" floppy drive at front, hard drive power supply, 3.5" IDE drive adaptor etc) are also available.

### Can Your ST PAK A Punch?

*PAK 68/3* from System Solutions is a hardware accelerator for the ST which allows it to out-perform a TT! The product has evolved from a DIY project in a German computer magazine and is now in its third commercial incarnation. The board is based around a 33Mhz 68030 processor with a built in 32k cache and

runs more than seven times faster than a standard 8Mhz Mega ST with blitter. Most PAK can run faster than 33Mhz, some at 40Mhz, others at 50Mhz. In order to achieve this further increased performance, the computer must be suitably modified.

The 32Mhz '030 processor is fitted as standard as is the 32k cache. A 68882 maths coprocessor is available as an optional extra as is a specially patched version of TOS 3.06. TOS 2.06 is the earliest operating system supported although the patched version of TOS 3.06 is recommended as it supports 32-bit addressing, memory protection under multi-tasking operation systems, and virtual memory. Comparing a 33Mhz PAK with TOS 3.06 and a 68882 FPU to a Mega ST with blitter and FPU, the PAK returned an overall performance of 775% against the Mega and 878% if using NVDI, when tested using Ofir Gal's GEMBENCH.

All 32-bit clean application programs will run on PAK and in fact most software specific to the Falcon (excluding that which addresses the DSP of course) and the TT will also run on PAK. The only 'catch' is that PAK 68/3 cannot be fitted inside a conventional ST casing and requires a Mega ST, a tower casing or *DeskTopper* and *FreeKeys*. Apart from that, the price is surprisingly competitive owing in part to the fact that second hand CPUs and FPUs are used in the production of PAK. The basic configuration consisting of a 33Mhz PAK (TOS 2.06 required but not supplied) is £299. A version of PAK which includes the modified TOS 3.06 ROMs costs £359. The final option is to add a 68882 FPU to the last option and that costs £399. Individual component parts of the system including the switching device for compatibility with existing software, are also available. For further details on *DeskTopper*, *FreeKeys*, *PowerUp*, *Medusa* or *PAK 68/3* contact

System Solutions, 17-19 Blackwater Street, East Dulwich, London SE22 8RS; Tel: 0181 693 1919; Fax: 0181 693 6936.

# BRISTOL AND LONDON SHOW REPORTS

*DAVID HOWELL betook himself to the two Atari shows held in Bristol and London at the end of July....*

The weekend of the 30th and 31st of July could be described as heaven for the average Atari user: two Atari shows, one in Bristol and one in London. It had been a while since the last show I had attended (in Birmingham) and so I was looking forward to these two with great anticipation.

On arrival I got the impression that the halls were quite small. The stands were layed out as usual down the side walls with a centre stand running the full length of the hall. Even with a few people in they were a bit cramped.

## CGS Computerbild

First up was CGS ComputerBild, one of the co-organisers of these shows—they had an impressive display of DA's Vector as with the last show I attended. Ray and Alison Cross were busy with Ray giving demonstrations of DA's Layout and DA's Picture.

On their stand the best offer that I could find was what they called the Falcon Video System. This comprised: DA Vector Pro, DA's Picture, Matrix ScreenEye and a ScreenEye Module. All this could be yours for £529. The star of their stand—if not the show—was DA's Vector which could be had on the day for £99!

## Titan Designs

Moving on, one of the other main organisers over the last few shows have been Titan Designs. David Encil was in attendance along with Niel Stewart from Black Scorpion Software. David was putting the Exposé digitiser through its paces. He also had on display the just completed graphics software for Exposé in the shape of Apex Media. Together they make a formidable video editing package for the Falcon. The expected price of Exposé plus Apex Media Lite will be £299, with the Pro version of Apex coming in at around £149.95.

## Atari ST Review and User

Europress were very much in evidence at both shows taking one half of the centre stand. They had the latest issue of Atari ST Review and advanced copies of ST User. Vic Lennard was on the stand which also offered the merchandise that they sell through their pages. Vic told me that he was impressed with both shows, giving them a firm thumbs up. The numbers were not great — about 250-300 at Bristol and about 400 in London — but he still thought the shows indicated the great support that the Atari machine has in this country.

## Compo

One of the largest stands was manned by Compo. Neal O'niions was very busy giving advice to a steady stream of customers. The shows were used by Compo to launch a number of new packages. The most notable was the arrival of SpeedoGDOS 5. This new version of the font scaling programme will now support standard PostScript Type 1 fonts as well as the TrueType format.

I talked with Theo Breuers, head man at Compo in Germany, who showed me Speedo 5 working on his machine. I was very impressed with the package. Speedo 5 was going for £59.95. This included some PostScript fonts to get your collection started. Up-grades were available for just £29.95.

Also on the stand were the new versions of MusiCom and their excellent word processor That's Write 3. Compo had also brought a few of their technicians with them. If you wanted a memory upgrade or a new disk drive this was certainly the place to come. You could drop your machine off and pick it up on your way out of the show. An excellent service.

## Calamus User

The only independent Calamus user magazine had a stand. Steve Llewellyn—the magazine's editor and originator of the user group—was on hand. He had his wide range of fonts and clip art up for grabs as well as the latest issue of Calamus User hot off the press. He was giving any help or advice to Calamus users who needed it. Calamus SL was running in full colour throughout the show on Steve's TT.

## JCA Europe

Staying with Calamus for a moment, JCA Europe (the UK distributor) was at the London show. All versions of Calamus could be seen running. Alastair Craig was offering any help that visitors needed. I asked him if there were any details of the forthcoming Windows 4 (or Chicago) version of Calamus SL for the PC's. He told me that DMC in Germany had finished the conversion. They were simply waiting for Microsoft to release Chicago itself. The bad news is that Chicago looks set to drag into the early part of '95.

## Goodmans and Merlin

On the PD front Goodmans and Merlin had stands at the shows. They had their usual array of PD software. All of their catalogues were being pored over by visitors looking for a bargain. If you were looking for a budget package to do titling for your home videos, then Video Supreme might well have been what you were looking for. At £19.95 it certainly wouldn't break the bank.

## Gasteiner

Adjacent to the Merlin stand in London Gasteiner had their usual array of hardware. Just the place to go if you wanted a hard drive or an alternative to your mouse.

## System Solutions

The show stopper had to be the appearance of the Medusa. This

super ST with a 64Mhz 040 chip on board was installed in a huge tower case. The price? A wallet draining £2,999 for the base machine! System also had their usual hardware for sale. Also on display for the first time was the Desktopper case. This alternative—read cheaper—version of the Tower system transforms your ST into the semblance of a desktop PC for about £100.

The one on their stand had its bottom off so that you could see an installed PAK 68/3 board. If you feel that your ST is lacking then this could be the answer. With a 030 chip running at 33Mhz, this will give your ageing ST the boost it needs to cope with today's software. The full version which includes TOS 3.6 would set you back £399.

## Furst

As operating systems go we all know and love TOS? These days however it would seem we are in the grip of multi-tasking mania. This weekend marked Furst's first appearance at the shows. They were putting their alternative operating system through its paces for onlookers. At £135 SMS2 will no doubt find a niche in the Atari market.

## Best Electronics

Lastly, becoming a regular exhibitor, Brad Koda of Best Electronics had his usual variety of Atari bits and pieces. Some of the most unlikely parts were available such as a window for a first generation Lynx for £10. Brad never ceases to amaze with his stand. But how does he decide what to bring?

The shows may not have been packed with visitors, but the weekend was a great success and everyone that attended had a good time and I went away asking when the next one would be. If you don't usually attend Atari shows then now is the time to change and make a date for the next one. You won't be disappointed.



# 3D Calc Plus

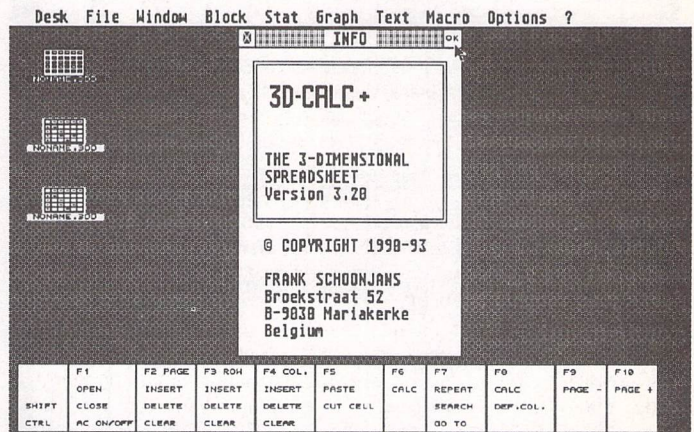
Review by Peter Crush

When all that raw numerical information seems too much to take in, you need a friendly statistical analyst to produce graphs and charts for you. Peter Crush checks out 3D Calc Plus, a new ST program that does all those Peter Snow-type things without waving its arms about to give the answers.

As any teacher, advertising guru or magazine editor will tell you, conventionally displayed facts and figures in columns and tables can seem just a boring jumble of numbers. But show the same information as a chart or illustration and suddenly everything becomes clearer. The trick nowadays is eye-catching presentation, and if you want people to read your stuff it just has to look good. The many reports, essays and papers we are all increasingly asked to produce nowadays can be quite dramatically improved if the text and numbers are broken up and peppered with graphics, so how about using those three-dimensional

graphs? These can convey information clearly and attractively, and it would be good if you could produce them easily on your ST, wouldn't it? Well now you can, using the latest version of 3D Calc Plus from FaST Club.

There are lots of PD utilities around that can produce spreadsheets and diagrams, and quite a few upmarket programs such as DA's Vector enable stunning 3D-type illustrations and charts to be made. Mid-priced commercial products of this nature for the ST are a little thin on the ground, but this gap in the market is now neatly plugged by this latest version of a low-cost graphing utility. You may remember seeing this program in a previous incarnation

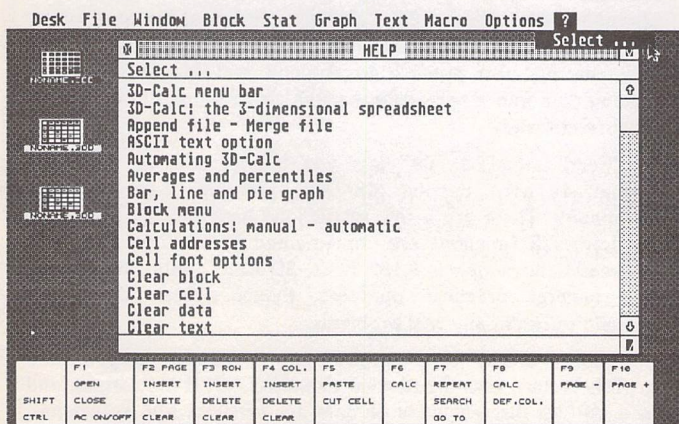


when it was plain 3D Calc (without the "Plus") I think it appeared in HiSoft's catalogue at one time. The program is written by Frank Schoonjans of Belgium who is obviously a bit of a boffin when it comes to statistics. However, he's certainly made the program easy to use, and even a maths failure like me can use 3D Calc Plus. The program enables you to input numerical or financial figures, perform mathematical operations or statistical analysis if required, then immediately display the results in the form of a graph or chart of your choice from those

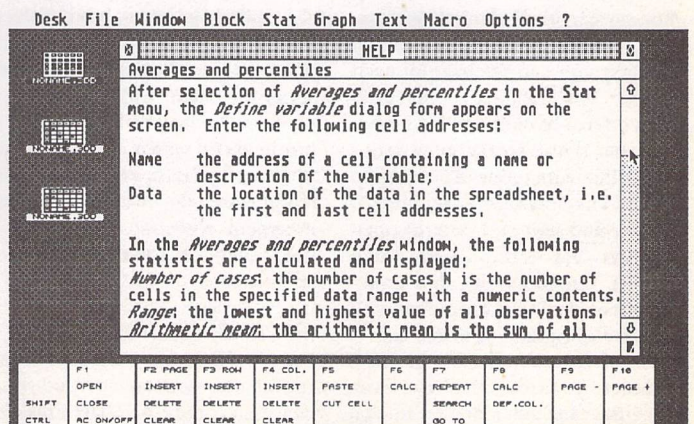
styles available. You can then print the chart or save it to disk for future reference, or even import the resulting pic into an art program for touching up and further embellishment! So how does it work?

## Graphic detail

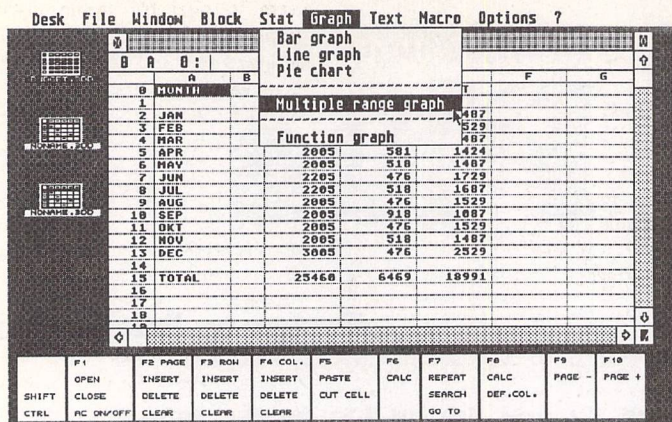
The Manual 3D Calc Plus comes on a double-sided disk and runs in medium or high resolution on any ST with a minimum 1MB of RAM. Also provided with the program is an A4 plastic comb-bound manual which runs to 80 pages. It's a rather well-written book,



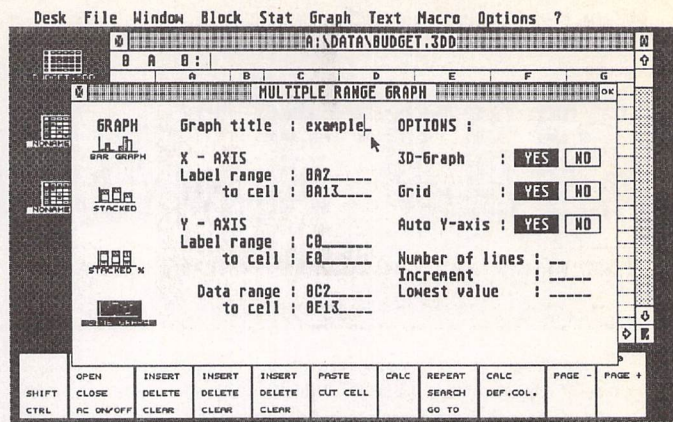
3D Calc Plus has a practical Help feature. At any time you can click on the "?" at the top of the menu bar and a GEM window appears complete with an alphabetical list of topics.



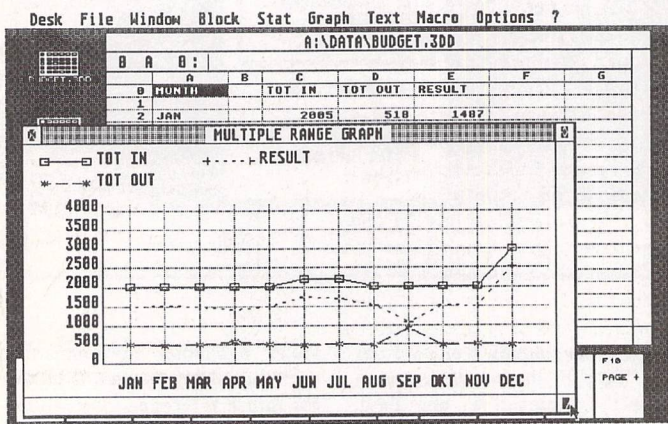
Say you want to know about Averages and percentiles — just click on that topic and a whole load of info appears. You can scroll through the text in the usual manner.



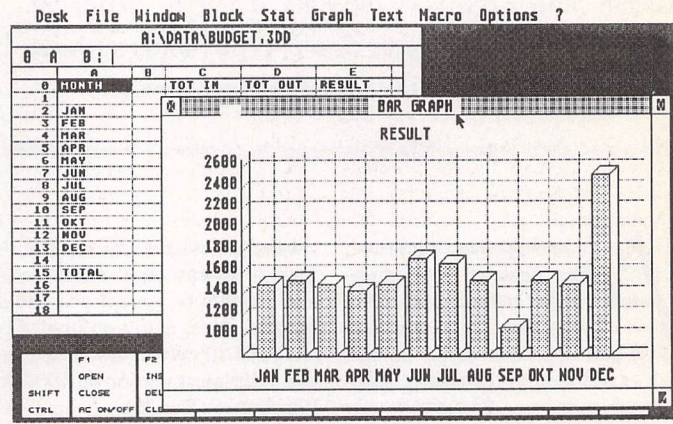
This is how your data looks in its spreadsheet form, quite neat and tidy but not very eye-catching. So, pulling down the "Graph" menu, let's see what we could do with it.



Hmm, I wonder what a Multiple Range graph looks like? First set your requirements in this dialog — it's very straightforward, and if you have any doubts, just use the defaults.



Here's the result, and if you resize the window the contents are resized in proportion too, handy if you want to view a number of different versions of graph at once.



This is the same information presented as a bar graph instead. There are assorted styles available for each kind of chart, all very easily set from the dialogs.

and its comprehensive indexing speeds up the process of mastering the features you want to operate. The layout of the handbook more or less follows the layout of the program's menus, which is the logical way to do it. The style is very straightforward: it tells you succinctly and clearly how to carry out each operation, and with plenty of screenshots in the text you can see exactly what to do. You can install 3D Calc Plus on to a hard drive if you have one, but it also works quite satisfactorily from your ST's floppy drive. The software is fully GEM based, and you can control operations via icons, dropdown menus, function keys, or a combination of all of these. When you run the program you will see a desktop (which looks like the ST's standard Desktop) which has three little Spreadsheet icons on it. You can actually handle three different spreadsheets in memory at the same time, should you possess the requisite multi-tasking type of mind, but most users will no doubt

content themselves with one at a time. Before you can produce a graph or chart you have to enter (or load data from disk) into the spreadsheet. Double-clicking on a spreadsheet opens it and enables data and text to be input or edited. Up to three windows can be open for each spreadsheet, and as these are all GEM windows, you can set their size and position on screen just how you want them, and scroll the sheet to display the bit of it you're interested in. This is pretty useful with a large sheet, as you can type data in at one end of it and watch the calculated results emerge in a second or third window situated at another part of the spreadsheet.

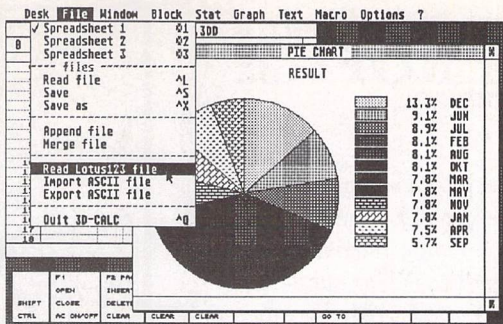
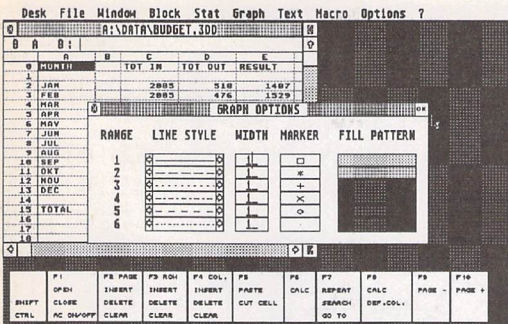
### Mapping out your chart

Before you can get any graphical results out, you have to put your details in. Your figures are entered into the spreadsheet — just type them into the matrix of "cells" or little boxes provided. There's plenty of room: there are up to 256 columns by 2,048 rows avail-

## Importing Data

There is more than one way of getting your data into 3D Calc Plus—you're certainly not limited to typing it in manually. In the File menu there is the opportunity to import data in a variety of fashions:

- 1) "Read File" enables you to load a previously saved 3D Calc Plus file into your spreadsheet—just use the standard Atari or alternative file selector. 3D Calc files are upwardly compatible, so you can utilise those created with earlier versions of the program. It's also possible to Append and Merge files, thus loading data into a spreadsheet that's already open in a number of different ways.
- 2) "Read Lotus123 File" lets you import data in the WKS format, as used by the MS-DOS programs Lotus123 and Symphony. There are a few restrictions here though, as not all the Lotus123 functions are implemented in 3D Calc Plus, and whereas Lotus supports 8,182 rows, 3D Calc "only" has 2,048! For general practical purposes though, these drawbacks shouldn't present any real problems.
- 3) "Import ASCII File" is another useful method to get your data in. This feature uses the familiar delimited ASCII file format, and in such files discrete units of data are separated with commas, text is placed between single or double quotation marks, and every line ends with a carriage return (ASCII code 13). Many database and WP programs can produce data in this format, and the manual advises on how to utilize this feature.



Among the many options available for you to play with is a way of adjusting the appearance of the lines and fill patterns used in the charts created on screen.

The File menu shows all the ways of reading your facts into the spreadsheet, and underneath is a pie chart representing the very same set of facts used in the other charts.

able, giving you 524,288 cells in all. As with all spreadsheets, you can define formulae and connections between the figures inserted. For instance, if you have, say, twelve monthly expenditure figures you can set up any other cell to do an automatic addition and display a yearly total. Much more complicated types of calculation can be done of course, and there are about a hundred different formulae which you can use. With all your data safely entered you now decide which method is used to display it. You can have a bar graph, a line graph, a pie chart or multiple range graph, and some of these can be given a three dimensional look. Not only are the graphs you can produce "3D", the actual spreadsheet is too! In addition to the sheet you can see, there are another twelve sheets "underneath" it. Any cell in each successive layer can be linked with any other cell, enabling some very complex calculations to be set up in the 6,815,744 total cells available. That should be enough for most mortals!

There are other options too, such as what shading or line styles you want your chart to have. A dialog box enables you to very simply select all these various options by just clicking with your mouse pointer. Once they have been set, the graph is drawn almost instantly in a GEM window on screen. Now you can save your spreadsheet and graph data to disk, and thus recall it later for a judicious bit of adjustment or fiddling! You can also export your graph into an art program for further enhancement — just save it as a Degas or IMG file then load it into your drawing software. In this way you can add text, graphics or other embellishments to your charts and resize them to suit. Of course you don't have to use the graphing capabilities of 3D

Calc Plus, and there's nothing to stop you merely using the program as a straight spreadsheet.

### 3D Calc Plus in use

So how does it measure up? The program is actually great fun and dead easy to use, although judging from its specification you would be forgiven for thinking it was a rather difficult and academic piece of work. This isn't the case though, and you really can't go wrong when carrying out any of its functions. Who might want to use it? Well, not just financial or scientific types; I would suggest most students could find a good use for 3D Calc Plus. It brings the most boring of facts to life, making them look quite interesting and important! Bung a few charts in your next essay or project and you could be heading for a Grade A. If you are into maths, stats or financial number-crunching, the program should be really useful, and as the Manual includes details of the programming language used, you can make the program do some very clever things if that's your bent. The software works well on all levels, is most intuitive to operate, and it didn't ever hang up on me. In fact the more you experiment with it, the more you like it, and I could even get over my old fear and loathing of maths, it all seems rather understandable and easy now!

### Conclusion

3D Calc Plus certainly has a lot going for it, it's more than powerful enough for the average user, yet is very easy to use. The manual is very good, clearly setting out all the program's many features in a straightforward manner, and the on-line Help feature is excellent. The software itself is attractive looking and pleasing to operate, it works fast, and is very stable with no apparent bugs or problems. It's a

standard GEM application, and works fine with Desk Accessories and alternative file selectors, etc. The modest cost of 3D Calc Plus makes the package quite a bargain — apart from some PD stuff there is really nothing else so cheaply priced. Looking for something to moan about, it's a shame the program doesn't make more use of colour. It will run on a Falcon but only in ST resolutions, although you can export graphs into Art software and add colour that way. Realistically, most folk don't own a Falcon and are mainly wanting to produce black and white output on their trusty STs. So the pro-

gram is ideal for mono hi-res graphs, which is what it was really designed for, and you'll love the easy way it delivers smart-looking charts. If you're searching for a professional spreadsheet and/or graphing program, you definitely can't go wrong with this one, and as the advert says, it's more than just a spreadsheet.

### Points for:

- ✓ Well documented
- ✓ Good user interface
- ✓ Enough features for most purposes

### Points against:

- ✗ Doesn't exploit colour
- ✗ Limited printing facilities
- ✗ Screen resolution graphic output
- ✗ Spells October as OKT!

Product:.....3D Calc Plus  
 Version: .....v3.20  
 Price:.....£24.95  
 Upgrade.....Return master disk plus £14.95  
 Manifest:.....one d/s disk plus 80-page A4 manual  
 Supplier:.....FaST Club  
 Telephone:.....0602 455250

## Smooth Numerical and Logical Operator

Crikey you chaps, look at all those fantastic formulae! The mathematicalness is terrific! Long division was enough of a puzzle for me at school, but even my clever old Maths master has been surprised by the capabilities built into 3D Calc Plus. Actually there are far too many to list, but to give an idea of the power at your disposal here are just some of the functions available.

**Arithmetic operators:** The usual Addition, Subtraction, Multiplication, Division, Negation and Exponentiation are there for the simpler sums.

**Relational operators:** Equity, Inequality, Less than, Greater than, Less than or equal to and Greater than or equal to are all treated with relative equality (more or less!).

**Mathematical functions:** From A for ABS(x) to T for TAN(x) which starts as an Absolute value then goes off at a Tangent, there are umpteen mathematical features, such as Arcs of cosines and Factorial functions and Logs and Random numbers—it's enough to make your head spin.

**Financial functions:** Want to work out your Compounding periods, or Double-declining depreciation? It's not double-dutch with 3D Calc Plus, in fact it's all you need to sort out all your mortgage and interest payment problems, and calculate when to buy a Falcon.

**Statistical functions:** This is why most people take those soft, Arts courses, but someone has to know all this statistical stuff. If you really need to calculate things like the Arithmetic mean of range, Correlation, Standard deviation and Paired Wilcoxon tests, you will understand why these and others such functions are provided.

**Plus:** enough other features and functions to keep you functioning for hours; there are Logical operators, Constants, Variables, String functions, Date and Time functions, Hexadecimal and Special functions, and Database and Database Statistical functions.

If you want to check out the full line-up of mathematical, financial and statistical features, etc., see the editor's advert in this magazine.

## PERSONAL PROFILE

*The technical side of the Atari range to most of us is a mystery. We are very lucky therefore to have a man like Paul Rossiter who knows the Atari range from the inside out. From a simple memory upgrade to major surgery, Paul is your man. With his background knowledge and expertise he has carved out a niche in the Atari market that few can match. He talked to David Howell...*

# Paul Rossiter

### *In the Beginning*

I talked to Paul at his home which serves as his base of operations in Hucknall, which is just outside of Nottingham. I began by asking Paul if he could give me a potted history of what he was doing prior to his involvement with Atari, and how his business had developed over the last few years.

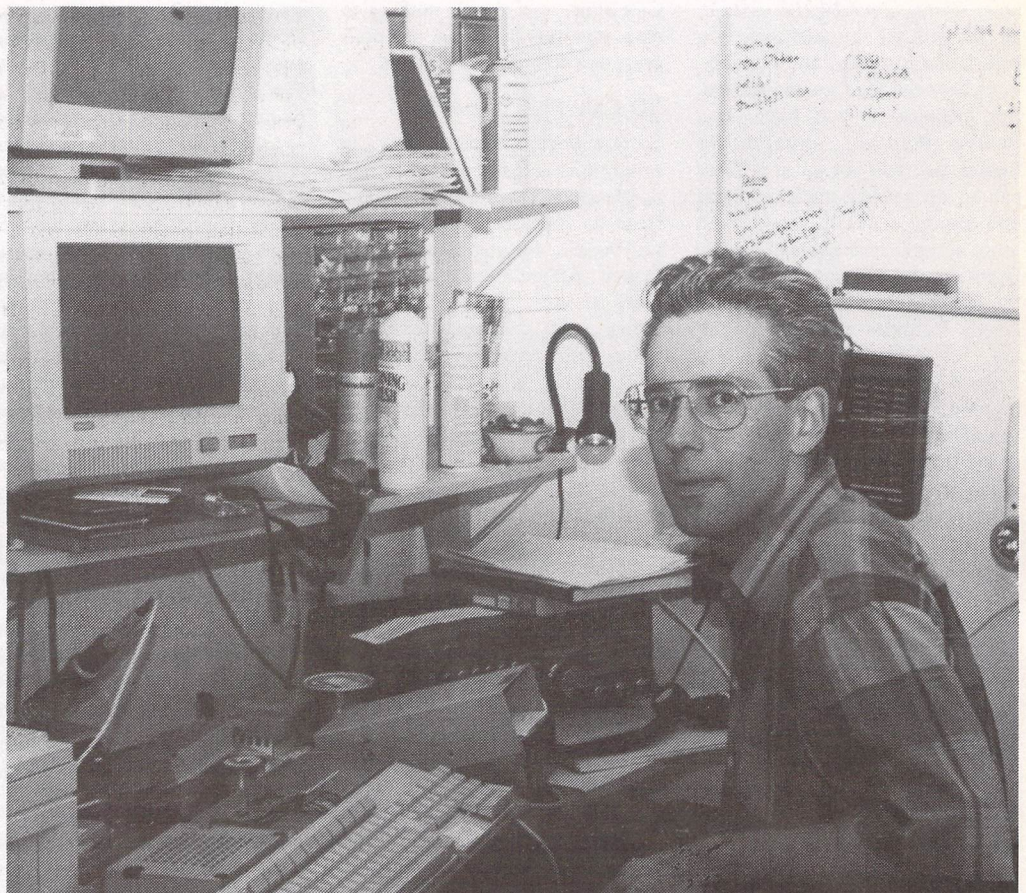
"I started after University working in electronics. I have been doing that for now for over 20 years for numerous companies, on telephone exchanges, computers, automatic test equipment. The last job was for about 12 years. I think the euphemism is that I left to pursue personal interests.

"When you are in a reasonably paid job there is no way that you are going to give that up for nothing. Fortunately for me when I brought an ST I quickly got involved with up-grades. I think I bought my first ST with mono monitor in probably 1986 or '87 from good old Silica Shop. At the time it was the obvious computer to get. PC's were sick at that time and an ST was almost affordable.

"You buy one that's half a meg and as you are in the electronics industry you do occasionally get access to a few memory chips. So I up-graded mine, and I thought 'Magic'. I teamed up with a colleague Rob Thompson, who is now technical designer for Titan Designs; we put in some cash, and bought enough memory to do about six half-meg upgrades.

"We put an eighth-page advert in ST User which cost over £100 at the time, and that was it. We thought, "Well, if it all goes belly up we've just lost a couple of hundred quid." After that Rob moved to In-moss to work on the Transputer and I carried the business on. I then diversified into repairs and selling the odd system. As a hobby, that was fairly lucrative.

"I opened a few trade accounts



Paul Rossiter in his office/workshop: yet another ST undergoing some work.

and started to do a bit of dealing. I was operating when Protar were in the UK. I started to sell their monitors and disk drives, which were excellent. I also got involved with Neal at Compo, and Ray at CGS. I always try to do a good job for a reasonable price. As a result I hardly need to advertise."

I asked Paul when it was he realised that the business could turn into a full time job for him if he ever needed it, and how it was developed from there.

"I had seen the threat of impend-

ing redundancy for the last four years. The amazing thing was that it took so long. As the market declined, as with everything you have to branch out so I have turned to PC's as well, but certainly not to replace ST's. As everybody knows, PC's are generally dreadful things. The amazing thing about Windows is not how well it works, but that it works at all!

"When I sell PC's to people, and they are usually fairly computer literate, you can almost guarantee that within the first few days they

will screw something up so badly they can't boot it up. That has happened a lot. To be fair, an ordinary ST with a floppy drive is pretty solid. There isn't a lot that you can do to it. But as soon as you put a hard drive on it, you wouldn't believe the number of people who lock themselves out of their hard drives. Then I have to try and explain about back doors and hot key combinations."

### *Peripheral Design*

I asked Paul what he thought of

the peripherals that we all have attached to our systems. Most are aimed at the home user. I asked if this made the peripherals we can all get for the Atari range more robust and give the user little chance of seriously damaging their machines.

"I think that might happen but not through design. If you have a typical PC and you buy a scanner for example, the scanner head is exactly the same as the head for an ST, absolutely identical, right down to the plug on the end. But it's the interface that's different. On an ST it plugs into the cartridge port. As long as you can manage to put it in the right way up you are fairly safe. In a PC it has to plug inside, which usually means taking the lid off. This obviously is where you can have problems."

The PC also has a great deal of choice when it comes to buying peripherals. I took graphics cards as an example. When PC magazines do their usual round up of the available cards, there are usually over a dozen to choose from. On the Atari platform we have perhaps three graphics cards to choose from which are all about the same price. I asked Paul if this lack of choice was a handicap or offered any advantages.

"As there are fewer cards it should mean that more software is compatible. It doesn't but it should do. The main problem to fit a graphics card to an ST is really that it can only be fitted easily to a Mega ST, Mega STe or a TT, which does rather limit your population somewhat. OK, I have fitted Reflex cards for example to STFM's, quite a few of them, and it's not exactly a trivial matter. Even if everybody who had a Mega bought an expansion card they would only be selling a few thousand."

I also asked if the learning curve for Paul himself to get into the ST from a technical stand point was very steep, or did he pick it up quite quickly?

"I think it all depends on what sort of infrastructure you've got. I have worked in electronics down to component level for donkeys' years, on all different machines, on all different operating systems. So in a way it's not too bad. There are lots of wrinkles that you learn as you go along. If on the other hand you are someone out of school who has done a few evening classes, it's going to be hard work."

### Atari Tech

I asked Paul to go back a few years to the time when he first got his ST. I asked him what he

initially thought of the ST's engineering when he took it to bits for the first time.

"The actual engineering in the old ST's was very good. The PCBs were nice boards, and when you looked inside and took away the memory you realised that there wasn't exactly that much in it, because they had managed to integrate it so heavily.

"If you compare say the ST to the BBC at the time, the Beeb board was around 50% bigger but it was absolutely covered with hundreds of TTL chips. On the ST (and the Amiga as well) they had condensed down all those chips to basically just four: the Glue, the MMU, the Shifter and the DMA chip. These days there are a number of ways of doing this condensing of chips with PALs and programmable gate arrays. In those you would have built the whole thing on bread board with old fashioned chips, then you would have worked out how you could put that lot into one small chip that replicated those functions.

"I suppose one of the best things that they did was to put in the extra address line so you could go to four megabytes even on a bare ST. And of course the Mega using 1 megabit DRAM's back in '85 was quite forward thinking really."

I then made the point that Atari have the annoying habit of giving the consumer a new computer that always seems to fall short of the mark in some way. With the Falcon we had the new chip in the shape of the 030 processor but Atari saw fit to have a clock speed of only 16 MHz.

"They always seem to spoil it. It was the same with the TT. Everybody said that this TT is going to be fantastic. The story goes that the Germans saw it and said, "That's a joke, take it away." All that they could do at that time was to double the speed of the CPU. But unfortunately they left everything else the same. There was no decent secondary cache on it, and so it was nowhere near what it should have been. But it was a very nice machine. The TT I had was excellent.

"When you actually worked out all of the features that were built into it: the SCSI port, the four serial ports, the mouse was built in, all the hard drive support, everything was there. And if you had their big 19-inch monitor it was marvellous. You couldn't beat it for monochrome DTP."

I then said that I had always thought that the Mega STe was an excellent machine. For those users who needed an up-grade this was

ideal. The TT's were still far too expensive. The Mega STe had a great deal going for it. I asked Paul if the machine was as good from a technical point of view as it was from a user's point of view.

"The Mega STe was actually a very nice machine. When it came out you had to think that an STe was something like three hundred quid. And to buy a 16MHz accelerator cost you £200. To buy a high density floppy cost another £100, and a decent keyboard was another £100. So for only a couple of hundred more you got the whole lot in a super case. Nice keyboard. You could fit a hard drive inside if you didn't have one. If they had re-designed the memory manager they could have got it up to 16 megs fairly easily. Also if they had up-graded the video a bit that would have helped."

One thing that I wanted to ask was a point about the graphics cards that we have. Or, more to the point, the graphics cards that we do not have. We have available at the present time very few colour graphics cards. The ones we do have are extremely expensive. I asked Paul if there was something inherent in the ST's design that made producing graphic cards for it difficult and expensive; or was it just a case of the Atari market being so small we do not benefit from the 'economies of scale' that our PC and Mac brethren do?

"I don't know how they justify the expense because certainly the earlier ones used an ordinary VGA chip set. Now a few years ago you could buy these for about \$10 for the set. So all you have on the card is a controller set, you have some video memory, either DRAM or VRAM if you want it faster. And then you have a thing that reads it out and puts it on the screen. And then you have a bit of interface circuitry of the BUS and a graphics controller chip.

"Well, when you actually cost it all out in fairly small quantities you are probably looking at £50 or £60 a board. Add on another £20 for the PCB, they should be around the £120 mark.

"When you think that once again on the old PC you can get a Trident True Colour card for less than £50 and it's got a megabyte of memory—ok its only DRAM—and it's not very fast. If you try and run it at 24-bit under Windows, you would be appalled. Someone once said that it's like a little man inside the monitor painting the image on the screen. A screen re-draw can take 10 seconds. But it's 24-bit col-

our if you need it. They do sell a lot of them but even if they quadrupled the price it would still be less than £200."

### Customer Profile

I wondered if Paul had found that he was doing more of the same kind of work for Atari users, and if this had given him an insight into the kinds of work that Atari machines are being put to. As programmes become larger and more complex for instance, has he found that the memory up-grades that he is now doing are for large amounts of RAM?

"Well, interestingly enough, large memory up-grades are only a fraction of what they used to be. Because—and this is my theory about this—the people that want them have now had it done. I still do quite a few memory up-grades, but quite a few are still half a meg to 1 meg in an FM. If you have 4 megs on your machine and want more you will have to go to a Mega and get a Xtra RAM up-grade board which will cost a lot of money."

I asked if Paul could see any common denominators with the customers that he has dealt with.

"I think it has changed a lot. At one time it was a lot of school kids who had got them for games machines that would break for whatever reason. Or there would always be a rush of 1 meg up-grades just after Christmas as they had all had Street Fighter. But they are now dying out as games machines. So the people who are left are the serious ones."

### Atari

I asked Paul about Atari's support generally for its users and the third party developers. We all have our pet hates when it comes to Atari itself, and the lack of support over the years has not helped matters, although many users feel that Atari has done a lot right and shouldn't be given such a hard ride. I asked Paul if he had any thoughts in this area.

"The things that can be very annoying about Atari are their attitude on things such as schematic diagrams. They will not release them. Even if they do it has got to be a non-disclosure agreement, which is ridiculous. When you buy an Amiga for example you get the circuit diagram in every box.

"What do Atari think they are trying to prove, by not allowing you the technical descriptions and the schematics? If you were in a position to be able to take apart their specific chips, and re-create them, you wouldn't need their schematic

diagrams. I mean nobody is going to do that. What's the problem? You can get the full schematics and the full service manual for the A1200 Amiga for £10, next day delivery. With Atari I think it is something like a £3,000 minimum order from Holland.

"Look at the fiasco with the STE and the faulty DMA chip, Atari persistently saying that it was only a batch of a thousand machines, when everybody knows that it was all the machines for the first two years. It was only that a thousand people had hard drives.

"I think the thing that really knocked Atari UK on the head was when their technical support guy left. I think he went walk about in Australia or something, a guy called Allen. He was excellent. You could always phone him up and he was really helpful.

"A lot of the companies have someone who starts off with a good idea, builds up a good company and nothing else seems to come out of it. The ST was great, compared to all the other computers that they had done before. But nothing else has come out of them."

I then moved on and asked Paul if he had in his head the ideal machine. If someone were to ask him what that machine would have what would his response be?

"It is easy enough to say what you would have in your ideal machine, but it's harder to say whether in a commercial world you would actually do it. You could do it. Everyone could give a wish list of what they would want. The TT, for instance, I think was a marvellous machine. With a few other bits on it, it would have been unbeatable... If, for example, it had had more easily expandable graphics for colour, well, they could have built that onto the board. It could even have been a daughter board.

"The graphics cards were OK but the prices were too high. I mean if you haven't seen the high res mono graphics on a TT you haven't lived, have you? They went to all the trouble of building it in, why couldn't they have just done a bit more on the colour side. But otherwise the TT was virtually perfect. Serial ports, LAN port—that never got any software written for it—SCSI port. I mean, people can plug in MAC SCSI peripherals. Marvellous. If there was a bit more raw processing power and better colour graphics, the TT would be great."

### Build Your Own

One of the questions that I wanted to ask Paul was about any ambitions he might have had to design

and produce his own peripherals. I know that he had produced the booster box that was available from him for all those DeskJet users who found they were having problems with their printing. I asked if there were any other projects he had looked at.

"At one time I was tempted to put out some hard drives. The colleague of mine that I started the memory up-grades with was a real wizard with that sort of thing. At one time between us we actually built and got working a solid state camera/digitiser for the ST.

"This actually worked on a DRAM memory chip with the top off. You could actually buy these with a quartz window on top. If you can imagine it, a DRAM is like a big array, a matrix of sensors, and the time taken for the electrons to leak away is proportional or inversely proportional to the amount of light that is shining on it. So if you focus a lens on to the top of this chip, you could then read and write to this DRAM, and build up a picture on the screen.

"This was five years ago. CCD's were far too complicated and expensive. This 64K DRAM was only about £5, and there were only three or four chips to drive it off the cartridge port. But it never quite got finished and the exposure times were too long. We were talking about five seconds. But it did actually work in prototype form. If

*"When you actually worked out all of the features that were built into the TT—the SCSI port, the four serial ports, the mouse built in, all the hard drive support—everything was there. And if you had their big 19-inch monitor it was marvellous. You couldn't beat it for monochrome DTP."*

it had been a little better that could have been marketed.

"There was another project that I did for my Open University degree. This was a digital storage oscilloscope run from an ST, through the cartridge port again because it's so versatile. I also wrote all the software. The market though would have been so small there wasn't a lot of point in developing it.

"Even with a simple thing, especially for just one or two people to do, there is so much work involved. Also in my case when you have also got work coming in, and writing articles and things, there is no time left."

### The Jaguar

I asked Paul if he had any thoughts on Atari's new baby. There has

been a great deal of press about this new machine, and Atari seem to have picked up just about every award they could this year. I asked if Paul felt it was a good move by Atari to go back to their roots.

"When they semi-released it, there was nothing else to touch it in the market place. 3DO looks like a disaster, Philips CD-i looks like a total disaster. The big boys really didn't have anything to compete. But once again where are they? Are they going to get enough out and a userbase established before they get killed?"

"This is the same with Atari's Lynx. At the time everybody said that that was the best colour handheld games machine around. But what happened to that?"

### Atari vs PC

As Paul has a two-tier business, I wanted to know if he had found over the last year or so that more and more Atari users were moving over to the PC. I also asked what reasons his customers were giving for making such a move. In a lot of cases they have had their Aris for quite a few years. What made them move?

"My PC exposure is very limited at present. Most people are referrals. Most are ST converts who have told other people. They have either come to a point where they have decided that they need more

the PC's and Mac's that dominate the market.

"One of the best examples of artwork produced on a Falcon was for a fantasy games place up in Scotland. I actually supplied the Falcon it was done on. The company is called Nightfall Games. The guy that co-owns the company used to live around here. He set up with two or three friends in Edinburgh. The company is one of these Dungeons and Dragons role play type games, but on paper not on a computer.

"At the time I thought that it was going to be a disaster. They had all the ideas and all the enthusiasm, but I still thought it was going to be a disaster. Well, I had to eat my words because they are doing incredibly well. Something like number one best seller in Virgin. I got my copy of the book and it was all produced on a Falcon.

"You are talking about a big book. Glossy cover, the rest in black and white, loads of scanned artwork, which I believe was set out in Didot (now DA's Layout). The whole lot was taken down to CY Services down the road to do the films and apparently he was there a week! Things were not straightforward. So they got all the films done, they had a print run of 5,000 copies or whatever, they all sold out, so they had another print run. It was stated in the book that it was done on an Atari."

### Falcon

With the Falcon Atari had the chance to answer some of their critics with this new machine. It remains to be seen if there will be any new Falcons in the range as Atari move, totally it seems, over to promoting the Jaguar games console. As my last question I asked Paul his thoughts on Atari's latest offering.

"Atari have this habit of shooting themselves in the foot, and everybody keeps waiting for the next version. I have lost count of the number of people who have said to me that they are not going to buy the Falcon as they are waiting for the O40 version in a decent case. And now it's too late."

There are still a large number of Atari machine out there in the UK and their users will always need help and advice with technical problems and up-grades of all types. We are very lucky in that we have people like Paul who will spend the time with users when they need it. Would a PC or Mac user find the same technical support from the company they bought their machine from?

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## Other Options

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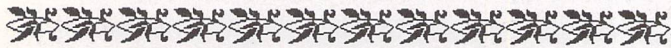
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# Migraph Scanner Extras

Say "Migraph", and I suppose most Atarians will think of scanners. That company has a long-standing and well-earned reputation for both its hand-held scanner and combined scanner driver and art program TouchUp. Since those early days, Migraph have released a few accessories designed to aid the owner's lot. Derryck Croker has been using these and shares his experiences with us....



## Scanning Tray

It's very frustrating at the best of times to get good quality scans without those irritating jagged lines and distortions caused by the scanner veering off-line. The usual result is a scan that could resemble attempts to walk the straight and narrow after a good night out on the tiles!

Right on cue the tray makes its debut (stage right) as a simple yet rigid construction of moulded plastic, with a shallow recess covered by a lift-up sheet of clear film. The original to be scanned is placed under, butted up to the edges of the recess to keep things square.

The scan head fits snugly into a plastic cradle, which in turn fits over one of the runners. A choice of exits for the data lead means that a variety of makes can be accommodated, including the ubiquitous Mitsubishi MT105.

So, run the scanner down the tray on one of the guides for a perfect scan, save, lift and replace the scanner on the other runner if it's a wider original, and rescan. The result, once the second scan has been saved, is a pair of scans that can then be joined and resaved as a whole. Naturally enough, the smoother the movement, the more accurate the scan.

- ✓ Makes large scans easier
- ✓ Maximum scan area of 203x300mm

- ✓ 8mm overlap for easy joining of paired scans
- ✓ Plastic film helps smooth out that step at the edge of thicker originals
- ✓ A virtual necessity for OCR users
- ✓ Fits most scanners

although:

- ✗ A photocopier would be handy for scanning from books and magazines

## MERGEIT

Mergelt's single-minded purpose in life is to load two side-by-side scans such as those taken using the scanning tray, and then to allow them to be joined and resaved as a whole.

- ✓ Easy to use
- ✓ OverScan friendly
- ✓ Runs as accessory or program
- ✓ May be bundled with scanning tray
- ✓ May be bundled with scanner

but:

- ✗ Large high resolution scans are both disk space and memory hogs
- ✗ Paint programs may offer another route to the same end, depending on block handling capability
- ✗ Caused a reboot cycle when attempting to run as an accessory as outlined in the manual

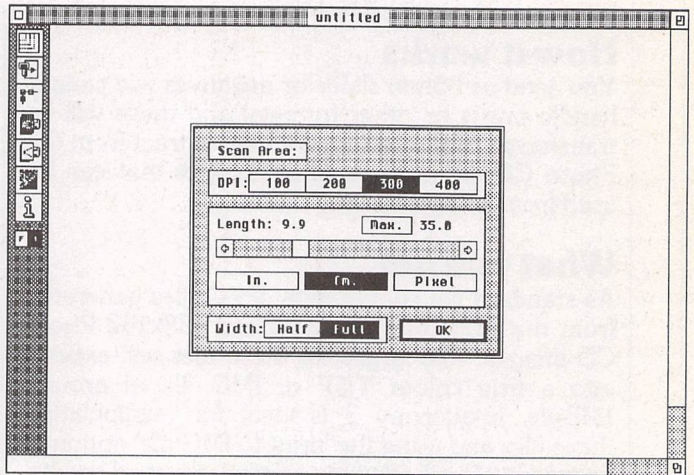


Figure 1

Setting Scan'n'Save up for scanning. Although the dialogue box is similar to that found in TouchUp, there is no automatic setting to the scanner resolution. The icons will also be very familiar, offering both 'Save full page' and 'From a clip box'.

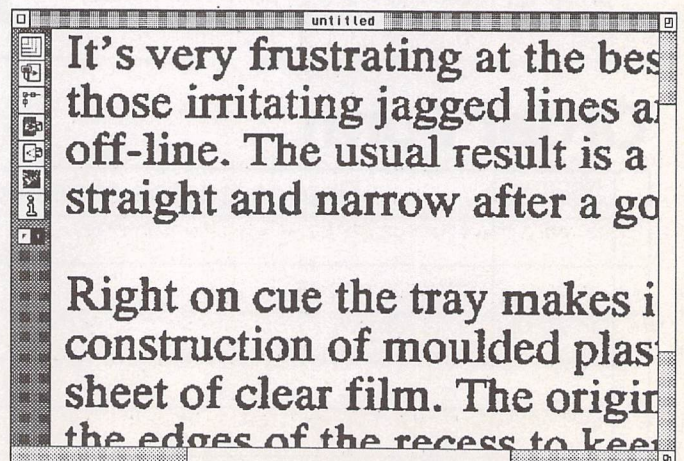


Figure 2

The resulting scan can be saved as IFF, 32 grey-level TIFF, and the more common IMG. The latter is accompanied by a small GEM file which will allow the scan to be loaded into OutPrint, arguably not the best use of a few bytes of disk space!



## SCAN'N'SAVE

No fancy editing tools in this program, just a quick'n'easy means of collecting digitised output from the scanner and delivering it to disk. Resembling ScanLite that I reviewed back in issue 29 of *ST Applications*, this program scores in that it runs quite happily under OverScan.

- ✓ Runs as program or Chameleon-friendly accessory
- ✓ Variety of export formats

but:

- ✗ No hooks to scan into other windows. ScanLite can scan directly into both later versions of MegaPaint (via an external module) and Silhouette (an auto-tracing vector package)
- ✗ No obvious advantage for TouchUp owners

## Conclusion

For the occasional OCR requirement, the combination of the tray and Mergelt will prove to be very useful for those wider scans, but OCR's stricter needs may mean that difficulty will be found in matching the strips at top and bottom. The problem is that the scans become "stretched" as a result of varying scanning speeds, worse as the resolution is increased. So, be prepared

for a lot of experimentation beforehand—at least the ability to run the scanner driver as an accessory will help speed this up.

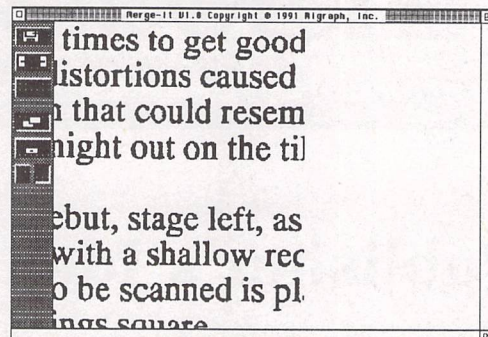
Power users should look to flat-bed scanners.

## Availability

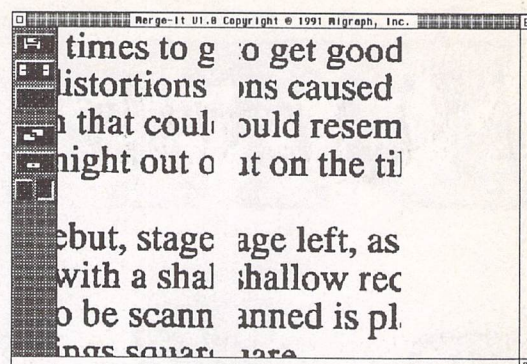
The subjects of this review were obtained separately from Gasteiner over a period of time, but they are all now available as a bundle from Compo at the favourable price of £54.99.

Gasteiner:.....081 345 6000

Compo:.....04873 582



Below the file handling icons appear those that deal with the actual merge operation. The overlapping square selects transparent or opaque mode. The latter is used during the actual lining up process, since it shows all the pixels in the overlap region. That allows the best possible match to be found before the second mode is engaged. This time all non-matching pixels are removed, and this is the mode that should be used just prior to saving the merged file to obtain the best results.



△ Figure 3

Preparing to merge the two halves of the scan in Mergelt. I've exaggerated the display to better differentiate the two.

◁ Figure 4

Now I've used the cursor keys in conjunction with the Shift key to achieve the best possible match. Note that the screen shows only a narrow strip to speed up movement. My guess is that the active or movable side is bit-shifted according to a set of coordinates adjusted as the display is moved only when the combined file is saved, or the amount of data to be shifted would slow things down to a crawl.

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# DTP

This month David Smith looks at a book aimed at the ever growing band of DTP enthusiasts who want to produce different kinds of hobbyist or business material.

## Book Reviews

### The Desktop Publisher's Idea Book

by Chuck Green

When I bought my ST in 1988, and gradually acquired one or two packages that allowed me to do simple layout of text and graphics, eventually culminating in Timeworks Publisher, I couldn't resist attempting a few DIY paper-based projects — address cards, Christmas cards, newsletter covers, flyers for the school I was working at then, jam-jar labels, cassette covers, etc., many of them involving a few tricks with sellotape, Prittstick, cling film, coloured paper, colour inkjet cartridge refills, multiple print passes, and so on and so forth. I don't do nearly so much of this sort of stuff now (I'm a very faddy person), but leafing through Chuck Green's book for the purposes of this review might just have set me back on the Sello Trick Road again....

The back cover of this large-format volume describes the book as "an exclusive collection of 100 design projects you can easily create using your standard DTP or word processing software and your laser or graphics printer. (It) shows you easy ways to design and produce printed materia on the desktop ...(and is) packed with scores of proven, step-by-step design recipes." Some of the individual projects are listed in the box overleaf.

Chapter 1 "Turning Ideas into Results", containing a short intro-

duction and outline of what the book proposes to do, is followed by a chapter on resources: "Adding the Professional Touches". This covers the selection of typefaces, clip art, stock and custom photos, illustrations, scanning, reproduction methods, service bureaux, printers and grades of paper.

Chapters 3-18 are the actual "recipes". Each chapter covers a separate kind of project, of which there are between three and a dozen examples. The project groups are:

- Binders and folders
- Books and booklets
- Brochures
- Cards and tickets
- Correspondence
- Envelopes
- Flyers
- Forms
- News
- Packaging
- Pads
- Presentation
- Signs
- Specialities
- Tags and labels
- Wearable projects

Thus, Chapter 3 (on Binders and Folders) contains four specific projects: Instant Binder, Binder Index Tabs, Gift Folder and Pocket Folder. It needs to be said that many of the individual projects are business-related, but there is also a good number of relaxational and hobbyist ideas. In any case, many of those that are presented as business aids could quite easily be turned into personal or club ideas; indeed, the author often appends a list of alternative uses to which the basic layout idea can be put. The "Family Album" project, for instance, has this list of alternative uses:

- A history of your organization
- A school scrapbook
- A travel diary
- An anniversary or birthday gift

The book's layout is clear and straightforward. Each individual project spans two to four pages; there is a shortish piece of introductory text on the first of these, giving a brief outline of the main idea, and this is followed by a step-by-step guide on the actual production. Some projects only need an annotated photo of the finished product, whilst others also need up to three or four diagrams to show the intermediate steps. The annotation consists of each part of the diagram being numbered and the comments for each of these being listed in the margin—typeface name and size, alignment, clip art name(s) and source(s), etc. The diagrams are surrounded by an inch ruler, and many of the projects use a paper size of US Note or Legal rather than the A4 or A5 we are used to on this side of the Water.

The book is not computer or software specific. The vast majority of projects are viable with ST DTP software (and maybe a little ingenuity), be it Calamus, PageStream, DA's

"An idea is a feat of association" (Robert Frost)

Vektor or Timeworks Publisher. For larger font requirements Timeworks users may need to use something such as Textstyle, but packages that use vector fonts will impose no such restrictions.

Some of the projects towards the end of the book will need extra aids—button machines, etc. But if you are interested in producing labels for your cassettes and videos, labels for jam and chutney jars, letterheads, gift envelopes, bookmarks, invitations, brochures, disk labels, club newsletters, etc., you will need no more than your current DTP setup and you'd do well to invest the £20 or so asked for this volume.

*"A microwave is a terrific gadget for cooking popcorn, but it makes a lousy toaster. My desktop publishing system is a terrific tool for certain projects, but I don't believe that everything can or should be created using a computer.*

*"I think you'll find that integrating the computer with conventional production techniques and sources will quickly increase the productive uses of your system."*

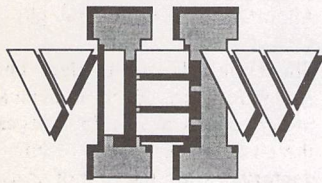
*"Scanning is a terrific way to incorporate illustrations and photographs in your artwork. But you must own the artwork before you can use it. Illustrators and photographers hold legal rights to their creations from the moment they produce them, and you can't use them, or anything substantially similar, without written permission.*

*"With the proliferation of computers and scanners, it's a fair bet that the art world is actively searching for opportunities to test and reinforce copyright. You don't want to be the next landmark case."*

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T-shirts	gift packaging

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Author:.....Chuck Green  
Publisher:.....Random House  
Price:.....£20.49  
Pages:.....311  
Dimensions:.....233 x 200 mm  
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## Run ST software on your PC!

# 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.

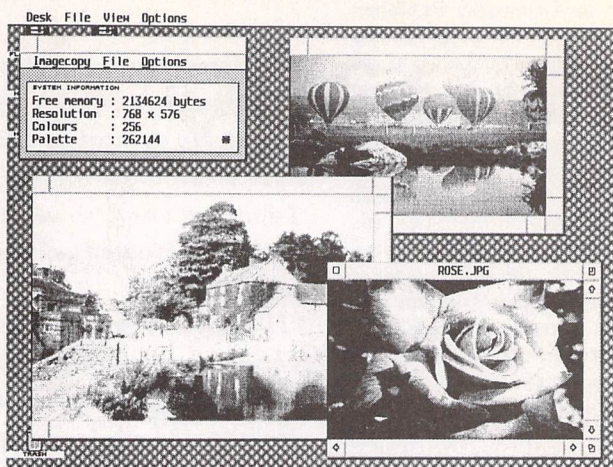
Increased range of halftone filters.

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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Price: £29.95, Available now.

## Upgrades:

XICD Upgrade D: from Imagecopy 1.xx: £22.95

XICE Upgrade E: from Imagecopy 1.5x: £17.95

XICF Upgrade F: from Imagecopy 2.xx: £12.95

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 and three disks of programs, images and digitized photographs.

## 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

# Panasonic KXP4400 Laser Printer

*It's that old conundrum! Want Laser, Got Cash, But Got No Space! Like most of us, you probably have limited space in your humble abode to set up your computer(s). This is usually because of dictates of other 'family members'—have it your own way, of course, and the ST/Falcon would occupy all of downstairs...! But enough of the musings, for I report good tidings in the page-printing world. The product in question is the KXP4400 which is an 'electrophotographic LED array' page printer. To the less initiated this is simply an entry-level 'laser-type' printer.*

Reviewed by Tim Finch

**T**he ace up the sleeve of the KXP4400 printer is its shape and size. Measuring 5" wide by 11.5" high by 15" deep it has a remarkably small footprint. The paper feeds in on a slanting tray on the bottom right. The paper path is very curly, as you can imagine, and arrives out in an angled tray top right. The two trays (when empty) can be closed up, allowing the printer to be stored easily between sessions. The printer would happily sit on the smallest computer desk by a monitor, etc.

The model reviewed has only 1Mb of RAM and costs about £450-£500 street price. The printer is quoted at doing four pages per minute at 300dpi (dots per inch). The printer emulates HP Laserjet IIP, which is a slightly older laser language now but still very widely supported by software packages. The sheet feeder holds about 100 sheets of 75gram paper. Equipped with the usual Centronics connector, the printer also has five basic sizes of Courier font and one proportional Century font built in. These are not scalable fonts as is the norm in more expensive laser printers, so basic word processors (sending information in text format) will be quite limited with their choice of print types, offering fewer faces to choose from than, say, a mid-range 24-pin dot matrix.

The printer is not too heavy at just over 6 Kg and so moving it about is quite easy, although the manual suggests repacking it every time you move it over a

distance. The consumables are as follows: the toner cartridge has an expected life of 1,600 pages which probably means 1,200 or less as it states 'with 5% image area'! The Drum unit should last 6,000 pages. Sorry, no prices on these consumables but I remember that when I first saw them they compared favourably with my trusty Ricoh LP1200 laser consumables' prices.

So what's it like to use? Well, we have been using it with a PC running Windows mainly. However, it's been hooked to my trusty Stacy2 (a portable ST) for a few tests. First up was First Word Plus. I loaded the supplied HP Laser printer driver and typed in text in Pica, Elite, Condensed and Expanded. The Expanded printed the same as Pica, but all the bold, italic and underline options printed nicely. Superscript and Subscript both failed, printing in normal Pica size. Print quality initially appears very good with a crisp black output and is perfectly reasonable for home and small business use.

Next in was Imagecopy 2, printing a PI3 picture that was a converted colour picture. It thus had dithered grey scales in it. I printed it at a few sizes, the best output being the 'Whole Scale' option set in Imagecopy 2. The grey scales came out very well. Slight banding can be seen where there are blocks of solid grey print but I've yet to see a laser that doesn't do this. Except for one print run from Imagecopy 2

where the ST finished sending the data but no page was printed out I was very happy with the Imagecopy output.

On to the strict test—PageStream. I have been using this program for many years and with a variety of printers. I own a Ricoh LP1200 Laser that has 2Mb RAM standard and it prints every single page I throw at it. I loaded a document prepared for my Church which had a range of typefaces and plenty of clip art on it. Page one of the leaflet didn't print properly — this is because of the limiting 1Mb RAM of the KXP4400. The RAM can be expanded by buying RAM packs and up to 4 Mb can be put in. I would suggest 2Mb is a minimum for PageStream and Calamus type use. What the printer does is print out as much as it can before RAM runs out and prints the rest on the next page. As it happened it picked a very good place to chop my document in half, but I imagine this won't be the norm. However, page 2 came out all on one page, indicating it is a hit and miss affair with only 1Mb RAM.

As for print quality, I scrutinise well as I do freelance printing for a local print firm using the LP1200. A close look at 72 point Olivian font (a very fat Helvetica font) shows very noticeable 'stepping' on the curves of the O's and U's. A quick look in the manual reveals that this printer does not have any form of 'resolution enhancement' — intelligent sizing of the laser dots on curves to make them look smoother. Now I am being very finicky here—I imagine the average home user will be perfectly happy with the print quality—but the smaller point sizes could come out a lot worse

than on a laser with the enhancement ability. We are using reasonably good 75/80 gram paper and there is remarkably little curling of the paper despite the contortionist paper path of the printer.

The front panel has six buttons, most allowing you to program certain functions into the permanent internal RAM. The LCD display screen indicating when you are on or off line, in programming mode or error codes, is not too easy to see—you must be looking square on and as it has no back light it would be hard to read in gloomy conditions.

On the whole I like the printer—it's whisper silent in operation, it's compact in size, it's not too bad a price, the output is solid black, etc. I would not consider it in any respect for semi-professional DTP output but happily recommend the printer to home users with very little space, or club members running address lists and doing mailing list runs, etc. You can put OHPs and labels through the printer, but the latter have to be of the type which completely cover the backing sheet.

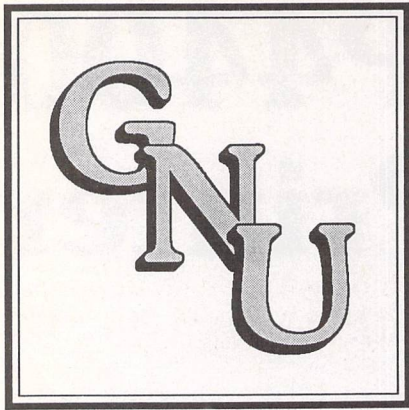
For the space-conscious and wallet-wary, this printer is worth a look! However, also check out the Ricoh LP1200 from Silica as it's being sold at a very reasonable price now—it's just a lot bigger!

#### Pros:

- ✓ Very small footprint
- ✓ Whisper quiet
- ✓ Reasonable jet black output
- ✓ Reasonable price
- ✓ One-year on-site warranty

#### Cons:

- ✗ Only 1Mb RAM—bad for DTP
- ✗ No resolution enhancement
- ✗ LCD hard to read



# A GNU Approach to Graphing

by Justin Read

## Setting up

When GNUPLOT first arrived I didn't expect to use it very much because of the command line interface and initially, this became a self-fulfilling prophesy. What I got was the bare essentials—one disk with a few demo files and GNUPLOT.TTP. The help file was comprehensive if a little drab, but it was the initial slog at the keyboard, typing in each filename of a demo file into the tiny box that put me off.

In desperate need of a plotting package of some sort, I overlooked the interface and decided to look for a shell to run it from. It was about then that I realised that the interface was not entirely primitive but, as CLIs (command line interfaces) go, fairly intuitive and once running from a shell called MENU+ I found it quite effective.

Several shells are available in the PD to run it from - all you need is a program to pass parameters to it. I used MENU+ because I use it in conjunction with the METACOMCO assembler for my programming but other shells were similarly effective. Teradesk, in fact, was adequate if you set up GNUPLOT and a text editor on the desk top and drag the source files (i.e. text files) on to them. But MENU+ is more practical because it uses less memory and allows you to set a filename and extension with the file selector. This filename can then be passed to any programs you have set up in the tool menu. Menu+ is very versatile and allows each of the menus to be set to your requirements which makes it a first choice for most of my work. Other alternatives are Vdos Proqueue or any desktop (e.g Neodesk) which will allow programs to have parameters passed to them by dragging files to the program on the desktop.

## Getting Started

### Interactive Mode

The manual is fairly comprehensive and worth reading but the best way to get to grips with the program is to go into its 'interactive' mode. To do this, run the program without passing any parameters to it (ie. if it is still a TTP (TOS takes parameters) then don't enter a command line and if you have renamed it to a PRG or TOS then just run it). GNUPLOT will run in 512k but more memory is recommended.

Firstly, a few simple graphs can be plotted. Autoscaling is on by default so you don't have to worry about setting a scale. Just to check everything is working ok, try just a simple 'plot x' function. This is in effect a  $y=x$  graph so you should get a diagonal line.

When plotting a graph, it is best to think of the plot as a 'y=' and the plot as a 'z='. Splot is a 3D plot (why they called this 'splot' I don't know, '3dplot' would make more sense!). To demonstrate this, type 'splot x\*y'. If you have 512k of memory then it will probably tell you that you haven't got enough. This problem can be got around by changing the accuracy of the plot. The number of points calculated which are then plotted are called the samples (again a strange name - why not call them points?). The number calculated is set to 100 by default and lowering this will reduce the amount of memory needed to do the plot (e.g. 'set samples 50').

NOTE: The GNUPLOT commands are case sensitive and so it is important that they are all written in lowercase unless stated otherwise by the manual.

*A guide to getting started with this freeware plotting program, moving up from the basic commands to some more complex equations, including a step-by-step guide to building a text file as well as some solutions to a few problems you may come across.*

Another method of changing the accuracy of the plot is to change the number of isosamples. This refers to the grid mesh in 3D, the number of isosamples are 10 by default so the 3D mesh will always be 10x10. If you type 'set isosamples 20', there will now be 20 grid divisions in the 'x' axis and 20 in the 'y'. The 'grid mesh' is the shape of the 3D graph: if you imagine a piece of cloth with a grid on it which is then placed over a 3D object like a sphere, the cloth will show the shape of the sphere and the smaller the squares in the grid, the more accurate the graph.

When plotting in 3D, it may be more effective to only plot visible surfaces—to do this you need the command 'set hidden3d'. This mode is usually preferable, a good example of the difference it makes is with the graph  $\sin(x*x + y*y) / (x*x + y*y)$  - try this with hidden3d and nohidden3d (see figure 1).

Plotting multiple graphs on one axis is fairly simple, with formulas separated by commas e.g plot x,x\*\*2' will plot  $y=x$  and  $y=x*x$  on the same axis. If a formula runs over one line, a backslash can be used e.g:- plot x,\n

x\*\*2 (the comma is still necessary to separate the two functions). Unfortunately, the word 'plot' cannot be repeated—e.g plot x, plot x\*\*2—because the second 'plot' will be treated as a variable. This can become a little annoying but I found that I got used to it fairly quickly.

The most useful feature in interactive mode could be the up arrow as this allows you to scroll back through all of the formulae you have typed in and then these can be fully edited or added to. This is more versatile than just typing 'replot' to redo the last function done. Unfortunately, if your formula runs over one line, only the last line can be edited—it is probably more sensible to create a text file and pass this to GNUPLOT.

Sometimes when entering interactive mode, the cursor may not be visible—try typing 'clear' to clear the screen and the normal flashing cursor should now appear. When leaving, the best thing to do is to type 'quit'. Control 'C' will also work but it is, for some reason, less reliable.

### Non-Interactive Mode

If you are just plotting quick test graphs you may want to use the interactive mode, but if you wish to save your formulae, you will need to create a text file and pass this to GNUPLOT through a shell e.g. MENU+.

I found that the easiest way to use GNUPLOT was to create 'template' files. I had one for 2D and one for 3D which set up my required defaults and tidied up at the end. Using these, I could just enter the formulae rather than having to type a whole file. The demo files which

come with GNUPLOT formed the basis of my 'template' files—you may find it useful to look at some of them because they are a good guide to how things should be done and because some of them are quite impressive, especially the file 'WORLD.DEM' (see figure 2). I used just two template files, but you may find it more useful to have more, i.e. one for parametric 2D and another for parametric 3D, etc.

### Making A Text File For GNUPLOT

The first thing to do is to state what the file does. The character for comments in GNUPLOT is the hash '#'. Although a graph's title states what it does, I still find it helpful to comment a file because there may be more than one graph and it is quicker to put a summary at the top of the file rather than having to search through the whole thing. So the first lines could be, for example:

```
# Two graphs to demonstrate the difference between hidden3d and
# nohidden3d.
```

The next step is to set up everything necessary for the plot. It doesn't have to be done in any specific order, but remember to write it all in lowercase—for example:

```
set samples 100      #(set the number of points to calculate)
set isosamples 20    #(set the the 3d grid mesh to be 20x20—this
                    #may have to be lower if you haven't got
                    #enough memory)
set xrange [-3 to 3] #(set the x and y ranges)
set yrange [-3 to 3]
set hidden3d
set terminal atari    #(this is default but if you want to print the
                    #file then you will need to change the
                    #terminal to be your printer)
set output           #if nothing is put here, output is to the
                    #screen,
                    #otherwise it will output to a specified file -
                    #I have found no way of outputting
                    #direct to the printer.
```

Now that everything is set up, we are left to label the graph and plot it. Axes can be labelled, but in this example we will just set the title.

```
set title "Graph with hidden3d on"
splot sin (x*x + y*y) / (x*x + y*y)
pause -1 "Hit return to continue"
```

The pause command will pause for a given length of time, a pause of --1 will wait for a key. The text after the command in quotes will be sent to the screen during the pause.

Now the next graph will be plotted on separate axes:

```
set nohidden3d      #turn hidden3d off
set title "Graph with hidden3d off"
replot             #plot the graph last plotted again
pause -1 "Hit return to continue"
```

Now we just need to tidy up:

```
#tidy up
set nohidden3d
set samples default
set isosamples default
set title ""
set xrange [-10 to 10]
set yrange [-10 to 10]
set terminal atari
set output
```

The file is now finished and ready to pass to GNUPLOT. After a while, you will have built up a reasonable library of files which can be used as template files for new graphs which saves a lot of time.

### Exporting from GNUPLOT

There are many export formats built into GNUPLOT. A list of these can be seen by typing 'set terminal'. Many printers are supported so this should not be a problem but if more are needed, the manual mentions a way of using GNUTERM's export options instead. Unfortunately, GNUPLOT won't print directly to the printer but only to a file, i.e.:

```
set terminal hpdj 300
set output 'M:\GRAPH.PLT'
```

This sends the output to GRAPH.PLT on drive M (my ramdisk) and the format will be a list of ASCII printer codes for the DeskJet 500 at 300dpi. This means that you can print the file from the desktop as you would a text file.

The printout is of good quality except that some of the lines are displaced to the right which causes the plot to be covered in places with dots. At 300dpi these dots are so small that the problem is not drastic but at lower resolutions such as 75dpi the problem is more serious and can make the graph unreadable (although it does depend on which graph you are plotting).

GNUPLOT does support a wide range of file formats to export but many of these are not so familiar to the ST. It would have been nice to see GEM vector files or Degas formats supported. It does support Auto-cad though I couldn't find any conversion programs available for this. The most useful formats are Postscript and LaTeX. There are several Tex drivers for all forms of Tex and while I'm not a Tex enthusiast, these will be of value to some people.

I did manage, however, to export 2D files to KANDINSKY. Kandinsky will import CSV files which are basically lists of 'x' and 'y' coordinates and the 'set terminal table' option in GNUPLOT will output a list of 'x' and 'y' coordinates. You will need to remove the 'x=' and 'y=' from the text file as well as adding a comma in between the coordinates, but this is easily done with find and replace. You can then import the file into Kandinsky which will plot the coordinates on some axes for you. This graph can then be saved in GEM format which is more compatible (see figure 3). Unfortunately, this won't work for 3D files so unless you can use Postscript or LaTeX format, you may have to settle for a bitmap file and snapshot the screen.

If you plan to print at about 75dpi anyway, snapshotting the screen will not lower the quality of the image too drastically, but if you want a high resolution 3D graph e.g. 300dpi but cannot import postscript or

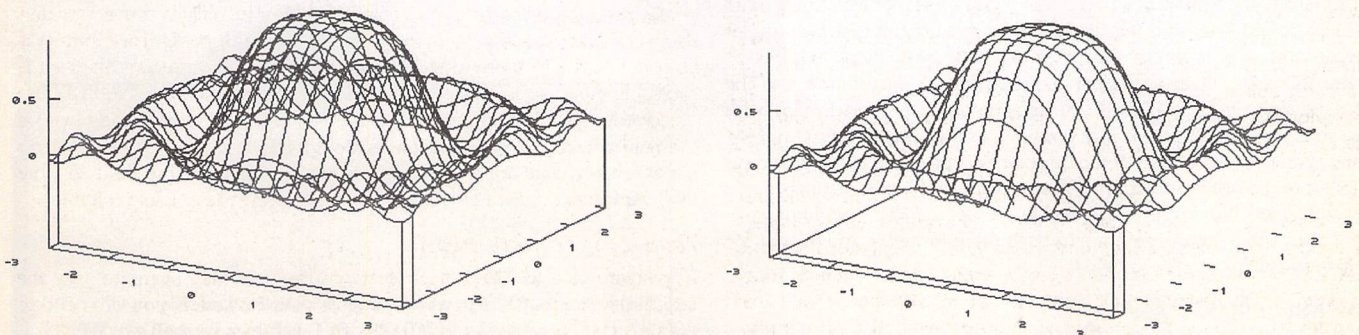


Figure 1: Left: an example of a 3D GNUPLOT graph with hidden 3D off. Right: The same graph has been plotted again but this time with the command 'set hidden3d'—this graph is more solid because the hidden surfaces which could not normally be seen have been removed.

LaTeX, then there are other options available. I did try sending a 300 dpi print file to a disk (basically a set of printer codes for the printer). My plan was to load this into Calligrapher or First Word and add any text I wanted around it. Being just a list of ASCII printer codes, this should have worked but I found few programs which would actually load it properly. Only Edit All seemed to do the job and it isn't really meant to be a word processor. It is difficult to keep track of the number of pages in your file with this approach because print files at high resolutions are usually over 100k which substantially increases the size of any text file so although the graph will only take up about half a page when printed, it will appear to take up 50 pages or maybe even more.

Another approach is to print the graph and then add the text on afterwards. As long as you have an accurate DTP package (desk-top publisher) or word processor, you can align the text on the page exactly where you want. This is not ideal and a little slow but then how many 3D graphs are you likely to need in a large document?

Obviously some people will need more flexibility and better file compatibility. If I could program in C, I might attempt to edit the source code but I don't even own a C compiler. Maybe if somebody else feels the need to have support for GEM and IMG files they may feel like editing the source?

**Compatibility**

I have tried running GNUPLOT on an STM with 512k, an STe with 2 megabytes and a Falcon with 4 megabytes and I have not experienced any problems. As far as resolutions go, GNUPLOT will run in low or medium resolutions on an ST but if you are displaying graphs to the screen, you will need to work in at least 640 by 400. If you haven't got a mono monitor but have got an STe, you can use a screen doubler to interlace in medium resolution but if not, you will probably have to use a mono-emulator like Sebra.

**Bugs**

The most useful part of this guide is aimed at solving the problems I came across when using GNUPLOT, problems which are not tackled by the manual. Several, relatively harmless, bugs may quickly become apparent in the interactive mode.

**1. Memory Bug**

If you try to perform a 3D function which needs more memory than you have, GNUPLOT may decide that you no longer have enough memory for anything—try setting the samples and isosamples to reasonable levels but if this fails to work, all you can do is quit and run GNUPLOT again.

**2. Print Bug**

The print function allows GNUPLOT to work like a calculator—e.g 'print 2\*5' would print the number '10'. The problem is with square roots. 'print sqrt(2593859238)' will give the same answer as 'print sqrt(3223849238)'. Basically, it would seem that GNUPLOT ignores all numbers over 2147395600 and treats the square root of numbers any higher than this as the same—46341.0. It is obviously limited to 32-bit signed numbers.

**3. Line Types**

This is not really a bug but more an annoying aspect of the program. GNUPLOT has the option of several line types—lines, points, linespoints (a combination of lines and points), impulses etc. (impulses draw straight lines from the x axis up to the point—if you use a large number of samples, this can fill areas under a graph in 2D—see figure 2). The problem is that GNUPLOT will not accept the command 'replot with points' so if you typed 'plot x with points' and then decided you preferred lines, you could not type 'replot with lines' but would instead have to recall your last command with the up arrow and then edit the line to say 'plot x with lines'. Not life-threatening, but it seemed to bother me.

There are other bugs common to both the interactive mode and the normal mode which are listed below.

**1. The Flashing Cursor**

If you have renamed GNUPLOT to a PRG or TOS, then you may notice that when you quit GNUPLOT there is a flashing cursor at the bottom left of the screen. This is completely harmless but can become annoying. I found that the easiest way to remove this was to show a text file on the

desktop—any will do. The cursor is used to output the text and is therefore removed from the bottom of the screen.

**2. Parametric Table Output Bug**

If you have set terminal to table, the output should be a list of 'x' and 'y' coordinates. The command to set GNUPLOT into parametric mode is 'set parametric' and the syntax for parametric output is 't' for 2D e.g. plot sin (t), cos (t) (a circle) and 'u,v' for 3D e.g. splot sin (u), cos (u), tan (v).

The problem is that GNUPLOT seems to get confused because multiple graphs are separated by commas and so are the two or three equations needed for the parametric mode. GNUPLOT will output two graphs in 2D and three in 3D, so if you are plotting 100 points in 2D GNUPLOT will output two graphs of 100 points each instead of the one graph you would expect. This only seems to occur in table mode but is easily solved. Any extra graphs can basically be ignored so if you have output the coordinates to a text file, you would keep the first graph and delete the rest (there will be one more in 2D and two more in 3D). All the graphs in a text file are separated by a space and a sentence such as 'Curve, 100 points', depending on how many points you have plotted, and so any extra graphs can be easily found and removed.

**Final Impressions**

All in all, GNUPLOT has been a useful graphing tool and has adequately suited most of my requirements, easily replacing my graphic calculator for work at home. Once the CLI interface has been overlooked you will probably find it a very powerful package. My only quibble is that, being written in C, GNUPLOT is not especially fast and when plotting a complex 3D graph you could well be in for a long wait, though a Falcon does considerably speed things up.

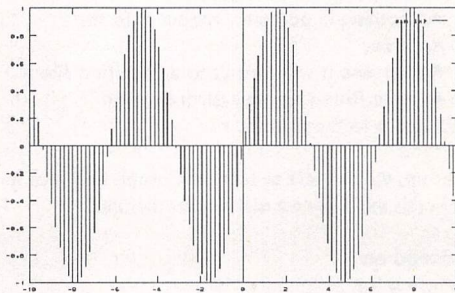
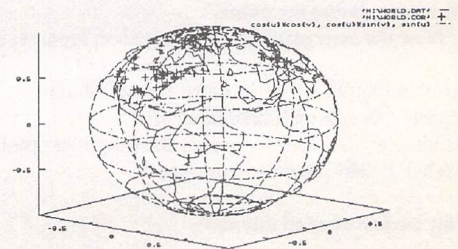


Figure 2: An example of plotting with impulses. In this graph, only 100 points were plotted—if this is increased, the vertical lines will get closer together until eventually, the area under the graph is completely filled in.

Figure 3: An example of the spherical coordinate mapping built into GNUPLOT. A data file containing rough coordinates of the world's continents was passed to GNUPLOT and then these coordinates were plotted spherically, the result being a 3D map of the world—a globe.



Product:.....GNUPLOT  
 Authors:.....Thomas Williams & Colin Kelley  
 Version: .....3.2  
 Supplier:.....The FaST CLUB  
 Disk:.....AP.210  
 Tel:.....0602 455250  
 Price:.....£1.25  
 Manifest:.....45-page on-disk manual, double-sided disk  
 System:.....All STs. 512KB (though 1 megabyte is recommended).  
 Resolution of 640 x 400 minimum if you want to display graphs on screen.



# MIDI Quest (Jr.)

Reviewed by Carl Löfgren

*Have you ever heard of an American company called Sound Quest, most famous for its multi-platform, multi-editor, MIDI Quest and MIDI Quest Jr? No? Then it's about time.*

MIDI Quest is available for Atari, Mac, Amiga, DOS and Windows. The program uses the same file-format through all different computers, so it shouldn't be any problem to use a driver made on a PC on an ST. In other words you can say it's very flexible. Same goes for MIDI Quest Jr. reviewed in this article.

MIDI Quest is a full multi patch-editor, while MIDI Quest Jr. is multi bank-editor. You have to buy the full version to tweak your favourite patches. If you just need to re-organize your banks, create new banks with your own favourite patches, the Junior version could be enough for you.

## Installation

The installation process is very easy. Just create a folder where you want to put the program and all drivers. Run AINSTALL.PRG and answer the questions. All drivers are compressed in LHarc format, but don't worry if you've never used packers. The installation program takes care of that.

## The user interface

I clicked on MQUESTJR.PRG, and after a while... Holy Zork! What's this? Sound Quest have created a GUI (Graphic User Interface) of their own! In other

words, it doesn't use GEM, so you can't access any of your accessories. How is it to work with? Well, it makes use of windows as in GEM, but let me say this: if a computer was equipped with this interface, I would never, never, never use it. I didn't like it at all, but some people do (as the program is going very well, at least in America). Sound Quest have also given us a new fileselector, instead of the normal dull Atari-selector. This one is so awful that after using it a couple of times you will LOVE your old Atari-selector. Luckily you can choose whether you want to use the Atari (or your replacement selector—the Geneva selector worked fine for me) or the SQ selector in the set-up.

When I used the program, I never really trusted it. I got that irritating feeling when dealing with a really buggy program, and all you want to do is select Quit in the menu. I must say, however, that I have never managed to crash it.

## The program

The main purpose of MQ Jr. is to handle banks, and swap patches between them. It does what you expect it to do. Anywhere in the program you can jump to the HELP-function, which will pro-

vide information and useful hints about you are doing. Good! This function should be used in more programs. You can also make your own drivers if yours wasn't included. But I don't think that should be any problem. Sound Quest have an HUGE library with drivers.

An interesting feature is the File Conversion Window. Here you can create your own drivers that will convert banks from a different file format to the SQ-format. You could for example have all your patches in Dr. T's D-50 format and want to use them in MIDI Quest. I just don't understand why companies never use Sys-Ex as their file format. Here we have got a format that doesn't need any conversions; it's standard for all synthesizers; and nobody is using it. Strange.

You can save the banks you create in either SQ format or in MIDI-file (more compatible), but unfortunately not in clean SysEx. But MIDI-file is better than nothing.

MIDI Quest Jr. has an integrated MIDI-file player (can play both Type 0 and 1 MIDI files), which means you can import your work into the program while changing patches, so that you can hear what goes with what.

## The manual...

...is 48 pages long and covers the basic operations. The more technical stuff is described in a 70,982 bytes long textfile, not included in the package—you have to down-

load it from their BBS in the USA or send them an SAE and a disk. In other words, the most difficult parts—for example how to create your own driver—are not illustrated at all.

## Conclusion

If you are interested in this program, you could ask Sound Quest for a demo before you buy it. I didn't. I would also recommend you to check out Emagic's SoundSurfer/SoundDiver before you buy. These are said to be extremely good. When I get my hands on them I will review them as soon as I possibly can.

The version reviewed was MIDI Quest Jr v2.16. The latest version of the full big brother has just been updated from v3 to v4. One of the main updates was the interface. MIDI Quest Jr is packed with really smart and useful stuff, and if Sound Quest had taken advantage of GEM it would have been a wonderful program, but now it just feels dull and uninspiring. It would be interesting to check out v4 of the full program (some day in the far far future), but I can't say I'm impressed by the things I've seen so far. The Atari ST is capable of much more than this.

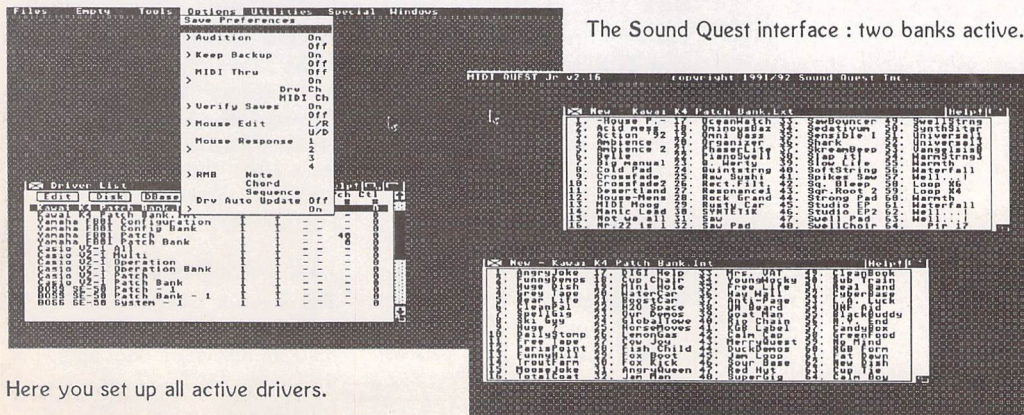
## Summary

### Points for:

- ✓ Good support
- ✓ A lot of drivers, and more are coming out
- ✓ File format compatible with all computers
- ✓ Not copy protected—requires no dongle!

### Points against:

- ✗ The interface is awful
- ✗ Does not deal with the really difficult questions in the manual
- ✗ No library included



The Sound Quest interface : two banks active.

Product:.....MIDI Quest Jr.  
MIDI Quest v.4

Prices:  
Jr.....\$99  
v4.0.....\$249

From:.....Sound Quest Inc.  
#2-131 W. 13th Ave.  
Vancouver  
British Columbia  
V5Y 1V8  
Canada

Here you set up all active drivers.

# Beginners' Forum

Mark Baines

## TOS – The Operating System

All computers, whether micros or mainframes, require an operating system—a suite of programs that provide the computer with its basic functions controlling the input and output of data and instructions, their storage and processing and a human interface. On most systems this suite is based around a small nucleus or kernel program which must always be present in memory and loaded from an external storage device when the computer is booted up. Then, as required, small interrelated programs are loaded into memory and run to carry out other infrequent tasks. MS-DOS, the most common operating system, and UNIX work like this.

However, on the Atari range the operating system consists of a series of individual functions contained, not on disk, but on one or more ROM chips mounted on the motherboard. This operating system we know as TOS which stands for “The Operating System” and definitely not “Tramiel Operating System”. TOS consists of hardware dependent and hardware independent parts. The BIOS and XBIOS are hardware dependent, GEMDOS and GDOS being hardware independent. The ROMs also include the GEM user interface which consists of the AES and VDI.

### BIOS

The Basic Input/Output System provides the low-level console and disk manipulation functions of the operating system. It is essentially the interface between GEMDOS and the hardware and concerned with the screen output, keyboard, joystick and mouse input, printer output, RS-232C functions and the disk drives.

### XBIOS

The eXtended BIOS is the

machine-specific extension to the BIOS that supports the special hardware features of the Atari range, being the lowest level of access in TOS to the hardware. Interfacing is provided to the RS-232C port, the disk drive, sound, video SHIFTER and BLITTER chips, keyboard etc.

### GEMDOS

The Graphics Environment Manager Disk Operating System is the hardware independent part of TOS and nothing to do with GEM. GEMDOS functions are concerned with disk management, memory allocation and process management facilities traditionally available in any operating system and consists, in fact, of very similar functions to those of MS-DOS.

### AES

The Application Environment Services part of GEM consists of a library of routines which provide the familiar windows and iconic user interface of the Desktop. It does not deal directly with the lower levels of TOS but communicates with it via the VDI.

### VDI

The Virtual Device Interface part of GEM provides the primitive device independent graphical routines for dealing with point plotting, line drawing, area filling and text drawing among other things with output to printers, plotters and the screen. There is also an input/output system which deals with the mouse and keyboard.

### GDOS

The Graphic Device Operating System is the part of GEM which never made it into ROM (not enough space initially) and contained as a separate executable file (e.g. GDOS.PRG). It contains device-independent functions for

font and graphics screen display and printing.

### Version Numbers

TOS comes in various disguises and version numbers are used to distinguish between them. The GEMDOS and AES parts of TOS also have their own version numbers and a program such as PRO-FILE (FaST disk DM.40) will give you a rundown of these and other facts about your system.

The TOS version number is coded into the ROM at the address pointed to by the `_sysbase` system variable plus two. For TOS 1.0 the value in the ROM at this point is 0100 which is commonly interpreted as 01.00 or 1.00. Similarly TOS 1.2 has the value 0102 and was, for many years, interpreted as v1.2. However, when TOS 2 and 3 came out the numbering system was changed to include the zero before the minor part of the version number, hence TOS 2.05 and TOS 3.06. Atari also decided to change the numbering system of earlier TOSes retrospectively leading to much confusion which persists today. TOS 1.2, 1.4 and 1.6 therefore became TOS 1.02, 1.04 and 1.06. However, TOS 1.62 remains as such as its ROM value is 0162 (although I'm afraid I saw someone refer to it as 1.062 recently!) which implies a far greater upgrade from TOS 1.06 than actually took place (two minor bug fixes)!

Also causing confusion is the version of TOS in the UK called 1.09 which Atari UK introduced in late 1987 for the Mega ST and its BLITTER chip before the official TOS 1.2 version became available from the US. The GEMDOS version number is also invariably 0.19 and this may be the inspiration for the TOS version number. TOS 1.09 was quickly replaced with TOS 1.2.

### Official TOS Versions

#### Disk TOS (1.0)

The very first STs actually came with TOS on disk. As some of these STs only had 256K of RAM there wasn't much left for programs after TOS was loaded. Even a 512K ST only had about 300K left for accessories, AUTO folder and other programs.

#### Old or ROM TOS (1.0)

The original ROM TOS, this version shipped in 520ST and 1040ST machines. It is basically the same as DISK TOS but has a newer version of the AES and

GEMDOS.

Formats: 192K-2 or 6 chip ROMs  
Machines: 520ST, 1040ST  
Patch: FOLDRXXX.PRG

#### Mega TOS or Blitter

##### TOS (1.2 or 1.02)

This version of TOS fixes some minor problems in TOS 1.0 and has support for the BLITTER chip and Real-Time Clock chip.

Formats: 192K-2 or 6 chip ROMs  
Machines: 520ST, 1040ST, Mega ST2 and 4

Patch: FOLDRXXX.PRG

#### Rainbow TOS (1.4 or 1.04)

This TOS has more robust and much faster disk input/output especially seen with hard disks; faster disk copy; file move; file date stamp is preserved with copy/move; file archive attribute bit works; folders can be renamed; MS-DOS compatible disk format; improved file selector; auto-running of GEM programs at boot up; a fix for the 40 folder limit; Malloc and OS Pool improved; file fast-load bit for faster loading; more support for larger screens; keyboard reset and much more. Most of it was rewritten or recompiled to be much faster than previous versions of TOS.

Formats: 192K-2 or 6 chip ROMs  
Machines: 520ST, 1040ST, Mega ST1, 2 and 4, Stacy  
Patches: TOS14FIX.PRG, POOL-FIX3.PRG, CACHEXXX.PRG, FOLDRXXX.PRG, MAKEFAST.PRG.

#### STE TOS Rev 1 (1.6/ 1.06)

This version shipped with the 1040STE and 520STE machines. It is essentially TOS 1.4 with support for the new STE hardware. There is mouse support in Show File; the `she_find()` bug in TOS 1.4 is fixed; palette size increased to 4,096 with 4-bit colour values; key click and bell sounds can be replaced by TSR routines; hard disk boot up delay; `Rskonf()` RTS/CTS bug fixed; introduction of a cookie jar; 8-bit stereo DMA sound support; two new controllers (light gun and paddle) support; external Genlock support; hardware support for vertical and horizontal scrolling.

Formats: 256K-2 chip ROMs  
Machines: 520STE, 1040STE  
Patches: STE\_FIX.PRG, POOL-FIX3.PRG, CACHEXXX.PRG, FOLDRXXX.PRG.

#### STE TOS, Rev 2 (1.62)

This version fixes the POOLFIX problem in GEMDOS and the medium resolution boot up bug in the Desktop of TOS 1.06.

Formats: 256K-2 chip ROMs

Machines: 520STE, 1040STE  
Patches: CACHEXXX.PRG,  
FOLDRXXX.PRG.

**Mega STE TOS(2.02)**

This was the first production version of TOS for the Mega STE using the much improved NewDesk Desktop from the TT. TOS 2.0x is essentially similar to TOS 3.0x without the TT specific features, such as Fast RAM support and extra resolutions and differs from TOS 1.62 in providing support for the extra Mega STE hardware. The RTS/CTS serial port bug was reintroduced.

Formats: 256K-2 chip ROMs  
Machines: Mega STE1, 2 and 4  
Patches: CACHEXXX.PRG,  
FOLDRXXX.PRG, SERPTCH1.PRG.

**Mega STE TOS-TOS 2.05**

This version was present in most early production Mega STE machines.

Formats: 256K-2 chip ROMs  
Machines: Mega STE1, 2 and 4  
Patches: CACHEXXX.PRG,  
FOLDRXXX.PRG, SERPTCH1.PRG.

**Mega STE TOS-TOS 2.06**

The final version of TOS 2. Changes include: Atari logo displayed at boot-up; automatic memory test at cold boot; hard drive start-up time delay; install programs, folders or files on the desktop as icons; change resolution with ALT number key commands; all available drives can be installed in one operation; icons can be set to automatically fit within a window; background colour of desktop and windows is user configurable; user selected icons can be assigned to devices or files; files can now be moved, moved and renamed, or copied and renamed in one operation; windows can be scrolled with files selected; select all files in a window command; RTS/CTS flow control is fixed; start programs with function keys; file copy any drive by dragging drive icons; bypass AUTO and Accessory programs by holding down the CTRL key at boot up; enter special characters using ALT numeric keypad combinations; file search function; file masks supported; multiple desktop configurations supported; print contents of top window or directories as ASCII text; file No Sort option; seven windows allowed; bottom window can be brought to top; keyboard commands available for most desktop functions; keyboard commands user configurable; help key support included; software support for 1.44Mb floppies;

6 ms floppy disk step rate; improved media change detection.

Formats: 256K-2 chip ROMs  
Machines: Mega STE1, 2 and 4, ST Book

Patches: CACHEXXX.PRG,  
FOLDRXXX.PRG.

**TT TOS (3.01)**

The first version of TOS for the TT030 introducing the much improved NewDesk Desktop. All GEMDOS memory including that from accessories is freed on resolution change; the menu/alert screen buffer is now half the screen; all window elements can be individually coloured; support for Fast 32-bit RAM; extra resolution support; mapping of the serial ports; support for .GTP (GEM Takes Parameters) programs; new XCONTROL panel accessory.

Formats: 512K-4 chip ROMs  
Machines: TT030  
Patches: CACHEXXX.PRG,  
FOLDRXXX.PRG, SERPTCH1.PRG

**TT TOS (3.05)**

This version was present in most early production TTs. The RTS/CTS serial port bug was reintroduced.

Formats: 512K-4 chip ROMs  
Machines: TT030  
Patches: CACHEXXX.PRG,  
FOLDRXXX.PRG, SERPTCH1.PRG.

**TT TOS (3.06)**

The final version of TOS 3 which included support for high density floppy disks; boots up in 640 x 480 resolution with access to 320 x 200 mode by pressing the ALT key; a memory check after a cold boot; VDI BITBLT greatly improved; bypass of AUTO programs and accessories at boot-up; media change detection on floppy disks is better; ALT key plus typing a decimal number on the numeric keypad inserts the character with that ASCII code into the keyboard input buffer; less floppy spin up delay; empty drives detected sooner; floppy disks with only one FAT supported; serial port RTS/CTS flow control bug fixed again; 68882 reset at boot-up; greater compatibility for programs using Timer-A; multiple AES events when scrolling are reduced.

Formats: 512K-4 chip ROMs  
Machines: TT030  
Patches: CACHEXXX.PRG,  
FOLDRXXX.PRG.

**FALCON TOS (4.01)**

This was the pre-production version of the Falcon TOS catering for the new hardware and video

differences, especially the 16 MHz BLITTER, DSP, SoundDMA and video functions libraries. A new AES is rewritten to support hierarchical menus, pop-up menus, 3D window and dialog objects, 256 colours 'animated' icons and soft-loaded fonts. It is also multitasking aware and provides facilities for linking with MultiTOS, with 'drag and drop' across applications, extensible file system support and background window manipulation. The VDI has the necessary support for all the Falcon video modes including overlay. The usual GEMDOS, BIOS and XBIOS functions are also contained in the TOS ROM. TOS 4 contains all the data relative to all the different countries and keyboard layouts with a .CPX module to configure the system, the language selection being stored in non-volatile RAM. The countries/languages catered for are USA, UK, Germany, Spain, France, Italy, Swiss French, Swiss German. Hard disk spin delay is configurable via NVRAM.

Although pre-production, this version was released in early Falcons and had some very serious bugs in it, and so an updated SHDRIVER.SYS file is necessary as is FPATCH2.PRG.

Formats: 512K-1 chip ROM.  
Machines: Falcon030

Patches: CACHEXXX.PRG,  
FOLDRXXX.PRG, FPATCH1.PRG,  
FPATCH2.PRG.

**FALCON TOS (4.02)**

Early production Falcon TOS still containing the serious hard disk and other bugs. AES 3D objects now uses more compatible ob\_state flags rather than extended type.

Formats: 512K-1 chip ROM.  
Machines: Falcon030  
Patches: CACHEXXX.PRG,  
FOLDRXXX.PRG, FPATCH1.PRG,  
FPATCH2.PRG.

**FALCON TOS (4.04)**

Current production Falcon TOS.

The bug that prevented sound calls working with external clock sources is cured. Devconnect bug fixed.

Formats: 512K-1 chip ROM.  
Machines: Falcon030  
Patches: CACHEXXX.PRG,  
FOLDRXXX.PRG, FPATCH1.PRG,  
FPATCH2.PRG.

Next month, I'll discuss the programs required to patch TOS to a working standard.

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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STA support in ATARIST echo  
TurboNet: 100:106/0.10  
STA support in T\_ATARIS echo

**The Official Atari TOS Version Numbers**

Numbers not in this list are third party modifications, such as 1.41.

os_version _sysbase+2	Old Number	New Number	Name
0x0100	1.0	1.00	ROM TOS or Old TOS
0x0102	1.2	1.02	BLITTER TOS or Mega TOS
0x0104	1.4	1.04	Rainbow TOS
0x0106	1.6	1.06	STE TOS
0x0162	1.62	1.62	STE TOS
0x0201		2.01	Mega STE TOS
0x0205		2.05	Mega STE TOS
0x0206		2.06	Mega STE TOS
0x0301		3.01	TT030 TOS
0x0305		3.05	TT030 TOS
0x0306		3.06	TT030 TOS
0x0400		4.00	FalconTOS
0x0401		4.01	FalconTOS
0x0402		4.02	FalconTOS
0x0404		4.04	FalconTOS

# Beyond GFA

## Part 5: Whole Array Machine Code String Search and Data Encryption, by Mark Butler.

*Last month we finished with GFA BASIC and Assembler routines to perform a complete String Array Search. Now follows the explanation of that code....*

MOST OF THE CODE has been used before, so I will just go over any new instructions that we meet and give a general overview of the program. Having worked through all the previous examples in parts 1 to 4 you should now have enough understanding to sort out the general bits for yourself. Please get in touch if you get stuck. It's down to me as your tutor if I don't make things clear enough.

### BASIC Code

First the BASIC Code. The search\$ and main\$ have been combined into a single main\$ array with search\$ occupying element main\$(0), and the data strings to be searched in elements 1 to 100. These are set up with test values to show how the routine performs.

The C: Instruction has only to pass the position of the main\$ Array pointer and not the search\$, saving us one value. But in addition has to pass the el% and max% value that refer to the current array element and maximum element to be searched. If you know how many elements have been used in your array and they are all stored in the first elements of the array then this max% value can save the routine from wasting time with elements that contain no data.

The ch% (start search character previously 'x') and wc% (Wild card byte + Case Dependent bit) are all passed as before. Case Not Dependent is selected by adding 256 to the wc% value in the second DO - LOOP search example.

### Assembler Code

Now for the Assembler code. The move.l command now includes d5,d6 and a3 along with the previously used registers. The main\$(0) ARRPTR value is retrieved and the Array table value derived from it and placed into a3. The max% value is then obtained along with the search\$ position and length from the main\$(0) table position. If the length is 0 the program aborts to the fail\_total: label. The max value is then compared with the DIM? value of the array. If it proves larger then the max value is changed to the DIM? value to stop the routine from looking beyond the array boundaries. Note the use of bge Branch if GrEater than instruction. A tip if you get confused about which register to put first in these commands is to take a guess and see what happens. If you're wrong then simply swap them around!

We then get the el% element value and move the array table pointer (a3) to point to this element. Each element takes up 6 bytes in the table, so moving on 6 multiplied by el% does it. Note that we deliberately didn't increment a3 when obtaining the search\$ values so that this sum would work properly moving on from main\$(0) where it is currently pointing. Next we get the start ch% position and decrement it if it isn't already 0. Finally we obtain the Wild Card + Case Dependent values and store them in d4.

A data store is set up with the pointer (a2) and the search\$ values are saved to it. Then we enter the search loop by passing the s\_loop: label. If we have passed the max% element value then we quit to fail\_total: otherwise we carry on. The next main\$ data element is read from the array table and its position and length are read into a0 and d0. If the element is unused with a length of zero then we loop back to s\_loop: and don't attempt a search. Otherwise we drop down to restore the search\$ values and call the search routine using the brs BRanch Sub routine command. Returning from this Sub Routine (just like a GOSUB) we reset the ch% value in d2 ready for another possible search and then look at the value in D0. Returning to s\_loop: to keep looking if d0 is zero

(nothing found yet) or dropping down to set up a search success return (search string found).

We have to return both the element and character values to BASIC. There are enough bits to return both these 16-bit values in one go but this will involve a bit of messy BASIC code to extract them. So instead we store the values in our data store and return the position of this store to BASIC where it can be retrieved with a LONG and a WORD instruction. Below the 'success' code is the fail\_total: code that sets these values to zero with clear long and clear word to signify that no more occurrences of the search\$ (main\$(0)) are to be found in the main\$ array.

The search sub-routine starts by remembering the VARPTR for the particular main\$ data element that it is working on and then checks the lengths of the search\$ and main\$ to make sure that they are legal values just as in the previous INSTR routine. We then perform a Case Dependent check with bst #8,d4 and call either search\_cnd (Case Not Dependent) or search\_cd (Case Dependent) routines. Returning from these will take us to the rts (ReTurn from Sub-routine) instruction that will take us back to where search: was called in our s\_loop, and not to BASIC as before. The routine has been nested!

### Nested Routines

Nested?—See GFA code below:

```
GOSUB super
PROCEDURE super
    PRINT "Super ";
    GOSUB card
PRINT "Data Base."
RETURN
PROCEDURE card
    PRINT "Card ";
    GOSUB three
RETURN
PROCEDURE three
    PRINT "3 ";
RETURN
```

The code consists of three procedures. For Assembler code substitute bsr for GOSUB and rts for RETURN. PROCEDURE super is called with GOSUB super to print "Super" and then call PROCEDURE card. PROCEDURE card Prints "Card" and then calls PROCEDURE three which prints "3". Now we continue to our first RETURN instruction. This returns us to the bottom of procedure 'card'. The RETURN in 'card' Returns us to 'Super' whose RETURN finally returns us to the PRINT "Data Base" line.

The search\_cd and search\_cnd routines differ only in that search\_cnd always clears bit 5 and search\_cd doesn't. This saves many bst #8 commands and even allows us to leave the main\$ data where it is in search\_cd, not bothering to move it to d3.

If the search fails in either of these routines then d0 is set to zero and an rts instruction returns you to the search: routine from where it was called. Success is handled by calling the success: routine and then returning.

When you are happy with the routine reduce the &H1000 INLINE value so that it will just fit and reassemble it into the INLINE. Note The Assembler code will compile down to &H18C normally and &H152 fully optimised. If the program doesn't compile to these values then it is a useful pointer to an error in your version.

Finally you can move to the INLINE and press the Help key as you would before pressing 'A' for the assembler but this time press 'S' to Save the machine code routine to disc. You can then Import this routine using the INLINE Load option into any future GFA BASIC Code without having to Assemble it ever again.

That's about it for searching—I hope that the examination of search routines has given you the confidence to have a go in Assembler. If you got stuck anywhere then please drop me a line by way of the magazine and I'll be happy to help. I want as many readers as possible to follow and benefit from my

articles, Writing into a vacuum is a waste of time for everyone. We now move on to the subject of Data Encryption.

## Data Encryption

The subject of Data Encryption has received much press recently thanks to some very depraved data that has been hidden using such routines. The USA would like everyone to use their 'Clipper' chip so that they can listen in to all encrypted data. Short of making other forms of encryption illegal I can't see this exactly taking off. International companies in particular would be understandably concerned about assigning their corporate secrets to this chip.

Protecting sensitive Business information and the many hours or even man years invested in articles, books and program Source codes are just a few of the more legitimate uses for data encryption. Posting, E-Mailing or even leaving such information lying around on discs in your home or office leaves it open to theft.

## Paranoia

Whether the average home computer user has need for such protection is debatable. But for the more paranoid amongst you there follows a series of 'how to do it' articles that will culminate in a stand alone data encryption program.

Making such knowledge more widely available did worry me for a while, but I finally concluded that those users with questionable uses for it would already have access to all the routines that they could possibly want through underground groups of a similarly depraved mind. So I don't see this causing any additional problems.

## What is Data Encryption?

Data Encryption is the protection of any data be it text, picture or sound from unauthorised access. Once encrypted it can be retrieved only by processing it through a de-encrypter to return it to its original form.

The data is locked, and only those with the correct key can unlock it. The key can be a dedicated program that only the receiver of the data has or a more general unencrypter program that relies on a combination of the built in code and an external key of numbers or characters that need to be input correctly for the data to be retrieved.

The key data should be kept separate from the encrypted data and the data encrypt/decrypt program, just like your credit card and its PIN number.

## Raw Power

The biggest problem with data encryption is the raw computing power needed to work on possibly megabytes of data. Every byte must be individually worked on, which is where Assembler comes into its own.

Our search routines can already access whole string arrays of data. It won't take much to modify that code so that it changes the data as well as accessing it.

Once we have our basic routine to work through all of our data then the actual encryption code can be bolted on quite easily. The following routines rely on the data being stored in a string array. This isn't the only way in which data can be held in GFA BASIC but it will do for our needs. If our program is a database it will most likely store its text data in a string array. Also if we want to encrypt a disc file then it can be loaded in 32k chunks into string array elements. Why 32k? you may ask. Well, that's the limit a GFA string can hold so we have to split a disc file amongst many string elements if we are to fit it all in memory at once. See the file copy program below.

Note that the `el#` variable is a floating point value due to the maths involved. To see the variable types correctly press Esc (direct mode) type in `defflist2` and press Return and then Esc again to return you to the editor.

### GFA BASIC Single Pass File Copy Program

```

DEFFLT "e" ! Define floating point
DEFINT "a-d,f-z" ! Define integers
' File copy program
' Load file
DO ! File find loop
FILESELECT "", "", file$ ! Find File
IF file$="" ! Cancel option
STOP
ENDIF
LOOP UNTIL NOT EXIST(file$) ! Only continue if file exists
OPEN "i", #1, file$ ! Open File
l# = LOP(#1) ! Get Length
el# = l# / 32767 ! How many 32767 elements needed ?
IF el# > INT(el#) ! Integer already ?
el# = INT(el# + 1) ! Extra element needed
ENDIF
DIM main$(el#) ! Dimension array
c# = 0 ! element counter
WHILE l# > 32767 ! Binary Get Loop
INC c#
main$(c#) = SPACE$(32767) ! Make room
BGET #1, VARPTR(main$(c#)), 32767 ! Get 32k data

```

```

SUB l#, 32767 ! Decrease length to load
WEND
IF l# < 0 ! End of file yet ?
INC c#
main$(c#) = SPACE$(l#) ! Make room
BGET #1, VARPTR(main$(c#)), l# ! Get last bit
ENDIF
CLOSE ! Close File
' Now copy file back to disc
DO ! New file loop
FILESELECT "", "", file$ ! Find New File
IF file$="" ! Cancel option
STOP
ENDIF
LOOP UNTIL NOT EXIST(file$) ! Check file not existing
OPEN "o", #1, file$ ! Open New file
FOR i# = 1 TO c# ! Loop through elements
BPUT #1, VARPTR(main$(i#)), LEN(main$(i#))
NEXT i#
CLOSE ! Close file, Copy complete.

```

The program first asks you to specify an existing file—you will not be allowed to continue until you have done so. The option to use the Cancel button is also available. The program then reads the Length of the file and works out how many String array elements (Maximum length 32767 bytes each) are required before Dimensioning the `main$` array. The file is then split and loaded into these elements. Finally you are asked to select a New file name to write the data back to. You aren't allowed to overwrite an existing file. The data is then written back from the string elements to form a perfect copy of the original file. If you try this with a program file then running the copy will prove that it has worked. This program is one of those standard very useful routines that should be in everyone's library. It will also form the basis for our stand alone file encrypter that we are working towards.

## Character Swap Encryption

The simplest form of encryption is to swap all the character values around so that 'a' becomes 'c' and 'z' becomes 'n', etc. On its own it's fairly easy to crack. The character that has replaced the space character would be pretty obvious as it turns up so regularly allowing a hacker to find out where your words start and finish. The Vowels could be the next target and how common a particular character is would also narrow things down a lot. At this point the message would be almost readable and any missing characters could be guessed from those not yet used.

But the method is a good place to start and could be thrown in as an extra level of encryption to give any nosy hacker a bigger head ache.

## Hacking

That a skilled hacker could disassemble your code is something else to consider. A separate set of code numbers with a few billion combinations will still keep your code safe. Even if they find out how those numbers are used to encrypt your data they still don't know their values.

## Back Door

A back door is a method used by many programmers to test a program by giving themselves special access via some form of secret code. Whether you want to build one into your program is up to you. Alternatively you could hide the encryption key code into the file that is produced. This could then be accessed by your own personal 'cracker' program should you need to co-operate with the authorities over misuse of your program for example. Such methods can be vulnerable to hacking though. How many game cheats have you heard about?

A good idea is to make the de-encryption program accept any values without question, as any checking the program does could be hacked. The resulting data would be either retrieved successfully or turned into total garbage.

One final problem arises if you are using encryption routines to save and load data into your own data base program. The fact that characters could be changed to control codes by the process messes up instructions such as STORE and RECALL that rely on special codes to separate string elements. A fix for this is shown below.

## Encrypted Data Save and Load Routine

```

DEFINT "a-z"
initial
d_save
d_load
PROCEDURE initial
DIM main$(5)
FOR i# = 1 TO 5 ! READ initial values from DATA
READ main$(i#)
NEXT i#
RETURN
PROCEDURE d_save
PRINT "Data Save"
OPEN "o", #1, "datasave.xyz" ! Output File

```

```

FOR i%=1 TO 5
  PRINT main$(i%)
  main$(i%)-MKI$(LEN(main$(i%))+main$(i%)) ! Add Integer LEN to
string
  BPUT #1,VARPTR(main$(i%),LEN(main$(i%))) ! Write to Disc
  main$(i%)="" ! Wipe Data - No Cheating !
NEXT i%
CLOSE #1
PRINT
RETURN
PROCEDURE d_load
  PRINT "Data Load"
  OPEN "i",#1,"datasave.xyz" ! Input File
  i%=1 ! Count
  l$="xx" ! String LEN Buffer
DO
  BGET #1,VARPTR(l$),2 ! Get String LEN Integer
  main$(i%)=SPACE$(CVI(l$)) ! Make Room in main$(i) element
  BGET #1,VARPTR(main$(i%),CVI(l$)) ! Load Data
  PRINT main$(i%)
  INC i% ! Increment Counter
  LOOP UNTIL EOF(#1) ! Keep going until End Of File
CLOSE #1
RETURN
DATA Data 01,Data 002,Data 0003,Data 00004,Data 000005

```

The procedure d\_save codes the length of every main() element and places it before the string data by using the MKI MaKe Integer function to convert the LEN value to a two character string. This value is then retrieved by the d\_load routine straight into the l variable where the CVI ConVert Integer recovers the Integer LEN value and uses it to pad out the receiving main() element before the string is pulled into it. The LOOP UNTIL EOF(1) will quit the program when all the file has been read.

The routine is a bit convoluted and much slower than STORE and RECALL. But extra code can be introduced to Buffer the disc writes and reads to get around this. I hope to cover this in a future tutorial.

A little trick before we continue. Move the cursor to the PROCEDURE initial line and holding down the Control key press Help. Neat, huh? Hold Control and press Help again to Unfold the procedures. Individual procedures can be folded by just using the Help key. When a procedure is working, Fold it out of the way to make moving around the rest of the program quicker and easier.

### Folded GFA BASIC Program

```

DEFINT "a-z"
initial
d_save
d_load
> PROCEDURE initial
> PROCEDURE d_save
> PROCEDURE d_load
DATA Data 01,Data 002,Data 0003,Data 00004,Data 000005

```

Now for our first Encryption routine before we run out of our allocated space!

### Assembler Encryption code

```

; Whole Array Encrypt 1 program
; Note Registers used, a0,a1,d0,d1,d2,d3 - Useful Reminder
; Store values of used registers for operating system, d0 used by us.
movem.l d1-d3/a0/a1,-(sp)
; Get passed values from Stack and work out VARPTR and LEN values
; Note have moved stack down 5*4 bytes to accommodate movem.l
movea.l 24(sp),a0 ; Get ARRPTR main$()
movea.l (a0),a1 ; main$()Array table
addq.l #4,a1 ; Skip DIM?(main$())
move.l 28(sp),d1 ; Get Start element
move.l #6,d0 ; Ready for sum
mulu.w d1,d0 ; Perform multi sum
adda.l d0,a1 ; point to 1st elmt
move.l 32(sp),d2 ; End Element
move.l 36(sp),d3 ; Encryption Value
e_loop:
; Array Encryption Loop
movea.l (a1)+,a0 ; Get Element posn
move.w (a1)+,d0 ; get length
beq skip ; Don't try for LEN 0
bsr enc_l ; Call Data Encryption
addq.l #1,d1 ; Current array Element;
cmp.l d1,d2 ; Past end$ element yet?
bpl e_loop ; No - Keep Looping
finished:
movem.l (sp)+,d1-d3/a0/a1 ; Restore registers
rts ; Back to BASIC
;*****
enc_l: ; Encryption_l Routine
eor.b d3,(a0)+ ; Exclusive OR
subl.w #1,d0 ; Reduce main$() LEN
bne enc_l ; Keep looping
rts ; Zero so quit enc_l

```

Now for the BASIC. Note that the initial routine is the same as the previous example and the save and load routines have only had a

couple of PRINT lines removed, So it should be possible to add to the previous code without too much effort.

```

DEFINT "a-z"
INLINE encrypt_l$,#H1000
initial
PRINT " Original"
display(5)
PRINT " Encrypted"
encrypt_l(ARRPTR(main$()),1,5,31)
display(5)
d_save
d_load
PRINT
PRINT " De-Encrypted"
encrypt_l(ARRPTR(main$()),1,5,31)
display(5)
-INP(2)
PROCEDURE initial
DIM main$(5)
FOR i%=1 TO 5 ! READ initial values from DATA
  READ main$(i%)
NEXT i%
RETURN
PROCEDURE d_save
  PRINT "Data Save"
  OPEN "o",#1,"datasave.xyz" ! Output File
  FOR i%=1 TO 5
    main$(i%)-MKI$(LEN(main$(i%))+main$(i%)) ! Add LEN to string
    BPUT #1,VARPTR(main$(i%),LEN(main$(i%))) ! Write to Disc
    main$(i%)="" ! Wipe Data - No Cheating !
  NEXT i%
  CLOSE
RETURN
PROCEDURE d_load
  PRINT "Data Load"
  OPEN "i",#1,"datasave.xyz" ! Input File
  i%=1 ! Count
  l$="xx" ! String LEN Buffer
DO
  BGET #1,VARPTR(l$),2 ! Get String LEN Integer
  main$(i%)=SPACE$(CVI(l$)) ! Make Room in main$(i) element
  BGET #1,VARPTR(main$(i%),CVI(l$)) ! Load Data
  INC i% ! Increment Counter
  LOOP UNTIL EOF(#1) ! Keep going until End Of File
RETURN
PROCEDURE encrypt_l(array$,start$,end$,enc!)
  C:encrypt_l$(L:array$,L:start$,L:end$,L:enc!)
RETURN
PROCEDURE display(end$)
  FOR i%=1 TO end$
    PRINT main$(i%)
  NEXT i%
  PRINT
RETURN
DATA Data 01,Data 002,Data 0003,Data 00004,Data 000005

```

Note that the Assembler code will fit in an INLINE of H44 normally and H3A when fully optimised. Also that most of the BASIC code is concerned with demonstrating the load, save and encryption routines. Just the INLINE and C... code line are required for your own programs. Running the BASIC will give you the following:-

### Original

```

Data 01
Data 002
Data 0003
Data 00004
Data 000005

```

### Encrypted

```

["k"?/
["k"?//
["k"?///
["k"?////
["k"?/////
["k"?/////

```

```

Data Save
Data Load

```

### De-Encrypted

```

Data 01
Data 002
Data 0003
Data 00004
Data 000005

```

Examining the file DATASAVE.XYZ that is produced will give you:-

```

["k"?/["k"?// ["k"?///, ["k"?////
["k"?/////

```

It won't put off many hackers, but it's a start. Tune in next month for a full explanation of the code and to see how it can be developed into a more powerful version.

# PD and Shareware Update

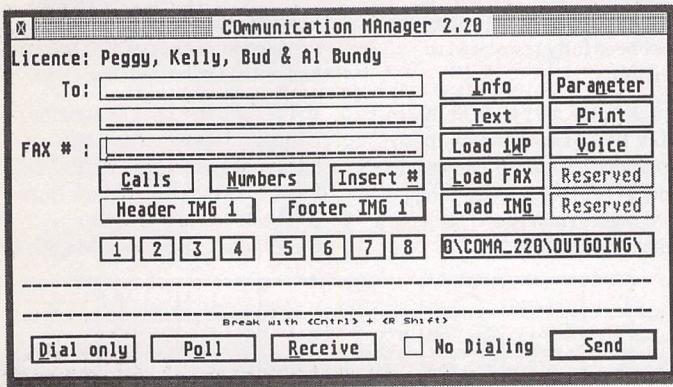
Version 14.8 ~ October 1994

### Premier Range Disks:

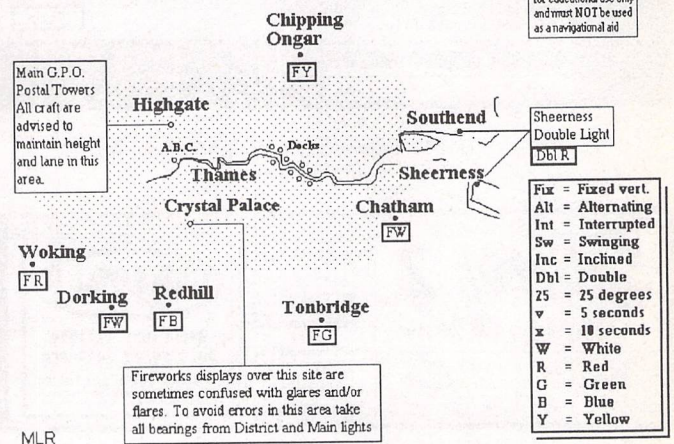
Disks in this update with two-letter prefixes cost £1.25 each (£1.00 to subscribers).

### Standard Range Disks:

Disks with a three-letter prefix cost £2.75 each (£2.00 to subscribers)



### London Main-Traffic Lights



### Applications

AP.902: TKR Junior Office and Coma 1.90: (above), two Shareware comms packages with support for sending and receiving FAX messages.

### Clip Art

The following disks contain a collection of files for use with Calamus and DA's Vector that have all been created by Keith Quinn.

SSM.133: Three alphabets of Celtic engraved decorative drop caps in CVG and DIG formats. Plus lots of vector clip art in CVG format (some B/W v1.0; some Colour v1.1).

SSM.134, SSM.135 and SSM.136: Three disks containing a selection of 24-bit colour fills for DA's Vector in TIC format

SSM.137 and SSM.138: Two disks of vector clip art in DIG format (a mixture of B/W and colour)

### Games

GAM.236 and GAM.237: FORGOTTEN FUTURES. This is not a computer game! It is a table-top role playing game and resource pack, mostly in the form of ASCII text and .GIF graphics files (see above), based on 19th and early 20th century scientific

romances (the predecessors of science fiction). It contains two stories by Rudyard Kipling, "With The Night Mail" and "As Easy As A.B.C.", plus additional material and monochrome GIF graphics files based on these stories, role playing rules, and a role-playing adventure.



Keith Quinn's clip art files for Calamus and DA's Vector on disks SSM.133 - SSM.138.

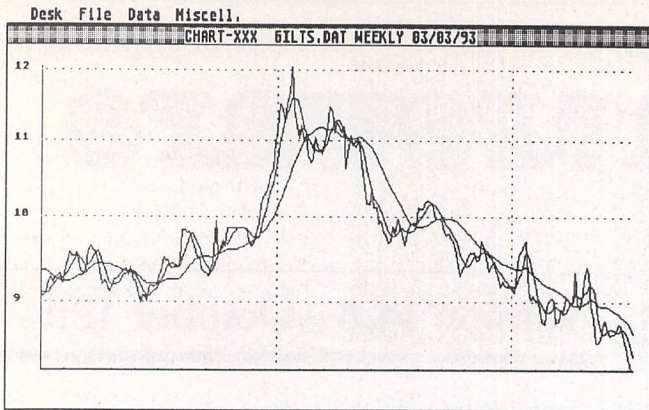
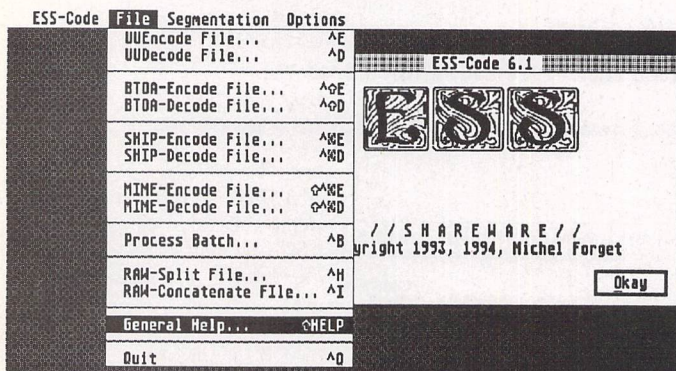
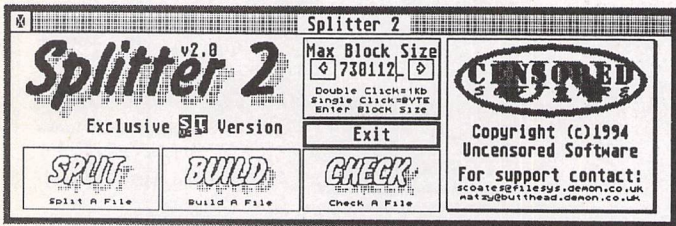


Chart Maker on DM.43: intended for charting share prices but may be adapted for other data types.



ESSCD61 on DM.43: Converts binary files to/from ASCII



File splitter on DM.43: works on both ST and PC computers

**DM.43: FaST Club's Disk Mag September 1994:**

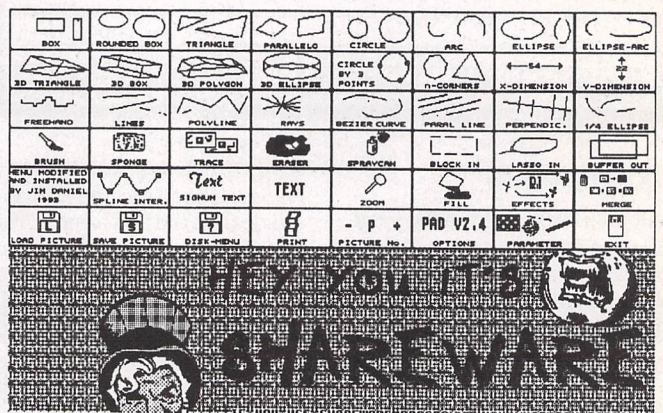
- BJ300 - Configuration ACC for Cannon BJ 300 printers.
- BMAPFIX2 - Bconmap bug fix.
- CACHE - Disk cache from Atari.
- CHART - Chart maker. Intended for charting share prices but readily adapted for other data types.
- C\_BEAT - Given the Beats Per Minute (BPM) this ACC will calculate the length, in milliseconds, of various notes.
- DCX\_PLUS - extraction program for many popular types of compressed files.
- ENV - Sets environment variables.
- ESSCD61 - Converts binary files

- to/from ASCII for file transmission on systems that do not support binary file transfers.
- FAXFIND - ACC to alert to when a FAX has been received.
- FNT\_SHOW - Creates sample pages for batches of Calamus fonts; needs Calamus SL.
- GFA\_FALC - Falcon support for GFA Basic.
- GREYSCAL - converts pictures generated by Videomaster to eight colours, enabling you to use the other colours to add atmosphere to pictures.
- GRIDS - FastBasic program to locate places of interest in an area; needs fast Basic or Runner program.
- GROCERY42 - very comprehensive grocery list manager, worth unpacking just to browse through the list of goods offered in the

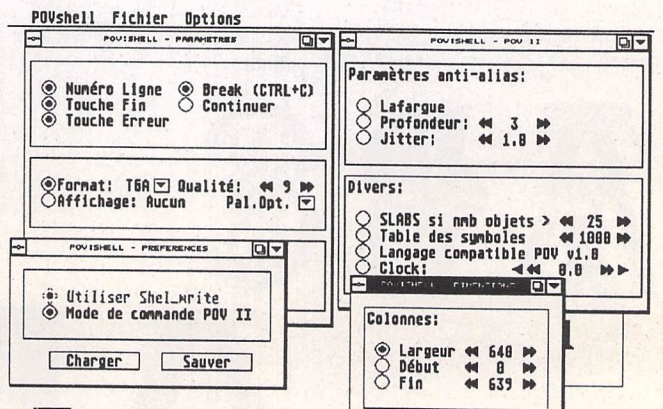
- average superstore in the USA.
  - HD\_FREE - Displays HD disk space free and used.
  - HPLJ4GER - CPXs to control and set up HP LaserJet 4, 4P and 4L printers.
  - P\_FORUM - Listings from Programmers Forum columns in ST Applications issues 40 to 46.
  - REDNOTES - Extracts the Footnotes and Endnotes from Redacteur LIB files.
  - SPLITTER - File splitter with support for splitting files on both ST and PC computers. Great for big image and PostScript files.
  - STE\_FIX - new STE fix now with XBRA.
  - WP - converts between First Word Plus and WordPerfect file formats.
  - YOURBOOT - puts useful mini-programs onto floppy boot sectors.
- Graphics**
- GR.153: PAD 2.4 - this well featured mono paint package has now been fully translated to English
  - GR.300, GR.301 and GR.302: POV Ray Tracer has now been upgraded to version 2 and comes with POVSHELL, a GEM shell that makes running the package a whole lot simpler.

**Information and Magazines on Disk**

- INI.71: INSIDE INFO No 71
- EDITORIAL - From Inside Info Editor - David Robertson.
- REVIEWS: Modems; Jaguar - An account from an owner; Mags - reviews of User, Review, and Format.
- ARTICLES: Be Aware - Warning! Modem Terms - What is it all about? Atari US News.
- PROGRAMS: ST ZIP 2.6 The ace of packers. WHICHST, STATS and GEMBENCH - three programs to test what is in your ST case, run all three on any ST you think of buying. ABFORMAT - excellent disk formatter.
- INF.76: Power Disk Magazine issue 19: over 480K of text files in the latest issue of this UK produced magazine. Not all computer related stuff but well worth a look. The magazine shell only runs in ST Low Resolution, but now that the articles are supplied in straight ASCII this is no longer the irritation it once was.
- INF.77: Power Disk Magazine issue 20: This issue features: interviews with Greg and Ralph of Impact Software and Mark Nobes of STellar; an article about Cyberpunk, a review of MagiC, an



PAD 2.4: a well-featured mono paint package on GR.153



POVSHELL now makes running the POV Ray Tracer package on GR.300-302 much easier.



article about that great graphics artist Ian Wilkinson, CD's and CD ROM's, Deano tells us how he met his wife (?), Martin Jones tells us about modems without a telephone line (??), plus reviews of the London and Bristol ATARI show. On top of all that there's a lot more, including: CHIT CHAT, NEWS, TECHNICAL HELP, STOS HELP, LETTERS and all the other usuals. There's also a few new sections: LIES and RUMOURS and SATELLITE NEWS.

**New Submissions**

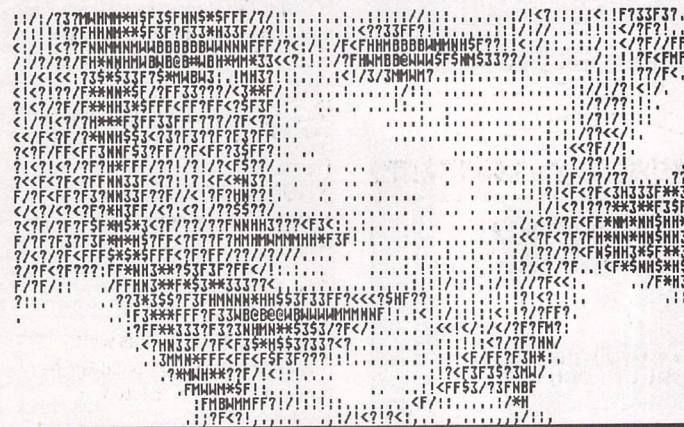
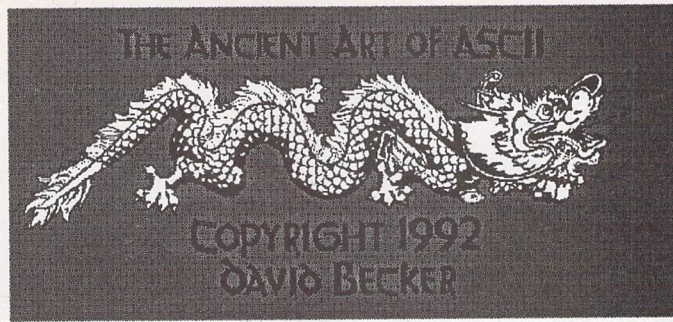
This new Premier Range category of disks contain newly submitted files that have yet to be fully catalogued or distributed on to the category specific disks. This has the advantage that we can get files out faster than is possible when we have to evaluate what type of disk a file should go onto. It is also a boon to customers who do not want to have to buy a disk of utilities that they already have just in order to get one new or updated file.

The contents of these disks are archived (with the same UNLZH system used on other Premier Range disks) and the disks cost £1.00 each to ST Applications subscribers, £1.25 to other customers.

A note to back issue readers: you can only order these disks within twelve months of the cover date on this magazine. After this date these disks will be withdrawn and their contents put on to other categorized disks. Take a look at our latest catalogue to track down the new location of the files that you are interested in.

**NW.06: New Submissions #6**

**ASM520** - fast assembler package with integrated editor,



ANCIENT on NW.12 generates ASCII files from Degas picture files - computer graphics style of the seventies!

online help, and manual on disk.  
**FCC Menus** - masses of HiSoft Basic sources from the menus of the FCC disks - lots of useful tricks and tips.  
**FORST** - implementation of the Forth programming language. Precious little documentation but full assembler source is supplied.  
**FPU** - gives Turbo C support for the TT's fpu.  
**GOFER** - programming language that is a in fact a partial implementation of the functional programming language Haskell. Comes with editor, example programs and over 200 pages of on-disk documentation.

**NW.07: New Submissions #7**

**GRAFIX** - Graphics Library version 1.1 for Lattice C and SOzobon C.  
**GNU ZIP v1.07** - GNU version of ZIP. Compatible with PKZIP v1.9, extracts .Z files and GNU TAR files. ST and Minix versions in this archive.  
**POPOP** - Shareware Lattice C library for a popup menu system.  
**PORTABLE PROLOG** - good Prolog implementation - comes with a version of the Microemacs editor.  
**STOBERON** - ST version of the OP2 Oberon compiler. (G)  
**TEMPCALL** - allows Tempus to be called as editor to be used with ST Pascal.

**NW.08: New Submissions #8**

**SB-PROLOG v3.1** - complete UNIX port of this Prolog compiler. Source and documentation included. (1MB)

**NW.09 and NW.10: ARP Guide**

Atari ST Machine Specific Programming in Assembly by Robert Arp. Large eleven-chapter guide to programming in assembly language. Texts are supplied in First Word Plus files along with plenty of illustrations in IMG format files. This is not a guide for complete beginners - you will

need a working knowledge of assembly language programming to get anywhere with this 'book'. Example programs and their source codes are also supplied. The second disk in this set contains the complete guide as a set of PostScript files, fairly pointless unless you haven't got a copy of Word Plus or you're still looking for an excuse to make some real use of Ghostscript!

**NW.11: New Submissions #11**

**AEYES** - set of eyes that follow your mouse pointer.  
**ALBION** - file utility that sets flags, etc.  
**GEMFONT** - simple GEM font editor.  
**ILLUSION** - Walls of Illusion game

**NW.12: New Submissions #12**

**ADEBUG** - debugger that is very like MONST.  
**ANCIENT** - Give this program a Degas file and it will generate an ASCII file that looks like the IMG file picture, 1970's computer graphics style!  
**ASCGIF** - Version of ANCIENT for GIF Image files.  
**CPXBAS1B** - BASIC interpreter in a CPX!  
**DIVE\_CPX** - Multi-function CPX.  
**D\_WURMII** - nicely done worms game with 77 levels (G).  
**ENCRPTO** - Encrypt any file.  
**FATDCODE** - Modify a disk's File Allocation Tables (FATs).  
**FAXFIND** - blinks drive LED if a FAX has been received and saved to disk.  
**FINDER20** - Excellent File Finder.  
**FONTRIX2** - System and printer font accessory and fonts.  
**PRO6SPEC** - Prototext version 6 printer driver specs and tokens list.

**SAFEMENU** - Good utility to give pull down menus.  
**SHBUF13** - Increase AES buffer for NEWDESK.INF.  
**SOX6PL9** - SOX version 6 for converting sound files.

**STCRON** - MultiTOS utility.  
**TOAST** - Before Dawn Flying Toasters.  
**TOS4TRAP** - Helps make TOS 4 compatible with earlier TOSs.  
**UUCODER** - Binary files to ASCII and back to binary again.

**NW.13: New Submissions #13**

**GBENCH\_3** - Generates benchmarks allowing you to compare the speed of your setup with other basic configurations.  
**GDOS UTILS** - Simple show font utility plus programs for listing

**KEY**

- (M) Runs in high Resolution only.
- (C) Runs in Medium or Low Resolution Colour only.
- (1Meg) Needs at least one megabyte of RAM.
- (G) Program and Documentation are in German.

Disks with a three-letter prefix cost £2.75 each (£2 to ST Applications subscribers). Disks with a two-letter prefix cost £1.25 each (£1.00 to subscribers).

**MAZIACS Instructions** MAZIACS was written by D.Raisin

Your aim is to find a chest of gold in the maze and bring it home.

- This is a MAZIAC! Beware of his teeth and don't fight without a sword.
- This is your aim! Find it, take it and bring it back home again.
- This is a poor prisoner of the maze. He will tell you the right way.
- This is a sword! Be sure you carry one while fighting against a MAZIAC!
- This is food! This means energy! Don't waste it, you need it.

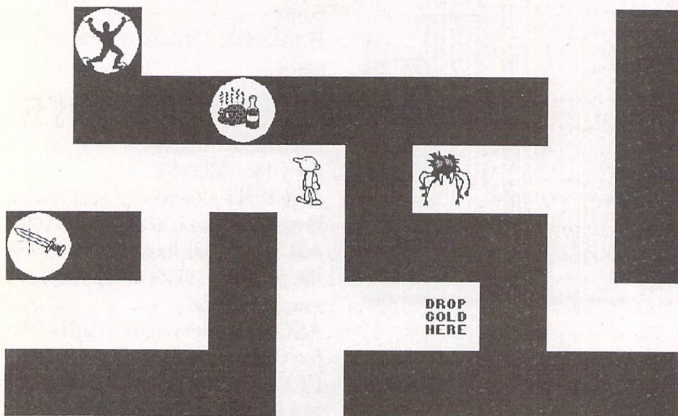
Walk around the maze by using the cursor-keys.

Take items from walls by pressing the SHIFT-key and pressing the cursor-key showing to the item.

By pressing the space-bar you can look at the map of the maze.

The incredibly fast BASIC-Compiler from OMIKRON Software, Germany

It only took about 15 sec. to compile MAZIACS



Mono maze game on NW.13

installed fonts and changing their serial numbers.

**GREETING** - Have a configurable message greet you when you boot up.

**GUCK18** - text and picture file viewer.

**HSMOD105** - serial port fixer and enhancer giving very fast results.

**INVERT** - the game in a CPX.

**LPS123** - Plays long sound samples.

**MAZIACS** - Good mono maze game.

**MDIAL100** - MultiDial, tries to stop alerts etc taking over the screen.

**MDL10** - animate DL files on monochrome ST.

**MDP\_213** - Latest Multi-Depacker.

**MEMMAP** - Memory map.

**MGIF\_42B** - GIF file displayer.

**MINIVIEW** - Small text viewer.

**MODEMT** - Modem tester.

**MSE\_MATZ** - Geneva style alternative mouse cursor.

**NEWDEPAK** - Evolution of MegaDePack.

**NVDI\_FIX** - fixes a small bug in NVDI v2.50.

**POSTCODE** - Shows town for Postcode.

**PRIORITY** - Change priority of program under MultiTOS.

**PROFL144** - version 1.44 of this utility that gives a comprehensive breakdown of the system status of your computer.

**NW.14: New Submissions #14**

A collection of programs supported by Danesh Bhabuta. See page 35 for further details.

**Music and MIDI**

**MID.89: PAN Collection:** Large selection of PAN files for use with MIDIman Universal Patch Editor and Midi Mapper by Hollis Research Ltd.

**Utilities**

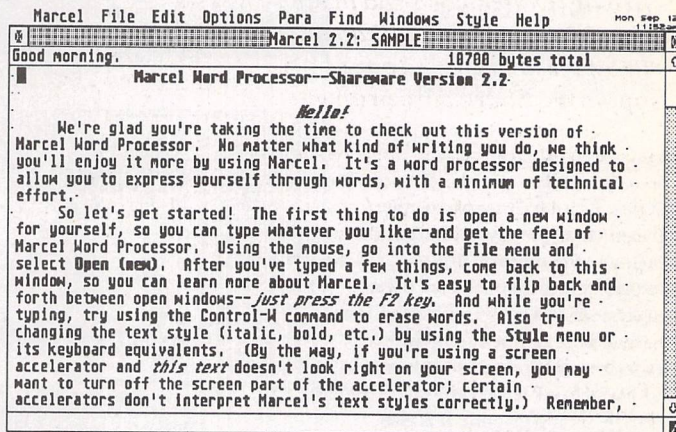
**UTI.333: OMEN:** - Fully usable demo version of this new multitasking operating system. Does not run GEM or TOS applications but an interesting development none the less. A few simple shareware OMEN applications are supplied.

**UTI.334 and UTI.335: LINUX** - a

free UNIX clone for ST, TT and Falcon. LINUX is a very popular operating system on PC's and the Atari LINUX port is a very important step forward for Atari systems, potentially opening up access to the vast range of professional UNIX applications available.

**WP.650: PageStream Support:** This disk now includes the upgrade program for the UK version of PageStream 2.2 and the US version upgrade files are no longer supplied.

**WPR.126: Marcel:** Easy to use shareware wordprocessor with spelling checker.



MARCEL: an easy-to-use shareware word processor, complete with spell check, on WPR.126

**Ultimate Virus Killer**

Written by Richard Karsmakers

**THE ULTIMATE VIRUS KILLER**  
Version 5.568  
Written by Richard Karsmakers

Douglas Communications  
P.O. Box 119  
Stockport  
Cheshire SK2 6HW  
England

F1	Search'n'Destroy Viruses
F2	Repair Disks
F3	UVK 5.5 Information
F4	System Status
F5	Quit to Desktop

WED 20.01.1993 20:10:37

**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**

**FaST Club**  
7 Musters Road  
West Bridgford  
Nottingham  
NG2 7PP

This session took 2'51"

Viruses destroyed	:0
Disks/files checked	:0
'Boot Files' written	:0
Immunizations performed	:0
Auto-boots repaired	:0
Unrecognized bootfiles	:0

F1 Oh, well...

WED 20.01.1993 20:13:23

**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 Beilstein virus.

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

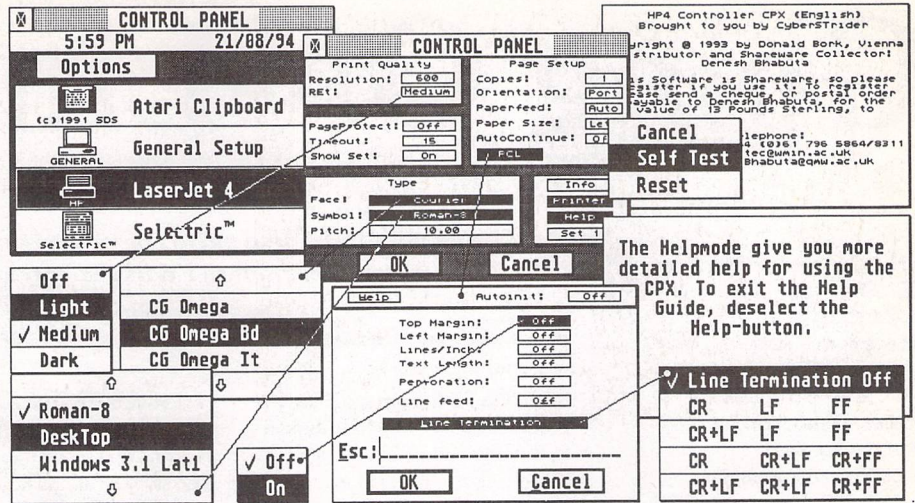
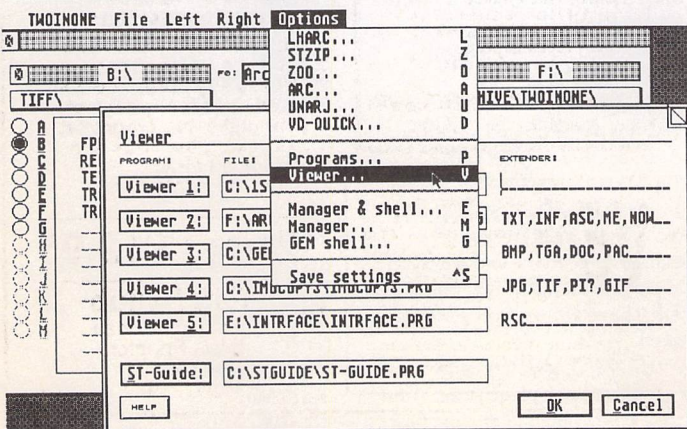
# Shareware Column

Joe Connor takes a look at the latest Two-in-One release and invites CyberSTRider, Denesh Bhabuta, to introduce himself and one of his supported Shareware products...

Two-in-One V1.11 includes many features normally only available from the Desktop. Running Two-in-One as a shell it's possible to move/copy and delete files, (optionally using Kobold) view files whatever the file type and run external programs. All these features complement the original archive management features for which Two-in-One is unsurpassed. Here's just a few of the more important new features:

- ◆ Up to 8 external programs can now be called using the 'Programs...' pop-up via a command line which can pass parameters.
- ◆ Up to 5 external file viewers are supported, which can each be assigned specific extender(s). For example a text Editor such as Everest set as the 'viewer' for 'TXT' files can not only view but also edit any loaded files. Similarly Kandinsky could be set to view and edit GEM metafiles.
- ◆ Context sensitive on-line help using ST-GUIDE is now fully implemented and available from within any dialog by selecting the 'Help' button. ST-Guide can be called either as an ACC or installed as a viewer and called as a PRG.
- ◆ The active archiver parameters are displayed in the Info line of the TOS window during ARGV communication.
- ◆ If confirmation for 'Delete' and 'Copy/move' operations is active it can be temporarily suspended by holding down either [Shift] key whilst selecting the the 'Copy' button.
- ◆ The internally used Archive commands are now stored in the file TWOINONE.COMD which future proofs Two-in-One from unforeseen changes in the supported utilities.

Version	Software	UK-Fee	Status
V1.70e	Kandinsky:	£15	Shareware
V1.10e	Selectric:	£13	Shareware
V1.11	Two-in-One:	£ 9	Shareware
V4.8	GFA Flydials	£13	Shareware
V3.3e	Everest:	£ 9	Shareware
V1.52i	Egale:	£10	Shareware
V4.7	GSZRZ:	£13	Shareware
V1.25e	OCR	£8-12	Freeware
V01.07.94	ST-Guide	£ 5+	Freeware
V3.5e	Idealist	£13	Shareware
V1.83e	Address	£15	Shareware



## Remote Control for Laserjets

When Joe first started supporting Shareware authors it occurred to me my position as file manager for the atari file area on hensa put me in an excellent position to play an active role. For those of you not familiar with on-line services, Hensa is the Lancaster University on-line facility offering the most comprehensive selection of Atari related files in the UK all freely available to Internet users.

My first step towards getting involved came after I bought a HP LaserJet 4L printer to use with my STE and realised the supplied software only worked on a PC! Worse was to come as I discovered the printer settings could only be changed via software and you can guess the reaction I got from Hewlett Packard!

I posted a request for help on Usenet and was delighted (and surprised) when Donald Bork contacted me about his Laserjet 'Remote control' CPXs! I was so impressed I bought the company, well actually I offered to support his program in the UK, so here I am to tell you all about it!

The 'Remote control' package contains three CPX modules, one for each of the Laserjet 4 Series, the 4, 4L and 4P. Admittedly, the 4 and 4P have external switches but it's still much nicer to configure your printer from the desktop.

### What's on offer

Change the Print Quality: Altering Economode (on/off), Printer Resolution, Resolution Enhancement Technology (four settings), and Density (five settings).

Configure Printer Memory: Change Memory Enhancement Technology (three settings) and Image Adapt (three settings) settings.

Change the Page Setup: Alter things such as number of copies to print (editable), lines per page (editable), page orientation, and paper size (nine settings). The 4, and 4P CPX modules allow you to input PCL commands.

Change the Font: Select

between the printer's internal typefaces, and symbol set. You can also change the size (from 0.44 to 99.99).  
**Miscellaneous:** Each CPX module features on-line help. Settings can be saved as sets and loaded at the click of the mouse button. A pop-up menu provides an easy way to cancel printing, print out the self-test page, or reset the printer to the factory default settings.

The English version is reserved for registered users but if you'd like to try before you buy the German version may be downloaded from [micro.s.hensa.ac.uk](http://micro.s.hensa.ac.uk), under [micro.s/atari/tos/n/n096/](http://micro.s/atari/tos/n/n096/) or from the FaST Club on NW.14 along with the other programs I now support.

If you're interested in reading mini reviews for any of the following software please write to Joe and I'm sure he'll invite me back!

**MasterBrowse:** Powerful text viewer

**ESS-Code:** UUEncode/UUDecode files for sending over the Internet as normal Email, now runs from Two-in-One.

**Grocery Lister:** Budget for and plan your shopping!

**PGP Shell:** GEM front end to use with 'Pretty Good Privacy' the encryption program for secure file exchange.

**Guitar Reference:** Essential widget for Atari-owning guitar players.

### UK Support and Registration

- 1) Write a cheque or postal order for £13.00 payable to Denesh Bhabuta.
  - 2) Be sure to include your full name, address, phone number, Computer and printer model, and Email address (where applicable) in legible form!
  - 3) Send to: CyberSTRider, Dept. STA, 203 Parr Lane, Unsworth, Bury, Lancashire, BL9 8JW.
- On registration, you'll receive a unique registration number, a master disk containing the latest English version on disk, along with a selection of other programs I support.

# Going On-Line

## HENSA — behind the scenes

*As part of my occasional series of interviews of prominent people involved with Atari comms, this month I'd like to introduce Denesh "Danny" Bhabuta who works at HENSA which was featured last month.*

**1. Hi Danny, what is your role at HENSA?**

Dog's body. ;-)

Moderator of Atari and Mac sections

Look after mail database

Toolkit distribution

Man the hot-line

Look after the modems

I am employed as one of the hensa/micros support staff to install the increasing volume of PD software packages on-line. I also felt that I should 'increase my worth' and took on the other things mentioned above. I will also be doing some programming under the Motif/X interface.

**2. When did you start?**

11 April, 1994

**3. What's a typical day's work for you?**

When I get into work, I log in straightaway. This involves logging into a few accounts. I have a PC on my desk connected to the Ethernet network. I therefore make use of eXceed which allows me to use the X Window System on the PC.

To get X, I log into my cent1 account, from where I then log into my other accounts. My login batch file does mainly everything for me apart from log me in. Basically, this telnets to my other accounts and places them as icons at the bottom of the screen in an icon bar. I then open each icon and login.

My icon bar consists of: two cpadb@cent1.lancs.ac.uk sessions, one cpadb@cent1.lancs.ac.uk e-mail session, two pddanny@micros.hensa.ac.uk sessions (for doing my normal work), one danny@micros.hensa.ac.uk session (used mainly for e-mail and private stuff), one vctec@wmin.ac.uk session (for e-mail and Usenet), one D.Bhabuta@qmw.ac.uk session (for e-mail and Usenet), one xarchie session (for searching files) and one Mosaic (for WWW).

The latter two I do not have running all day long.

The first thing I do after logging into all these, is to do a general check in micros.hensa. This

involves checking to see if the modems are running fine, look at how many people have logged in and check and reply to mail. This mail box is shared, as even though pddanny is my account, it is under the syspds umbrella and so the mailbox can be read by pdmartin and pddave [Danny's colleagues] too. I will also save mail or digests to their respective folders, if required.

Mail is checked by whoever gets to work first (usually me) and constantly throughout the day, on average every hour.

I then check the mailing list on average every two hours and make any new changes, such as people subscribing/unsubscribing from the list.

Next on the agenda is nix [the HENSA conference system] which we all jointly moderate. I do the Atari and Mac sections and check them randomly throughout the day, replying to what people have written and occasionally do some postings.

Any new software uploaded for my sections is shown when I log in. I move the software from the incoming directory into the installation directory from where I download it to floppy and transfer to the ST ready for testing.

I then read my personal mail accounts. I receive the MiNT mailing list at my vctec@wmin.ac.uk account and the GEM List at my danny@micros.hensa.ac.uk. I like to read these as they keep me well informed on a personal and professional level. These lists inform me of announcements, such as new versions or patchlevels of software which I can then get hold of and bring to HENSA for testing and installation, therefore keeping HENSA up-to-date.

I then go on to read Usenet News, another great place to get information as well as helping other Atari users. I can't imagine living or doing my job without Usenet. It's brilliant!

I search for any new software that has been announced on the Net and download it to HENSA. I also search for and download software which I think is useful and which I have come across in articles in magazines. These get tested before I start preparing them to go on-line. I like to see what the interface looks like—how standard it is. I also like to see how easy it is to use and then check for any incompatibilities with the boot-up software and accessories installed on the system here (MegaST2) and my STE (TOS 1.06/2.06) at home. Documents are read fairly thoroughly. Falcon software will be tested when we get a Falcon RSN.

Once a few programs have been tested, I prepare them for going on-line which is usually around 5pm. I then update the index file, the 'News of the Day' file and the WWW pages. I also search for new WWW pages specific to my sections and write the Editorial page for the Atari section.

On average, I expect between five to ten hot-line calls every day and these range from simple queries about dial-up access numbers to trouble with some software.

I also do Toolkit distribution which is where we send people unpacking tools on disk (£5 plus VAT). I have to modify the toolkit database and do a small report once a month when I've collected a few cheques.

As I said above—general dogsbody ;-)

**4. What plans do you have for the Atari section at HENSA?**

To make it a respectable place to get Atari PD. Everyone I know, including myself, respects atari.archive at the University of Michigan [atari.archive.umich.edu]. They have almost everything you need.

HENSA has never been recognised as a place to get Atari stuff from. I plan to change this. I'd

like the UK Atari community to come to us, to use nix, exchange ideas, contribute to the service by uploading software, just like they do for Michigan. People upload to UMich because it has a very large following, it is mirrored everywhere around the world. It would be nice if the HENSA Atari section got that recognition and was mirrored similarly.

I plan to bring in the latest software into HENSA and support the software on-line especially software which doesn't find its way onto atari.archive. My support through the WWW pages should also expand bringing you Atari news from all over the world.

HENSA is already the official place in UK for some PD software—CyberSTrider ones (my own Shareware support scheme), Joe Connor's Shareware scheme programs and others written in Europe.

**5. Do you enjoy working at HENSA?**

Definitely. No doubt about it. It's the sort of thing I'd do at home anyway. Also, I have made many contacts—you, Joe Connor and Vic Lennard [editor of ST Review] to name a few. This job has also made it easier for me to break into ST journalism.

**6. Thank you, Danny, for that interesting look behind the scenes at HENSA. Where can you be reached?**

danny@micros.hensa.ac.uk (private)  
pddanny@micros.hensa.ac.uk (for HENSA stuff)

E-mail:

Internet:  
msbaines@cix.compulink.co.uk  
FidoNet:  
2:259/29.10@fidonet.org  
NeST:  
90:105/5@nest.ftn  
TurboNet:  
100:106/0.10@turbonet.ftn

# Graphics Arts

Paul Keller

## TECHNIQUE – Inkjet Printing

Diversifying slightly this month, we look at the output of the DeskJet printer and how we can improve on its performance and cut down on the overhead costs of these excellent machines.

The DeskJet range of printers are very good for outputting computer graphics, for both the artist and DTP user. They offer 'power without the price' (as the Atari slogan once stated) and much more besides.

### Ink Refills

Are there any downs to these great machines? Just a few: the main quibble with DeskJets is the cartridge prices. It is surprising how fast one can use up a cartridge if working with computer graphics of any kind and outputting regularly to the printer.

As a very rough approximation, a black high-capacity cartridge will last about 250 A4 sheets of text and costs about £25. A DeskJet is guaranteed to last 1,000 A4 sheets a month for five years, so if you are using your machine full tilt that's four cartridges a month or 52 a year, a cost of £1300 a year in ink cartridges!

Most regular Deskjet users know that you can get black ink refills for about £15 each. Although suppliers claim these as double refill packs each refill will probably only contain a maximum of 22ml (about half of a full capacity cartridge, which will hold just over 40ml).

So back to our sums, that's 52 x £15 = £780 (still a lot of money). We could buy a new laser printer for that price!

If I was to say that it's possible to obtain refills for just £2.50 each and in any colour you want, you would probably say to me, What's the catch? Does it work? Can I have some?

I have been using these £2.50 ink refills for some three months now, trouble free, and have worked through the equivalent of some 15 cartridges in just this time alone! That's a massive saving of about £187.50 in ink costs, assuming the normal refill price of £15 each.

### Single Colour Printing

I doubt that everyone is going to use this quantity of ink so fast but the enclosed information will be of great use to the casual user as well as the more intensive worker. After all, the above price can include any colour

you wish to refill your cartridge with and not simply black. This makes multiple colour outputs on B/W DeskJets easy, especially if you have three cartridges or more.

There is one drawback with this particular ink being used (if I can really call it an 'ink') and this is that if you get water on it it will run. This drawback also applies to the ink supplied by Hewlett Packard in their three-colour cartridges. Is it the same type, I wonder?

### DIY Refilling

First you will need one empty HP51626A cartridge. Then you will need one 'Jetwise' Ink cartridge refill system, comprising a 30ml bottle of black ink, a re-usable syringe, gloves and instructions.

The main reason for using this particular kit is that the syringe contained inside is re-usable, unlike most others which can only be used once and then have to be disposed of. The instructions for this particular kit can be disregarded if you are refilling the HP51626A cartridge as mentioned above—they are for the 51608A instead.

You will also need another ink refill kit specific to the HP51626A cartridge to obtain a stopper, which is needed later on to close an opened hole after refilling is complete. This stopper can also be re-used many times, just like the syringe. The Ecojet kit will do.

It is very important NOT to puncture the hole in the middle of the HP51626A cartridge as this will cause it to leak constantly and render it useless. Instead a small sealed hole can be located on the top of the cartridge to the bottom right hand corner. This hole is opened up by pressing a ball point pen into it, and with a little brute force pushing the small plastic ball contained within into the cartridge. Be careful not to damage the print head by placing it on a table while doing this—instead hold the cartridge in your hand. Have two small bowls handy as well as some tissue paper. Stand the cartridge carefully on some tissue paper in one of these.

For your ink use 'Supercook' food colouring (available from Tesco's, etc.), one 38ml bottle of each of the following: Blue, Egg Yellow, Cochineal (instead of Pink, for darker results). Empty all the contents into the second bowl and add 5ml of black ink (one syringe full). This will produce a very dark brown colour suitable for most applications.

Other colours can be mixed if wished and tested on a white piece of paper with a match stick end dipped in the ink.

Fill your cartridge with the syringe, it will leak a bit but don't worry about this (as long as you have remembered to place it in the bowl!). When you have filled the cartridge with about 40ml of ink seal it with the stopper contained in the second refill kit. Place any remaining ink back into the bottles with your syringe and keep it for future use.

The cartridge will leak for a little while after sealing, so to speed things up gently place the syringe in the underside of the cartridge near the back centre where a small hole can be located. Suck some of the excess ink and air out. Gently wipe with some tissue. If it still leaks repeat the above. Leave the cartridge some five minutes to make absolutely sure it has stopped leaking. When you are quite sure of this wipe the ink head, VERY gently, with a damp tissue—this is also a good way of clearing the head of any minor blockages, should these occur. These blockages can be noticed by banding or blank lines distorting your output. Re-insert the cartridge and start printing.

A cartridge can be reused in this way between six to ten times before it needs replacing and this type of ink does not block so easily as that used in some of the black refill kits available. Ink must be of the 'Supercook' variety of food colour, as some other types although giving darker colours, may contain very small particles which will block the cartridge jets.

It should be possible to use the same ink refilling method with other cartridges of a similar nature but this is the tried and tested type I always use.

### Some useful inkjet refill addresses:

#### Total Computing:

FREEPOST: 16 Station Road, Poole, Dorset BH14 8BR;  
Tel: 0202 717001;  
Fax: 0202 717002  
(for re-usable syringe)

#### Rodesign:

195 Milwards, Harlow, Essex CM19 4SJ;  
Tel: 0279 444313;  
Fax: 0279 444256  
(24hr service/competitive prices)

# Classroom

## Part 3: Printing

# Computing

*This month we take a look at school printing needs, and how to satisfy them.*

*Matthew Townsend*

**MOST DOCUMENTS** produced on school computers are not much use on floppy or hard disc. Usually a printout is needed, or a hardcopy as it's otherwise known. It is not at all hard to find a printer to connect to an ST, but selecting the right printer to satisfy particular academic uses is slightly more complex.

The first aspect that makes a difference to the approach taken to buying printers will be whether the STs are on networks or not. If they are then the file servers of each department's network may be the only machines that will need to be linked to a printer. The rest of the network can print via this server. If your school does not operate departmental networks, or even a lone network spanning the whole school, then why not? You will end up playing floppy frisbee transporting your files to a computer with a printer attached.

### Horses for Courses

Different printers are useful for different purposes and most schools need more than one printer to satisfy the whole multitude of printing needs in all classrooms, offices and the LRC.

Laser printers are great, in that they are fast and produce results of a high quality, but they are very expensive. For the cost of a laser printer many exercise books could be purchased, so buy cheaper printers when at all possible. Remember, as always, to spend the minimum possible on purchasing required equipment. Avoid buying what is not really necessary.

Sometimes a good inkjet printer will be all that is needed. The quality from these printers is high, but they are much slower than

laser printers. In total contrast, a 24-pin printer is quick but the quality is generally quite lacking for the price you have to pay.

Colour printing capabilities may be needed in art departments, and possibly in some other parts of the school. Ever tried finding a cheap colour laser printer? Impossible. Good quality colour inkjets however are already at quite reasonable prices, and are dropping in price all the time. Colour 24-pin printers are rarely of a high enough standard for use in a school.

The size of printer is also an important factor. Not the size of the actual printer, as this is very rarely of concern in a school, but the size of paper that the printer can print on. A4 printers are great for office work, essays, most projects and suchlike but have their limitations. CDT and art departments really do need A3 printing capabilities. It makes a world of difference. Inkjets again are brilliant for these circumstances. A3 inkjet printers' prices are also falling constantly. A3 Lasers are too

highly priced, while A3 24-pin printers do not print to the high quality that CDT and art departments require.

9-pin and daisywheel printers rarely have a place in schools these days. They are too outdated and their quality is low compared with the standards required these days, though they may well be satisfactory when rough copies of text are needed. Care should be taken, if you are buying printers second hand, that the printers use the Centronics port and not the Serial port, which is slow and rarely supported by software nowadays.

### Software Compatibility

When investigating the printer market, looking for one that satisfies your needs, you should look at which printers are compatible with your software. Buying an expensive printer, just to find that new software is needed to run the

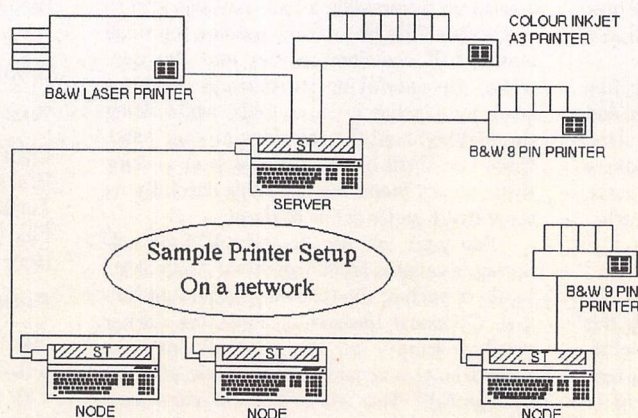
thing, happens to people very rarely, but it does still happen. Bear in mind that some software doesn't support A3 and colour printing.

### Away From the Network

If you are operating on a network then there is a problem that schools frequently have to deal with. If the only printers are attached to the servers, then pupils and teachers may end up walking through several blocks and up several flights of stairs just to get hold of a couple of pages of draft printouts. In this situation the school would benefit from a few cheap printers being attached to some of the most used computers. This way the local printers (i.e. the printers attached to computers other than the server) can be used to print rough work, and for high quality printouts the document can be printed through the server on a better printer.

If my mentions of networking have confused you slightly, then please bear with me a little. Soon I will take a look at how to establish networks of STs. I am sorry to say that this is the point every month where I have to say bye to all my loyal readers (yes, both of you) and promise that I will be back next month.

◁ This diagram shows a possible printer set-up for a mini network. Normally only one or two of those expensive printers would be attached to the server. Also there would often be many more nodes.



# DESKTOP DISCUSSIONS

*The ST and TT are obsolete—and that's official.*

*William Hern mourns the unfulfilled potential of the TT.*

## Requiem for the TT

I presume that by now everyone will have heard about the financial report from Atari that described its ST and TT range of personal computers as “technically obsolete and non-competitive”. While it's hardly surprising for the ST to be described in such a way (in this age of PCs with clock speeds of 40MHz or more, how can a computer with a puny 8MHz processor be described as anything else?), I feel sorry for the TT. If this is to be the end of the TT, then it will go out without ever having fulfilled its rich potential.

Right from the start, the TT faced problems. It was late being delivered to market, and for much of its existence supplies were short which made it difficult for dealers to push it hard. It was not as competitively priced as the ST was when it was first released. And, like all recent Atari products, it suffered from a lack of advertising.

However, the major reason for the failure of the TT in my opinion was the choice of primary operating system. The single tasking TOS was fine for the ST but the TT was capable of much more. What it needed was an operating system that could make full use of its additional computing power.

Originally, the plan had been to give the TT exactly that. Before the TT's launch, Atari revealed that they were porting Unix System V. This was tremendously exciting news—there had not been a truly low cost Unix computer before.

Unfortunately Atari then seemed to lose interest in Unix. The project languished unfinished within the company as delivery

dates slipped steadily. Eventually it was cancelled with only a few copies having been passed out to a select group of developers.

Quite why Atari chose to drop the development is unclear to this day. My guess is that the company underestimated the amount of work involved in porting the operating system to the TT. Costs eventually rose to such a point that the company couldn't see how it could ever be profitable for them. There was also probably the issue of Unix's heavy system requirements - it needs a lot of RAM and hard disk space.

Whatever the reasons, cutting the Unix development was a real blow to the TT's prospects. Without the operating system, the system could never really be anything more than a go-faster ST.

Unix would have been the ideal operating system to take advantage of the TT's special features. Unix offers full pre-emptive multi-tasking which allows many programs to be run at once, all oblivious to each other's existence. Thanks to a technique known as virtual memory, hard disk space can be used as pseudo-RAM, giving the illusion that the computer has far more memory than it actually has. Forget about TOS's eight plus three character filename limit—in practical terms there is no limit to how long a Unix filename can be.

The reasons for the advantages of Unix over TOS can be seen by looking at their roots. TOS was built upon CP/M, an operating system designed for small eight-bit personal computers with extremely limited

memory. By contrast, Unix was designed for running on powerful multi-user mini-computers with megabytes of memory space.

Unix has long been popular in academia and there is plenty of good quality software available. The range of Unix utilities available is staggering and allows almost any data-processing task to be accomplished. I've mentioned before the ST ports of the GNU software series (see the March 1993 column). Good as they are, they don't compare to the Unix implementations. Porting Unix to the TT would have meant thousands of programs becoming available for it overnight—all that would need to be done would be to compile and link them on the TT.

The power and flexibility of the Unix system does come at a price. The most common criticism made of Unix is that it is unfriendly to use. Skeptics will cite the cryptic commands as an example of why Unix will be unable to cross into the mainstream computing environment.

Now there's a certain element of truth to that allegation. With commands named `rm`, `ls` and `chmod`, it's not hard to understand why new users have difficulty at first. If anyone ever does get round to sitting those monkeys down at the typewriters to begin work on their first Shakespearean sonnet, you can be pretty sure that the first thing they'll manage to type will be a valid Unix command.

However great strides forward have been made in recent years to tame Unix and make it easier to use. Anyone who has used one of the NeXT machines with its innovative graphical

Unix-based NeXTSTEP operating system will be able to confirm that it is as easy to use as a PC or a Mac or an ST.

The other criticism made of Unix is that it is too resource-demanding for a home computer. That certainly used to be true but the advances in computer technology mean that home computers are becoming ever more powerful. Unix is viable on a 68030 or higher processor equipped machine with sixteen megabytes of memory and about two hundred megabytes of disk space. Given the fact that the processing power and memory storage of the average computer doubles roughly every two years, it won't be very long at all before this is a typical home computer configuration.

It's tempting to speculate where the TT might be today had Atari persevered with the development of System V. A low cost Unix workstation would be attractive to a large number of professional people. It would also be popular among the universities which previously would have had to purchase expensive Sun or Hewlett-Packard machines. If Atari had been able to market the TT as a sub-thousand pound Unix workstation then they would have attracted a lot of attention.

Using the single-tasking TOS on a TT is like using only the first gear of a Ferrari. The only way to show the TT's true talents is with an industrial-strength operating system such as Unix. Someone someday will make an enormous amount of money from marketing a low cost Unix computer. It's a shame that it probably won't be Atari.

# FORUM



## DB Master One

Chris Lawley - Forum STA 45

**A** There is a program called MOVEONE.PRG which is for the import/export of data to ASCII files. You can choose between fixed length and tab delimited fields.

The line length seems to be up to 3000 characters, so there is an upper limit on the combined length of the fields that you can export.

Should you need to reformat the output, e.g. replacing tabs with commas, you can use CFILT.TOS to do this quickly (CFILT is a Fontkit utility tool). I got MOVEONE on a STUK PD disk very many moons ago, now uploaded to atari.st/2listings.

There are two other routes for getting data out of DBM\_1:

1. Design a suitable report and 'print' to disk. Then reformat as required—a good macro utility or editor with built-in macro facility makes this much more practical. The 'Record' format prints in graphics mode so is not useful for this. Using the 'Column' format instead is less than ideal as it is limited to 80 characters per line. I guess if all your fields end to end are longer than this then you could export in 'column' format in two stages but the reformatting might then become a real pain.

2. If you have Base II (or access to a copy) you can use FIXONE.TTP to convert the DBM\_1 files into BASE\_2 files. BASE\_2 is a development of DBM\_1 and has some extra facilities, though still not as many as I would like. It also seems not to be Falcon compatible, a pity because I really like the user friendliness and screen appearance of these programs. The point is that BASE\_2 has an option to export data in DIF format, and though I suspect that there are many variants of DIF, it is always a good place to start.

As well as migrating to a new database you can use variants of these techniques to split or merge databases, things which I don't think you can do directly inside DBM\_1 or BASE\_2. In fact BASE\_2 owners should keep DBM\_1 for this purpose—export from BASE\_2 as DIF, edit to merge databases and reformat, MOVEONE.PRG to import into DBM\_1 and FIXONE to put back into BASE\_2!

Converting from BASE\_2 DIF to a format readable by Prodata (ST User cover disk circa October '93) is fairly easy (remove lines with "BOT", "-1,0", "1,0", and "EOD" and import into a PRODATA database of similar design). PRODATA has some more flexibility in exporting with various options for delimiters and line termination.

Oli Skelton CIX #664

## Watch Logo

Trevor Thompson - Forum STA 43

**I** What a wonderful bunch STA readers are. Even before my copy had arrived, I had two offers of help with my request for Neighbourhood Watch logos.

In all I had six offers of help, three of these using Atari to produce Neighbourhood Watch Newsletters. That's nice to know, isn't it? Any others? So, thanks again fellows.

Trevor Thompson

## Classroom Computing

Mathew Townsend - STA 44  
David Peppiate - Forum STA 45

**I** I have just got my copy of ST Applications and feel moved to write to you at last rather than just thinking about it. I was interested by the article on STs in education, not because I know anything much about education but because I have often wondered about computer use in schools.

About 4 years ago I visited a friend who is a teacher in a nursery. She was knee deep in sheets of paper and calculators doing one of her administrative chores. Every term she had to produce a version of the waiting list for her nursery saying how old each of the children on it will be at the start of the next term. Surely this was a long, boring job that was ideal for a computer? She looked at me blankly. Yes, they did have a couple of BBCs in the nursery but no one had a clue how to use them for anything like that.

So I cobbled something together on Superbase Personal which could not be called remotely professional but worked and would print the list in alphabetical or age order or whatever. Every term I did a new list which took me about an hour.

Last year the school got a new computer system for administration which was networked into County Hall and was supposed to fix everything. It didn't. It wouldn't do age order, it wouldn't do double spacing and it wouldn't let you work out anything that wasn't for today's date... So, I'm still doing the list. I don't mind, but for their own convenience I suggested that they buy their own ST—they could get a complete second hand system for £150 if they looked around and they could use it for all sorts of other things too. She looked at me as if I had suggested something utterly ridiculous like installing a steam engine in her classroom.

This worried and puzzled me. What are these people teaching children about com-



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 considerable 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



puters? What do they do with the computers they have and why are they so put out when a way of making life easier and saving money on computers is offered?

Nicholas Lintott

● There's no easy answer for schools—whatever they buy will be totally obsolete by the time today's eleven-year olds leave to try to get jobs! Maybe they're better off making do with rooms full of secondhand computers and software until the Intel vs PowerPC and Apple vs Microsoft tussles throw up the next 'industry standard' we'll be saddled with for the next ten years.

## AUTO Folder Order

Mark Baines - Beginners' Forum STA 44

**I** It isn't quite true to say that files are loaded in the order in which they "physically appear on the disk surface". What matters is the order in which they appear in the auto folder directory. The two will be the same if files have been copied in one after the other without any moves or deletions, but once a file is removed from the folder its directory entry becomes available for the next file to be copied or moved in. This process can be employed to manipulate the order of files in any directory and Autosort and the file sorting function of Mouseboot uses some variant of this to re-order the folder without actually "physically" copying each file.

My copy of Autosort is not the one on DMG.23 or 27 but another one which enables any directory to be re-sorted, including the root directory—useful for accessories.

Alan Kennedy

## Programming Overload?

Keith Powell - Forum STA 44

Jon Ellis - Forum STA 45

Mark Butler - Forum STA 45

J F White - Forum STA 45

Guy Patterson - Forum STA 45

**I** About the contents of ST Applications.

Firstly, I really like the magazine and have subscribed to it since before its new name, but I too had a good think before renewing my last subscription.

The reason for this indecision was twofold. Firstly I recognise Keith Powell's point about programming and some of the arcane subjects covered. I am no sort of a programmer really and I am quite happy to admit that sometimes I don't even understand the subject matter, never mind follow the logic of the solutions. This does not bother me at all, in fact I quite like having a magazine that is prepared to deal with queries in depth. However, I did enjoy the series on GFA Basic and followed it with interest. It ended, I thought, just when it had started to get useful. It had dealt with the very basics but there seems to be a massive gulf between where that series left off

and the 'easy bits' from Programmers' Forum.

The other thing is that I wonder about my dedication as an ST enthusiast. I am afraid I am becoming just another computer user. I bought my ST years ago not because I gave a hoot about Atari but because I wanted a Mac and couldn't afford it. Like most other people, I suspect, I have looked at other machines and wondered if I should be buying a PC or a Mac and have come to the rather boring conclusion that my ST does everything I need. Even the software I use is fine with me—none of it the latest version. Basic word processing is First Word Plus or increasingly often Protext. If I want fancy fonts and layouts it's Calamus. I have yet to see anything to do my work better on any other machine. Colour is of no use to me and whilst I am sure the Falcon is a nice computer, I don't know how its features would make much difference to me.

I have tried to want more and better programs but can't quite do it. I bought Mortimer and liked him at once but Protext didn't like him and even the normally placid Superbase wouldn't run from his RAM disk so gradually I returned to my mixture of Turbo ST, UIS III, a PD mouse accelerator and occasional ram disk.

The same happened with shareware titles. I tried Kandinsky and was pretty underwhelmed; Idealist is very clever but in practice I don't use it. So you see that the problem is not whether STA is too boring for me but whether I am too boring to benefit from it.

Nicholas Lintott

**I** Unlike Keith Powell (STA 44) I have no hesitation in enclosing my cheque for another year's subscription to ST Applications. Mr Powell's vitriolic onslaught against Jon Ellis, programming in general and the level of articles in ST Applications—for that's what it was—was unfair, narrow minded, and at worst, completely selfish.

Mr Powell will doubtless agree, along with virtually all other Atarians, that if there is one thing that the Atari scene requires, it is a constant flow of top quality software, both commercial and public domain. There is only one mainstream publication which supports the people who provide this life blood to Atari computers, and that is ST Applications.

Programmers' Forum may only be directly accessible to the technically aware, but it is the only reliable source of this type of information available to those not connected to the Internet. The technical level, is, as the editor stated, self regulating. There are plenty of books around which discuss the basics of ST programming, so few people are going to ask questions for which the answers are easily available. The information Jon Ellis provides is in response to people who are stumped by a problem, and those problems are obviously going to be of a very technical nature.

The apparent focus on C is easily explained. Like it or not, C is the most convenient language to program Atari computers in, simply because of the way TOS and GEM have been designed. BASIC and the other languages have their places, but when performance and power are required, C and assem-

bly language are the only two languages to work with.

Mr Powell asks that no one recommend him to change magazines. Well that is a shame, as there are three magazines on the news-agent's shelves every month which, over the last year or two, have changed style in order to support people exactly at his level. He may not understand statements such as "When the pipelined architecture of the DSP and the 32K words of zero wait state private RAM are taken into account...", but there are plenty of people who do, and it is these people who really benefit from reading ST Applications. If Mr Powell wants to understand the basics of Devpac DSP without the heavy technical element he should check out the review in ST Review, which doesn't cover the detail, but does explain the concepts as it goes along. If he doesn't like the editorial style of that magazine, well that is unfortunate, but probably not as unfortunate as changing the technical level of STA so we have four monthly magazines, all with the same content, all aimed at the same people.

As you have probably guessed, my opinion on which way the level of STA should be moved is the opposite to Mr Powell. I would like to see more technical content, and I firmly believe that sections like Beginners' Forum are a move in the wrong direction. The glossies have covered subjects like RAM disks and archivers over and over, and having Mark Baines regurgitate the Superboot manual is simply a waste of space which could be used for original material.

If this letter just serves to cancel out that of Mr Powell, I would be happy. I am satisfied with the balance of STA, and have never felt the need to write before. If, however, the level of content is moved several steps down the technical ladder, I and many others would be deprived of a valuable and highly enjoyable source of information.

Derek Fountain

**I** Mr Keith Powell is taking up some serious subjects for discussion in his letter: How much of the articles should be taken up by specialist subjects, such as programming? How advanced should STA be?

As I see it, STA has to deal with specialist subjects, since no other magazine does and there is a very limited output of advanced literature for the Atari range of computers. But of course there has to be a balance. Mr Keith Powell is quite specific in his criticism by mentioning programming and I agree, there has been a shift towards more BASIC and C in STA. What I mean is that programming has nothing to do with the different languages they are implemented in. You can even program without having a digital computer, which was what they did during the nineteenth century in the textile industry. Programming is just a way to solve a problem, an algorithm. Since there are plenty of tutorials about BASIC, C, Pascal etcetera, the programming sections in STA should focus on the algorithms instead of the languages. This is something Jon Ellis is doing but unfortunately a lot of the pages are taken up by program listings in C. Instead Jon Ellis

should skip writing the algorithms in C and instead concentrate on the Atari specific (read GEM) problems and list them in a more general way. It is not even necessary for every listing to be for an executable program.

I am not a C programmer myself and it would be a bit easier for us non C programmers to implement the algorithms to our languages if the algorithms were listed in a more general form. This also raises another question: Why isn't there a tutorial in GEM-programming? There certainly exist people that are competent enough, Jon Ellis is one of them. A good tutorial in GEM would lessen the need for such a large part of programming in STA. These sections could then really be a Programmers' Forum in its right sense. My advice is that Jon Ellis edits all his articles together to make a book out of them. This would be a good start to a tutorial in GEM programming.

Keith Powell criticises the reviews of different programming languages—he mentions Devpac DSP. I think that the critics are unfair. We must allow subjects that we are not interested in to get a larger proportion of STA once in a while, but of course not all the time.

I do not know if STA has become more advanced since I have not been with it from the start, but I do not find the magazine too advanced even if I admit that I do not understand everything. I think that most of the writers have been writing for STA a long time and they have worked with their Ataris even longer. It is easy for them to assume that every reader has read all the articles in their series from the start, and that the readers have gained just as much knowledge as they have. This results in the articles being more and more advanced. The editor of STA mentions in his reply that it's in the nature of magazine columns that they become self-regulating. This is a very important point. We must not forget that it is us, the readers of STA, who decide what should be published and not. We must not wait for other readers to write letters to the authors about suggestions and questions, we must do it ourself. The more letters that demand the same kind of articles the larger the chance that that topic will be dealt with. To end this rather long letter I would like to use the same words as Keith Powell did: ST Applications is still the best ST magazine by far.

Jonas Möller Nielsen

## A Basic Dilemma

**Q** I'm currently using ST Basic to learn to write some programs and I would like to know more about GEM. Also, can you tell me if there is any way to compile finished BAS files into executable programs?

Adrian Wherry

● The original ST Basic was never a popular programming language, mainly because its user interface was appalling and the interpreter was riddled with bugs. The ST Basic manual gives some details on accessing GEM

from within ST Basic—you should be able to pick up a copy of this for a couple of pounds: try Gasteiner.

But there is precious little point in spending even this amount on ST Basic. You'd be a lot better off buying Power Basic from HiSoft, or a secondhand copy of First Basic (as supplied 'free' with many STs) and a copy of the HiSoft book cum manual called Your First Basic. The documentation for both is pretty good for Basic programmers who want to get into GEM programming. All HiSoft's versions of Basic can load your ST Basic programs with little or no modifications.

If you want to compile your Basic programs (i.e. convert the BAS file into a PRG file) then you will need a copy of HiSoft Basic. The current version costs £79.95 direct from HiSoft (0525-718181), or if money is tight look out for an earlier version secondhand.

You should also consider GFA Basic as an alternative; you can contact GFA on 0734-794941.

## Desktop Discussions

William Hern - STA 41  
Graeme - Forum STA 44

**I** Graeme and I agree on one thing at least—the Jaguar in its present format would make a lousy computer. Should Atari choose to put in a more powerful general purpose processor than the 13 MHz 68000 currently deployed in the Jaguar console then my criticisms of its computing power would of course disappear. However, unlike Graeme and Doug I don't regard this as a given.

While I agree that the Tom and Jerry chip-set teamed up with a 68040 would make for a pretty powerful computer, I still don't think that this is the route to take. First I feel that it is high time that Atari ditched the 680x0 series. The future life of the series is limited—Motorola have stated that the 68060 will be the last in the family. It would be much better to go with a processor family that is just starting out—the PowerPC for example.

Second (and this I realise is very much my own personal opinion—what else after all are columnists paid to provide?), I don't particularly like the idea of specialist chips in general purpose computers. Sure they provide impressive performance in the short term but longer term I believe that they can become a liability. Take the Amiga for example. The specialist co-processing chips such as Copper and Denise provided impressive functionality at first but gradually as successive Amiga models came out with faster central processors they became a bottleneck. If the central processor can blit a memory segment faster than can the dedicated processor what is the point of using it? The 'clean' approach where the central processor is responsible for most tasks has served the ST and the PC families extremely well.

Graeme also feels that TOS is perfectly adequate to use in future, saying that it has come a long way from its CP/M 68K roots. If that is so, how come I still can't have filenames longer than eleven characters?

There is also the issue of multi-tasking. It is very hard to turn an operating system that was single-tasking into a multi-tasking one. Look at the trouble that Apple is having turning their Macintosh System software into a true multi-tasking OS. MultiTOS is good but it still has to make sacrifices in order to remain compatible with existing ST software. As a contrast look at the features provided by OSEs such as OMEN and SMS2 which didn't have to make this allowance.

The point that I have made several times in my columns is that sooner or later compatibility becomes more trouble than it is worth. Look at the problems Intel is having in coming up with faster versions of the Intel x86 family. New processors such as the PowerPC are able to match their performance using simpler designs and far fewer transistors. The ST has reached that stage in my opinion—Atari would be much better starting from scratch, using all the latest technologies and coming up with the fastest machine possible. Using the computer's additional processing power perhaps an ST emulator could be written—much like the ZX81 and Spectrum emulators that are available for the ST.

I remain convinced that the best approach for Atari would be to start over again with a new architecture and a new operating system. I'm sorry that Graeme feels that this is unimaginative. I disagree—evolution is easy, it's revolution that takes guts. In any case I don't think that Atari has been particularly imaginative with the evolution of the ST over the past ten years. Remember, this is the company whose grand idea for differentiating the Falcon from the ST was to give the Falcon a different colour of keyboard.

William Hern

## Imagecopy Tips

**I** With Imagecopy 3, I configure the ACC version to give me 3.5 inch wide screen dumps from ALT/HELP, thus allowing about 8 images on A4 if the paper is inserted upside down for the second 4 images. CONT/ALT/HELP gives the screen dump to disk.

I set the Catalogue option to give 1 inch wide prints, thus allowing about 45 images per A4 sheet. I configure the cut down version (that does not recognise JPEG files) as a second accessory to give me 6 inch wide dumps to printer; this is useful for printing text from selected parts of README files, or records of Desktop layout, etc. This does not seem to interfere with the first accessory having the SAME NAME, as SHIFT/ALT/HELP is configured here. I thus have a quick choice of 3 image printing sizes, without having to adjust the defaults.

N W Scott

## PhotoCD

**Q** Many thanks for the Imagecopy 3 which I recently received. There is only one word for it: "brilliant".

Now, can you help me, a youngster in my 74th year? Where or how can I get photos of my own put on a disk in a suitable format to enable me to use with Imagecopy 3?

S G Coles

● If you have a lot of photographs to transfer—or someone is paying you to do the job—then the best option is to invest in a CD ROM drive. Expect to pay around £340 for an Apple CD300 drive complete with cables, software and interfaces. System Solutions (081-693-1919) can supply plug in and go setups.

High street shops such as Boots can copy your slides or negatives to PhotoCD format on a CD ROM. For specialist or professional work it can be worth paying a bureau to process your pictures—expect to pay £5 per picture for this level of service as it takes as much time as enlarging a photograph by hand.

If you can't justify the cost of a CD ROM then take a look at our Photo2Disk advert in this issue of ST Applications.

### Psion/ST File Exchange

I Chris Phelps reports problems sending batch files using Y-Modem. I find that Vanterm will receive batches of files using Y-Modem at 9600 baud without problems providing you don't try to send duplicate files (this results in an error being reported). I have recently backed up all my Psion internal files; data bases, WRD documents and spreadsheets this way, by first selecting 'transmit' and then 'tagging' the batches in the directory display.

It might work faster than 9600 baud but I have not bothered trying. I am just delighted that it works at all!

Mike Playle

A I have read recent letters regarding the transfer of files between a Psion Series 3a and Atari. I have used both Dterm and Uniterm to transfer files and found both to be adequate.

I have written a Uniterm macro and a Psion Comms script which provide a list of menu options for transferring files, allowing the transfer of upto 6 directories at once.

I am willing to provide these files to other users if they send me a disk.

Craig Dodson  
45 Greenshaw Lane  
Patrington  
Hull HU12 0RL

### Atari Portfolio

Q How pleased I was to see an article on the Atari Portfolio Pocket PC. I also use my Portfolio all the time, after a few teething problems that is (every time I plugged it in or removed either the serial or parallel interface it would crash—and yes I did follow the instructions to the letter). However, after copying a friend's auto-boot folder and installing the program 'Update Com' it rarely crashes. All this infor-

mation is on my memory card, together with a further backup on disk via my Atari 520 STE which brings me to the points of this letter.

One of the best contacts I have made is the Portfolio Connection Club based in Oxfordshire, who do a vast range of software and hardware, with newsletters, for sale lists, tests on Portfolio, and a help line. The telephone number is 0491 833312.

At the Atari show last month in the Novatel Hotel I purchased a second Portfolio for £50 without instruction book. Now I have one Portfolio at home and the other in the office and only need to take the memory card backwards and forwards to work (much easier on your pockets).

Data transfer between Atari Portfolio and an ST was only briefly touched on in your article. It is extremely difficult, but sometimes possible using a parallel 25-pin D lead connected to the printer port on the STE, and the parallel interface in the Portfolio. I now have the software called PORTLINK by a German company, which turns one of the computers into a slave computer, so you only have to type in the commands once and the software does the rest.

Can anyone answer the following queries?

1. The serial transfer I have tried repeatedly but to no avail, so I would be very interested to know how Mr Curtis transferred data to his ST Falcon.

2. With my set-up which would be the fastest way for data to be transferred—serial or parallel—and which method or program should I use to achieve the transfer of information?

Also, Mr. Curtis did not mention the hardware called Universal Interface by BSC from the USA. This plug-in interface has both serial and parallel connections, and also a 512K ram (it works as a B drive) with approx. 128K of programs, like the program which connects the special 20MB hard drive to the Portfolio. XTERM 2 the Comms Program—the FILE MANAGER which makes the Portfolio even easier to use, with many other programs all built into this 128K chip. So with this 512K ram and a 128K memory card, I have 700K of available memory.

Thanks for answering my earlier letter, and thanks for the article by Mr Curtis—keep up the good work.

Paul H Finch

### User Groups

Q There are various Atari User Groups. There is a Falcon User Group, A Calamus User Group, Local Area User Groups and, for all I know, maybe there is an Opus Friendly Society out there somewhere.

Recently I wanted to contact one of these groups. The only way I could start was to hunt through my back issues of STA in the hope that the relevant advert or article would hit me right between the eyes. It didn't. That got me thinking: STA should publish a column listing existing minority interest contact groups together with their names, telephone numbers, and addresses. I am aware that User Groups

arrive with a bang and leave with no notification, so I would suggest that any such listing omits any group that has failed to register their presence during the past three months.

John Ridge

● Any User Groups are welcome to a free listing in the General/Contacts sections of the Classified Advert pages in ST Applications each month. There used to be enough user groups to fill a whole page but time has taken its toll. Encouragingly, though, the number of Atari-based BBSs has grown to the point where they now get their own column in the classified pages.

### Places of Interest

M Wirth - Forum STA 42

I You have kindly printed my contribution 'Places of Interest'. At the bottom you presumably meant that the files would be in disk mag DM.41; in the event no files appeared on DM 41!

M Wirth

● Sorry, triple trouble with this one. The files are now on DM.43.

### SM124 Monitor Problem

Patrick Middleton - Forum STA 39

Mark Glanfield - Forum STA 41

Chris Snowden - Forum STA 42

I I have an SM124 mono monitor circa 1991 that was purchased second hand from a PC defector relation. The monitor was a known quantity and had seen only very light usage and the price was right.

However, when I first connected the monitor to my 4meg STE I was very disappointed at the small display area in the centre of the screen. I could vaguely remember reading something about this problem in Your Second Manual by Adreas Ramos, and so I set about hunting for my copy in the attic. Having found it (the book, not the attic) I set about following the instructions for enlarging the display. It turned out to be a relatively simple operation and the display now only has a border of about half an inch all round.

The SM124 stayed connected to my STE for the following two weeks until one of the children wanted to play some games, so my Phillips CM8833 II had to be reconnected. This caused a major upheaval as my desk is rather congested and so a solution to the problem had to be found. In the initial period the SM124 had shown no problems at all having a rock steady display every time it was switched on.

The answer to the connecting problem was easy. All it involved was purchasing a common or garden monitor switchbox, but connecting this switchbox created a problem of its own. Yes, you guessed it, the screen rolls for quite a while when the monitor is first switched

on. It has been like it now for about eight months and doesn't seem to be having any detrimental affect on the SM124.

I have twice connected the SM124 directly to the computer since and each time the display is rock steady from cold.

J T Barrow

**Q** Both of my SM124 monitors have recently acquired rather unstable displays. On one, there is a rippling or wavy effect noticeable only on the grey background of the desktop. On the other, the whole display shows a jittery effect, the display moving at random. This monitor had a very stable display till I carried it next door for my nephew the other day. It is as though it doesn't like its new surroundings. In both cases the display shows increased instability if one jiggles the monitor lead and it is possible to reduce but not completely stop the instability by finding the best position for the lead. Can anyone tell me what is going on? Are these monitors dying?

Stephen Kingdom

● Atari SM monitors suffer dreadfully if placed too close to a TV or colour monitor. Are you sure that the new monitor location is well away from possible sources of electromagnetic interference?

On a very looseley related topic can anyone explain the logic behind the radio interference produced by the LCD screen on a Stacy? For instance, with a document loaded into Redacteur radio reception only marginally deteriorates; go to open a file and a bit of white noise is evident; close the current document to get the Redacteur desktop and the interference obliterates the radio reception. The noisiest part of the Redacteur desktop is the font table. Playing a white noise tune by moving the cursor around a document is fun for a while but a solution would be more satisfying long term.

### Desperately Seeking Atari

**I** Having just come back from a trip to London and Washington I am feeling even more depressed about the prospects for Atari.

I was mainly looking for software but the search proved almost fruitless. The Virgin Megastore which used to have heaps of Atari software had about a foot of shelf space devoted to the ST hidden away amongst miles of IBM, Sega, Macintosh and Amiga software.

None of the other big four software shops had any Atari at all. The HMV shops had tons of software for the other platforms and my heart picked up when hidden away in a corner I saw a display of Jaguar Boxes with the Mount Fuji Emblem. It's a pity that that's all they were—empty boxes. The salesman said they had no stocks and didn't really expect any. He directed me to the new Philips Multi Media Machine which is CD based and plays music, movies, and CD Rom based games. It was supplied with heaps of software and was selling like hotcakes. The Salesman volunteered the information that it would be unwise

to buy the Jaguar because there would be no backup and only a handful of software titles.

In desperation I wandered around to Tottenham Court Road to Silica Systems where I bought my STE back in 1988. They have expanded countrywide though the Debenhams Department Store chain, but the bad news was that they have dropped Atari, and they used to be the country's main Atari suppliers.

Two of the old backstreet software clearing houses which used to support Atari had folded and I ended up having to order the copy of Graham Gooch's Cricket which my son wanted via mail order.

I had to visit about half a dozen newsagents to find ST User magazine and could find ST Format only at a specialist Computer Book Shop.

I don't know my way around Washington as I do London but I visited ten different Computer and Software Outlets in DC and at the huge Pentagon City shopping centre and none of them stocked Atari products. Nobody I spoke to had even heard of the Jaguar and five days of watching television, and trolling the newspapers (including a special fifty page computing supplement in the Sunday Edition of the Washington Post) did not turn up a single Atari ad or reference. They laughed at me when I asked about Atari magazines in the newsagents.

Peter Cave

ACE NSW, Australia

### ASCII Conversion

Anne Strachan - Forum STA 36

Colin H Stacey - Forum STA 40

**I** The subject of importing ASCII text into DTP or word processing programs merits some further discussion.

Word processors are able to reformat text because they distinguish 'hard' returns, i.e. the new lines or paragraph ends inserted by the writer, from 'soft' returns inserted by the program's word wrap function. Word Perfect for example uses carriage return (ASCII 13) for soft returns and linefeed (ASCII 10) for hard returns. Some word processors (ST Writer) do not store soft returns in the file at all, but work them out on screen or during printing according to the line length set in the current paragraph layout.

Text editors rarely make any such distinction; when (if) they wrap text, they delete the space the writer types at the end of the last word in the line. Their usual way of distinguishing paragraphs when reformatting paragraphs is to look for a double carriage return—that is a blank line; lists of items such as program listings are likely to be turned into single paragraphs.

There are other ways of attempting to detect formatting. Edhak counts an initial indent as marking a new paragraph corresponding to the other convention for distinguishing paragraphs (as used in ST Forum). Word Perfect attempts to format imported ASCII text by treating any line end in the hyphenation

zone as being a soft return; this depends on the line length of the imported text being the same as that set up in Word Perfect. Full stops, question marks, etc., at the end of a line are a fairly reliable end of paragraph marker, as are hyphens or other 'bullet' markers at the beginning of a line.

First Word and Mortimer do not delete the trailing space before wrapping so that soft returns are marked by "space-carriage return-line feed" instead of "carriage return-line feed". These files are easy to reformat since this method provides a reliable way of identifying paragraphs which does not depend on blank lines.

I would like to make a plea that all text editors should adopt this convention, deleting trailing spaces when the return key is pressed but never otherwise.

Such files can be converted to ASCII without soft returns by replacing "space-carriage return-line feed" with "space". This document is written using Mortimer and should respond to this treatment even without blank lines between paragraphs. The only difficulty arises if there are indented paragraphs; these can be dealt with by first replacing "space-carriage return-line feed space/tab" with "space-carriage return-line feed" and repeating the operation until there are no leading spaces left. In a reasonably tidy document with consistent indentation this can be done in one operation.

An alternative convention is to mark hard returns with an additional carriage return—that is with "carriage return-carriage return-line feed" which has the effect in some text editors of marking paragraph endings on the screen with ". Everest can work this way or with trailing spaces. Either convention retains the necessary feature of ASCII files that they can be displayed on screen or printed out more or less anywhere.

Alan Kennedy

### Still Onboard

**I** When I purchased my STE as a "Managers' Special", it was with the intention of keeping it for a year or so, then selling it on to buy the biggest, fastest PC I could get. I did not intend to buy software, or add-ons, beyond the cheap upgrade to 1 Meg of RAM. I received no manuals or software with the machine, except for something called Dragon's Breath. I did have some coverdisk software, and a few copies of ST Review and ST Format. Two letters to Atari HQ for a copy of the start-up software were turned down as I "didn't need it". Is not manufacturer support a wonderful thing?

However, by trial and error, and from reading the magazines, I learnt to use my machine. Timeworks appeared on a mag cover, and I spent a lot of time making letterheads, etc. Useless effort, as I had no printer, but I had fun. I bought a few games, mostly flight sims as that's where my interests lie. I bought some PD, Astronomy stuff, etc.

All my workmates with computers have Amigas, although half of them have only ever

used them for games, and some have grown bored entirely. PC's are also in use. Many jibes were fired at me for running an Atari machine, but I always did go against the flow. This year was decision time, however, and I let my subscription to ST Applications lapse while I decided. The result of my deliberations is that on 30 of July this year I drove to the Bristol Atari Show, and bought a 127 Meg drive and "MagiC" from System Solutions, and a pair of SIMMS from Best Electronics, bringing the total RAM to 4 Megs.

I am perfectly happy with my ST, as it performs all the tasks I require now that I have a Bubblejet printer. The dearth of new games is not a problem as I have enough, and the lack of new titles makes me use the ones I have, rather than look for new ones. "Timeworks 2" takes care of my DTP needs, although it is rather slow to print out. I have made new contacts, and received excellent service from you and other PD libraries. Software is available for me to pursue my hobbies and other interests, although some of it is a bit dear, I think.

I shall therefore be sticking with the Atari platform, and would advise others who would abandon it for the IBM market to think again. I feel that only those with a professional need for a computer may be better served by PC's and Mac's, generally because their output is better, and others in the business world will expect to see those kinds of machines in a business setting. I doubt that I will be getting a Falcon in the near future, as it is too expensive for me, and still has not established itself properly. Perhaps the much discussed Jaguar computer will be worth waiting for, but I'll believe it when I see it! As long as enthusiasts use the ST it will remain alive, and as long as we buy products for it, someone will produce them.

Paul L Cass

### Calligrapher

**Q** My concern with Calligrapher is from the letter (Applications Issue 41, p44) reporting that, in time, CACHE.CAL cannot be properly deleted on a floppy, so that eventually a fresh disk must be used for the CACHE.CAL files, and the original floppy disk can then only be used for something unconnected with Calligrapher. If that is the case, then a hard disk partition must also get corrupted resulting in an UNerasable file. No way do I wish to reformat a partition, let alone the entire Hard Disk! (I have 210Mb internal, plus 240 Mb external Hard Disk space, with some 150 different applications and data installed.)

N W Scott

**Q** I use Calligrapher with a hard disk and an STE with 4mb of memory but I am having trouble with the spell checker. Reading the manual does not help because it merely states how it operates and does not seem to be of any use to solve problems.

I have the English, Spanish and Catalan PAKs which I understand cannot be modified.

My documents are a mixture of Spanish and English texts so when I spell check the document using the Spanish dictionary the unknown words are mainly the English ones. My understanding of the spell checking system is that any words not contained in the open dictionary can be saved by pressing "LEARN" when the checker indicates that the word is not known. Following this, the words should be saved in a file called "USER.CAL". This file is included in the directory but I do not know how to load the file to examine its contents.

My system does not seem to be saving the words because a document checked today when checked again shows that words which should have been "LEARNT" are still unknown. But if I try to "Maintain" the directory I find that the words are known but are not being recognised and in many instances there are several identical words shown where I have saved the same word more than once. Furthermore when I try to delete a word the system bombs out with three bombs.

Can you, or any of the readers, give me any help or advice in solving these problems please?

Herbert Spencer

### Artificial Intelligence

Robert Coare - Programmers' Forum STA 44

**A** 'Real' artificial intelligence is best implemented by scoring each of the possible positions which could arise after a character has moved, then picking the move which gives the highest score.

This is how, for example, computer chess is implemented. A considerable complication arises when the program has to consider the opponent's reply, and its counter-move to the reply and so on, but this is unlikely to apply to the circumstance cited by the reader.

Simulated neural networks appear to be irrelevant in this case.

J. White

### AtariWorks

**Q** I am having problems with elongated circles! This happens when AtariWorks prints out its pie charts, and also with circles and ellipses drawn with Easy Draw and imported into Atari Works. It seems only circular images are affected.

I contacted Hisoft and I was sent some new printer drivers, but none of them worked. I'm wondering if my program has a bug as it works fine otherwise. Has anyone else had this problem? My printer is a Citizen Swift 200C.

D Smith

### Boot Bombs

**I** Each fifth or tenth boot, I have experienced boot crash, most often with two bombs in the middle of the boot sequence. The trouble disappeared after a warm reset. Not alarming but a little uncomfortable. My system is an STE with TOS2.06 and SM124. Having no harddisk, I keep my boot configurations as short as possible. I have also experienced similar boot troubles with older versions of TOS.

On the Mortimer Deluxe disk sold by the ST Club, I found the solution to my problem: DESK-STK.PRG, a small AUTO utility. From the time I have had it at the beginning of my boot sequence I have not seen any more boot bombs. And I am able to run all other auto-programs and ACCs with fast load bit ON, so reducing my boot time to a minimum.

There is a German DOC file about DESK\_STK. It says something about some resolution parameters getting overwritten because of a too small buffer. In fact DESK\_STK just makes that area about 1K larger. Nothing else.

Since DESK-STK is a very short program, only 138 bytes long, I have made the HEX dump listing shown below. Just type this carefully in an HEX-editor and save the 138 bytes as DESK\_STK.PRG to get your own copy at once.

Paul Dion

### Saving the Time

**I** On my 1040STE (TOS version 1.6), I find that provided there is an AUTO folder (with an auto-folder program in it) on the boot disk or in the boot partition, the time and date are preserved over a reset (i.e. whether one presses the reset button or resets from the keyboard), provided that the power is not switched off. It even works with the file DUMMY.PRG from Fontkit; this program does nothing more than load and exit! Perhaps everyone knows all this, but I have never seen it mentioned.

Leslie W Dewhurst

### HD Floppies

**Q** I am wondering why the PC standard has a directory length which together with FATs and bootsector makes an uneven number of sectors. This leaves an unusable sector at the end of the floppy. Why? Is it a requirement of the PC Virus Makers' Association?

Would it not be easier for the system to run with whole clusters within each track as is the case with DD disks? Or is the point that one should use single sector clusters?

Paul Dion

```
60 1A 00 00 00 64 00 00 00 00 00 04 04 00 00 00 00 00 00 00 00
00 07 00 00 48 7A 00 22 3F 3C 00 26 4E 4E 5C 8F 20 6F 00 04 20 28 00 18
D0 A8 00 1C 90 90 42 67 2F 00 3F 3C 00 31 4E 41 41 F8 04 FE 22 50 0C A9
58 42 52 41 FF F4 66 0C 4A A9 FF FC 67 06 41 E9 FF FC 60 E8 45 FA 00 10
24 C9 20 8A 4E 75 58 42 52 41 42 74 46 78 00 00 00 00 2A 4F 4F FA 04 0A
2F 3A FF F4 50 97 4E 75 00 00 00 00 51 44 42 31 00 00.
```

# Programmers' Forum

In this month's edition of *ST Applications'* regular programming column, we continue our series on how to program modules for Atari's extensible control panel by looking at a useful CPX for Falcon owners...

## A more complicated CPX

After last month's gentle introduction to the basics of CPX programming, we move on to something a little more demanding. The program that provides the listings this month is

a CPX for setting the Falcon's boot-up configuration. Whilst not of direct utility to non-Falcon owners, the source code should serve as a good template for development of other CPXs.

Boxes 1 and 2 contain background information on the Falcon's configuration system. Box 3 describes how to get the CPX compiled and installed.

Turning to the listings, Listing 2 contains the complete source code for the NVRAM editor CPX. The first thing to notice is the large amount of embedded resource data. As the screen space available to a CPX is so limited, conducting an extensive dialogue with the user is difficult. The simplest solution to this problem is to have a hierarchy of dialogue boxes within the XControl panel area. The first box forms a menu, from

which the user may descend to lower level boxes. As an example of this approach, FontGDOS uses at least 3 layers of forms to give the user access to all of its features (Figure 6).

The NVRAM editor adopts a slightly different approach. It has three panels that the user can edit: Video, Keyboard and Date. Since there are only three displays, a top-level 'menu' dialogue is omitted, and a serial interface used. The Video box gives access to Keyboard, which gives access to Date, which gives access to Video and so on (Figures 3,4 and 5). At any point on the list, the user can close the CPX, write changes to the NVRAM, or clear the NVRAM contents.

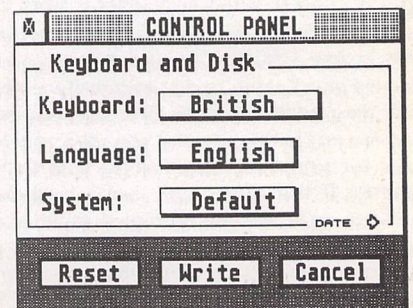
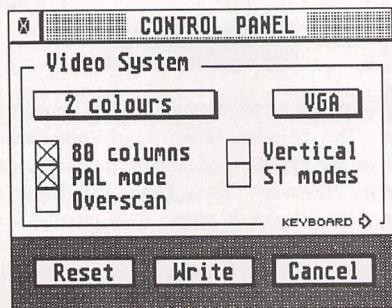
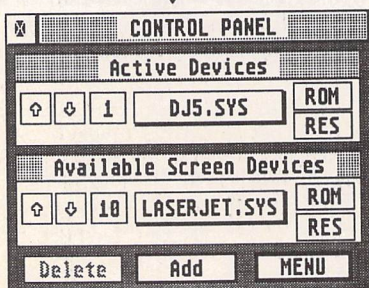
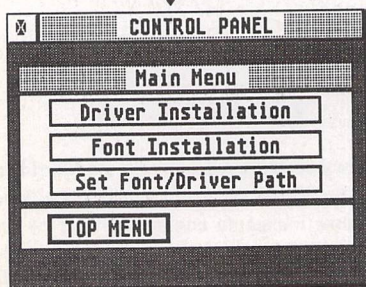
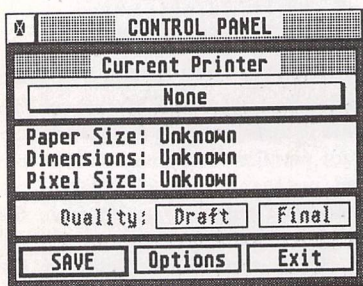
## Program structure

The program code can be grouped into three main sections: resource data and code to animate the interface, code to interconvert between the program's variables and the values in the NVRAM and finally, specific CPX code.

The interconversion code is straightforward bread-and-butter stuff. The CPX keeps a copy of the NVRAM block in memory, and only writes it back to the system when requested. From the values in this memory area, the program variables are set by the function `read_NVM()`. These variables are then further processed to determine the appearance of the dialogue box. This is performed by `configure_box()`.

A detailed description of the NVRAM data handled by the CPX is given in Boxes 1 and 2. After reading this, the bit-twiddling details of the code should become clear. Note that the program treats the NVRAM block as being made up of 16-bit words rather than bytes—this is just for convenience in data processing.

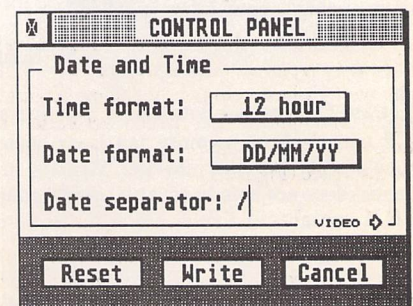
The reverse operations are performed when the CPX is to write to NVRAM. First the states of the dialogue boxes are analysed and program variables updated using `read_box()`, and then the copy of the



Above and right: Figures 3, 4 and 5:

The three screens of the CPX allow access to useful locations in the Falcon's configuration NVRAM.

Left: Figure 6: The FontGDOS CPX uses a hierarchical approach to its user interaction — so many screens...



NVRAM block is set according to these variables (evaluate\_vars()). The updated buffer contents can then be written to the NVRAM in a single NVMAccess() call.

### Resource matters

Moving on to the resource and interface code, the important point to grasp is that each of the three display panels is implemented as a separate object tree occupying the XControl window. Such an approach has a fundamental influence on the design of the rest of the program. Some of the effects are quite subtle, and so are discussed in depth.

The currently-visible panel is controlled by the value of the global variable 'page' (0 = Video, 1 = Keyboard, 2 = Date), and addressed by the OBJECT pointer 'box'. The update\_panels() function ensures that the value of 'box' correctly tracks 'page', and also keeps an eye on the ob\_x and ob\_y fields of the displayed panel. The reason for this is that if the user moves the control panel window, XControl does not send a form CPX a message telling it of this event, it simply updates the ob\_x and ob\_y fields of the root object. Most form CPXs never have to worry about this. However, since the NVRAM editor changes object trees on the fly, it needs to ensure that when a new panel is displayed, the new objects are correctly positioned.

Another minor difficulty is created by this multi-panel structure. Since some of the objects are the same in each panel (for example, the 'Reset', 'Write' and 'Cancel' buttons), we do not really want to have separate functions to handle each of the three panels, as this would lead to code duplication. Rather than using lots of if () statements to cope with the different cases, the CPX uses a resource data trick.

ob\_type, the field in the OBJECT structure that indicates whether an object is a string or a box or whatever, is a 16-bit word. However, the codes for the standard AES objects only occupy the low byte. This leaves the high byte free to hold other information. This 'extended object type' byte as it is sometimes known, is used by some enhanced AES toolkit packages like MyDials to provide object types not supported by the AES.

In the NVRAM editor CPX, the extended object type byte is used to store one of five values: CROSSBOX, NEXT, RESET, WRITE and CANCEL. These are used to process objects without needing ascertain which panel is displayed: for example an object with the extended type NEXT means 'go to the next panel' regardless of whether it is object number 13 in the 'Keyboard' object tree or number 20 in the 'Video' tree.

After the switch statement that processes extended types comes some of the if () statements whose numbers we were attempting to minimise. These handle activation of the pop-up menus that are a major feature of the interface (Figure 7).

### CPX aspects

Initialisation of the CPX follows the same lines discussed in the previous article. Once the CPX is activated, the Xform\_do() service

## Box 1 - NVRAM

On later Atari machines such as the TT and Falcon, various configuration options are stored in a small area of RAM outside the normal memory map. This memory is powered by a battery, so its contents are preserved when the machine is turned off: hence the name non-volatile RAM or NVRAM.

The 50 bytes of memory in the NVRAM block reside on the real-time clock chip. To access them a XBIOS function, NVMAccess(), must be used. For those without an up to date set of operating system bindings, NVMAccess() has the function code 46. The function call looks like this:

```
result = NVMAccess(mode, start, number, buffer);
```

The three operations supported by the function are reading from NVRAM into normal memory (mode 0), writing from memory into NVRAM (mode 1) or clearing the entire block (mode 2). The read/write calls process a block of 'number' bytes of NVRAM beginning at byte number 'start'. 'buffer' is the address of a buffer to read NVRAM data into/write data from.

To verify the contents of the block, the last two bytes are maintained as a checksum. As a result, there are only 48 usable bytes of NVRAM. NVMAccess() updates this checksum whenever the block contents are altered by a write or a clear.

NVMAccess() returns 0 if all went well, -5 if one or more of the arguments has an invalid value or -12 if the checksum fails. In the latter case it may be necessary to clear the NVRAM and start again.

### NVRAM Assignments

As usual, Atari have been reticent about the details of what is stored in NVRAM. The information needed to write the NVRAM editor was garnered by experimentation on a TOS 4.02 Falcon—it is possible that other machines (especially the TT) may use the area differently. If anyone has any further data on the subject, please write in and share your information.

To assist in the dissection of the NVRAM, a small C program was used to download and print its contents (Listing 1). The code simply reads the 48 bytes of usable NVRAM into a memory buffer, and then prints the values in hex.

The following bytes were found to be active on the Falcon. Inactive bytes were zero:

- 00-01 The function of these bytes is obscure. Other Falcon configuration programs suggest that these control some aspect of the hard disk system. Values of 0x0000 or 0x0080 are held to be compatible with the TOS filing system, whereas 0x0040 is alleged to be something to do with UNIX. Fiddle with these at your own peril!
- 06-07 These bytes hold keyboard and nationality configuration data in the same format as the \_AKP cookie (see Box 2). In fact, the data held in these bytes is used to construct the \_AKP cookie during boot up.
- 08-09 Similar to the preceding locations, the date and time format information that makes up the \_IDT cookie is stored here. See Box 2 for more data on the \_IDT cookie.
- 14-15 During the early stages of the boot process, before the Desktop is initialised, TOS uses this word to determine the screen resolution. The value is a 'modecode': the same format as required for the Vsetmode() call. Further details can be found in any up-to-date XBIOS reference (The Atari Compendium or the Lattice C manuals) and also in the Programmers' Forum of STA 38.

**STOP PRESS**

Another useful NVRAM location was discovered just before this article went to press. Unfortunately there was no time include support for it in this version of the CPX, but the extra code should be trivial to write.

Byte 10 appears to control the length of the hard disk spin-up delay on the Falcon. Values less than 12 cause the memory test and spin-up delay to be skipped completely during a cold boot. Values of 12 or more seem to specify a delay of (x-12) seconds.

is used to animate the interaction. Return values from this call are processed by the handle\_button() function in ways already described.

The major new feature of the CPX code in this listing is the use of the Popup() service function. This is provided by XControl to manage the interaction of the user with a pop-up menu. Its input arguments require a little precalculation, which is the purpose of the wrapping code that makes up popup(). The inputs to Popup() are an array of string pointers that form the pop-up menu items, the number of items in the list, the currently active item index, a font specifier (always IBM) and pointers to two GRECTs that delineate the size of the host object for the menu (ie the button that the user clicks on to obtain the menu) and the area of screen space

outside which the menu may not fall (in this case, the XControl window area). After the interaction, Popup() returns -1 if no choice was made from the list, or the index of the item chosen. Index numbering begins at 0 for the first item in the menu list.

The strings that make up the menu should all be padded with spaces to the same length, and all should have two leading and one trailing space. The section at the top of the listing shows these rules in use. Popup() is quite smart, in that if the list is too large to fit into the usable space, scrolling arrows are automatically added to the menu (see Figure 8). The appearance of the host object needs some thought to ensure a visually-smooth animation when activated. In this CPX, the pop-up menu host objects are all shadowed TOUCHEXIT buttons.

## Box 2 - A Fistful of Cookies

One of the many differences between the Falcon and preceding Atari machines concerns support for different languages and keyboard layouts. For early machines, Atari produced a different set of TOS ROMs for each country where the computer was sold. Each country had a version with the Desktop and system text in the appropriate language, and a different default keyboard layout. The nationality of the ROMs was indicated by the value of the 'os\_conf' entry in the ROM header block.

On the Falcon, 'os\_conf' has a nationality code of 127, indicating that the operating system supports multiple languages in software. The language and keyboard configuration in use is made accessible to programs via the installation of two operating system cookies: \_IDT and \_AKP. For those not familiar with the cookie jar, STA 15 had a useful introduction to the subject.

\_AKP (standing for Advanced Keyboard Processor) indicates the system language and keyboard layout. The 32-bit value of the cookie is assigned as follows:

Bits 0-7: Keyboard layout

Bits 8-15: System language

Bits 15-31: Reserved

The language and keyboard layout specify nationalities by reference to the same code table used for the 'os\_conf' ROM identification byte (see Table 1), with the restriction that only English, German, French, Spanish and Italian seem to be supported as system languages. Also, English is supported as if it were American, rather than British.

**Table 1  
Nationality Codes**

Code	Nationality	Language
0	USA	English
1	Germany	German
2	France	French
3	UK	
4	Spain	Spanish
5	Italy	Italian
6	Sweden	
7	French Switzerland	
8	German Switzerland	
10	Turkey	
11	Finland	
12	Norway	
13	Denmark	
14	Holland	
15	Czechoslovakia	
16	Hungary	

\_IDT (International Date and Time) indicates how date and time information should be presented. For example, in the US, dates are usually written in the order M M / D D / Y Y, whereas in the UK the convention is to write DD/MM/YY. The \_IDT cookie value allows programs to find out which order the user prefers. The value is made up as follows:

Bits 0-7: ASCII code of separator between fields in a date

Bits 8-11: Date format (0=MMDDYY,1=DDMMYY,2=YYMMDD,3=YYDDMM)

Bits 12-15: Time format (0=12 hour,1=24 hour)

Bits 16-31: Reserved

## Box 3 - Getting it Working

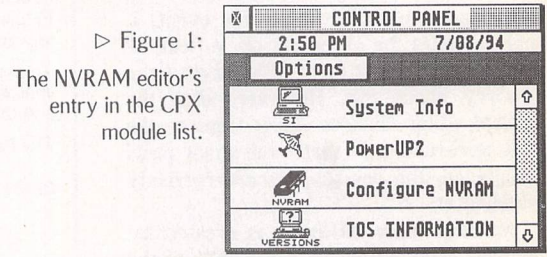
Compilation the Falcon NVRAM editor is straightforward under Lattice C. Users of other compiler systems will have to consult their documentation for details of CPX programming in those environments. Save Listing 2 as NVCONFIG.C and then compile it with the specified options.

The next stage is to construct a CPX header block using the CPXBUILD tool. Save Listing 3 as NVRAM.ICN. There is no need to compile this file, as the source code is processed directly. Running CPXBUILD with the command line:

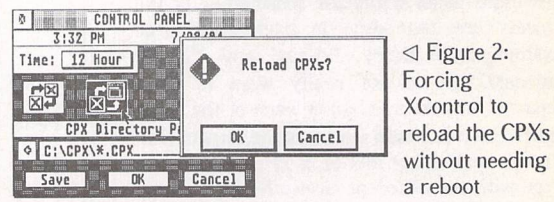
```
-b -c1 -d'NVRM' -iE:\NVRAM.ICN -nNVRAM -tConfigure NVRAM' -p1 -v1.0 E:\NVRAM.HDR
```

will create a 512 byte CPX prefix with the appropriate text and icon (Figure 1). Finally, the CPX is produced by hooking all the pieces together using the linker directed by Listing 4. The linker control file will have to be altered to reflect your setup before it can be used.

Once the new module is in the CPX directory, XControl should be forced to reload the CPXs using the Setup screen (Figure 2). A new entry should now be present in the module list, ready for use.



▷ Figure 1:  
The NVRAM editor's entry in the CPX module list.



◁ Figure 2:  
Forcing XControl to reload the CPXs without needing a reboot

## Next Month

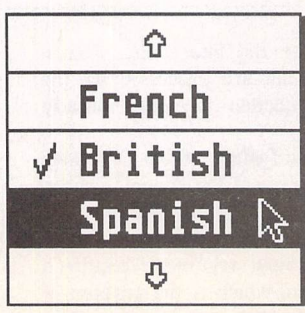
Next month, more on the finer points of CPX programming, along with a return to our regular diet of readers' questions and tips. Keep the letters coming in - the more we receive, the better the column gets! Hints on any subjects, or questions about programming problems should be sent to the address below. 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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Above left: Figure 7: Pop-up menus allow selection from a list of alternatives without needing acres of screen space.



Above right: Figure 8: Even very long lists are automatically catered for...



Listing 1

```

*****
/*
** Listing 1.
** Programmers' Forum STA 46 (October 1994)
**

```

```

** Quick program that displays a hex dump
** of the contents of the Falcon's NVRAM.
**
** 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.0 and LC.LIB to produce NVRAM.TOS.
** Written on 5 July 1994
*/

```

```

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

```

```

/*
** Define program symbols...
*/

```

```

#define NVMSIZE      48

#define NVM_READ     0
#define NVM_WRITE    1
#define NVM_RESET    2

```

```

/*
** Prototype functions...
*/

```

```

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

```

```

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

```

```

int main(argc, argv, envp)

```

```

char **argv, **envp;

```

```

{
    int f, g, offset, rows, code;
    static char ram[NVMSIZE];

    printf("NVRAM contents\n\n");
    code = NVMAccess(NVM_READ, 0, NVMSIZE, ram);
    rows = NVMSIZE/8 + (NVMSIZE%8 != 0);
    for (f=0; f<rows; f++)
    {
        printf("%02X: ", f*8);
        for (g=0; g<8; g++)
        {
            offset = f * 8 + g;
            if (offset < NVMSIZE)
                printf("%02X ", ram[offset]);
        }
        printf("\n");
    }
    printf("\nReturn code: %d\n", code);
    printf("\nPress RETURN to exit:");
    getchar();
    return(0);
}

```

Listing 2

```

*****
/*
** Listing 2.
** Programmers' Forum STA 46 (October 1994)
**
** More advanced CPX that uses the XControl popup
** menu facility to do some useful work for Falcon
** owners !
**
** Compiler system: Lattice C v5.60
** Phase 1 options: -cargfku -aw
** Meaning: Enable ANSI mode, disable trigraphs, enable
** non-ANSI keywords, assume unsigned chars,
** type-based stack alignment
** Phase 2 options: -ms -v -y
** Meaning: Optimise for space, disable stack checking,
** force reload of a4 on function entry
** Link using supplied link file.
** Written on 7 August 1994
*/

```

```

#include <aes.h>
#include <cpx.h>
#include <osbind.h>
#include <portab.h>
#include <stdio.h>
#include <string.h>
#include <vdi.h>

```

```

/*
** Symbols concerned with the NVRAM...
*/

```

```

#define NVMSIZE      48
#define EBADRQ       (-5)
#define EGENRL        (-12)

#define NVM_READ     0
#define NVM_WRITE    1
#define NVM_RESET    2

```

```

#define DISK_OFFSET  0
#define AKP_OFFSET   3
#define IDT_OFFSET   4
#define VIDEO_OFFSET 7

```

```

/*
** General symbols...
*/

```

```

#define LAST_PAGE    2
#define REDRAW       10
#define REDRAW_OBJECT 11
#define NEXT         0x01
#define RESET        0x02
#define WRITE        0x03
#define CANCEL       0x04
#define CROSSBOX     0x05

```

```

#define NUM_COLOURS  5
#define NUM_MONITORS 2
#define NUM_LAYOUTS  17
#define NUM_LANGUAGES 5
#define NUM_SYSTYPES 3
#define NUM_DATES    4
#define NUM_TIMES    2

```

```

/*
** Resource data...
*/

```

```

#define VIDPANEL 1
#define VIDCAN 2
#define VIDWRITE 3
#define VIDRESET 4
#define VIDCOL 7
#define VIDMON 8
#define VIDROCOL 9
#define VIDVERT 11
#define VIDPAL 13
#define VIDSTMOD 15
#define VIDOVER 17
#define VIDNEXT1 20
#define VIDNEXT2 21
#define KBDCAN 2
#define KBDWRITE 3
#define KBDRESET 4
#define KBDfmt 8
#define KBDLANG 10
#define KBDsys 12
#define KBDNEXT1 13
#define KBDNEXT2 14
#define DATCAN 2
#define DATWRITE 3
#define DATRESET 4
#define DATDATE 7
#define DATTIME 8
#define DATSEP 10
#define DATNEXT1 13
#define DATNEXT2 14

```

```

static TEDINFO rs_tedinfo[] = {
/*0*/ {" True Colour ", "", "", IBM, 0, TE_CNTR, 0x1100, 0, -1, 15, 1},
/*1*/ {" VGA ", "", "", IBM, 0, TE_CNTR, 0x1100, 0, -1, 7, 1},
/*2*/ {" Video System ", "", "", IBM, 6, TE_LEFT, 0x1180, 0, -1, 15, 1},
/*3*/ {" KEYBOARD ", "", "", SMALL, 6, TE_LEFT, 0x1180, 0, -1, 14, 1},
/*4*/ {" Norwegian ", "", "", IBM, 0, TE_CNTR, 0x1100, 0, -1, 13, 1},
/*5*/ {" English ", "", "", IBM, 0, TE_CNTR, 0x1100, 0, -1, 11, 1},
/*6*/ {" Default ", "", "", IBM, 0, TE_CNTR, 0x1100, 0, -1, 11, 1},
/*7*/ {" DATE ", "", "", SMALL, 6, TE_LEFT, 0x1180, 0, -1, 10, 1},
/*8*/ {" Keyboard and Disk ", "", "", IBM, 6, TE_LEFT, 0x1180, 0, -1, 20, 1},
/*9*/ {" DD/MM/YY ", "", "", IBM, 31, TE_CNTR, 0x1100, 25, -1, 12, 1},
/*10*/ {" 24 hour ", "", "", IBM, 31, TE_CNTR, 0x1100, 25, -1, 11, 1},
/*11*/ {" ", "Date separator:", "-", "x", IBM, 36, TE_CNTR, 0x1180, -1, 0, 2, 18},
/*12*/ {" Date and Time ", "", "", IBM, 6, TE_LEFT, 0x1180, 0, -1, 16, 1},
/*13*/ {" VIDEO ", "", "", SMALL, 6, TE_LEFT, 0x1180, 0, -1, 11, 1},
};

```

```

OBJECT VIDPAGE[] = {
/*0*/ {-1, 1, 5, G_BOX, 0x0, 0x0, (void *)0xff1101, 8, 16, 256, 176},
/*1*/ {5, 2, 4, G_BOX, 0x0, 0x0, (void *)0xff1141, 0, 128, 256, 48},
/*2*/ {3, -1, -1, 0x400|G_BUTTON, 0x7, 0x0, "Cancel", 176, 16, 64, 16},
/*3*/ {4, -1, -1, 0x300|G_BUTTON, 0x5, 0x0, "Write", 96, 16, 64, 16},
/*4*/ {1, -1, -1, 0x200|G_BUTTON, 0x5, 0x0, "Reset", 16, 16, 64, 16},
/*5*/ {0, 6, 20, G_BOX, 0x0, 0x0, (void *)0xff1101, 0, 0, 256, 128},
/*6*/ {19, 7, 18, G_BOX, 0x0, 0x0, (void *)0xff1101, 8, 16, 240, 104},
/*7*/ {8, -1, -1, G_BOXTEXT, 0x40, 0x20, &rs_tedinfo[0], 8, 16, 120, 16},
/*8*/ {9, -1, -1, G_BOXTEXT, 0x40, 0x20, &rs_tedinfo[1], 168, 16, 56, 16},
/*9*/ {10, -1, -1, 0x500|G_BOX, 0x40, 0x1, (void *)0x1171, 8, 48, 16, 16},
/*10*/ {11, -1, -1, G_STRING, 0x0, 0x0, "80 columns", 32, 48, 80, 16},
/*11*/ {12, -1, -1, 0x500|G_BOX, 0x40, 0x1, (void *)0x1171, 136, 48, 16, 16},
/*12*/ {13, -1, -1, G_STRING, 0x0, 0x0, "Vertical", 160, 48, 64, 16},
/*13*/ {14, -1, -1, 0x500|G_BOX, 0x40, 0x1, (void *)0x1171, 8, 64, 16, 16},
/*14*/ {15, -1, -1, G_STRING, 0x0, 0x0, "PAL mode", 32, 64, 64, 16},
/*15*/ {16, -1, -1, 0x500|G_BOX, 0x40, 0x1, (void *)0x1171, 136, 64, 16, 16},
/*16*/ {17, -1, -1, G_STRING, 0x0, 0x0, "ST modes", 160, 64, 64, 16},
/*17*/ {18, -1, -1, 0x500|G_BOX, 0x40, 0x1, (void *)0x1171, 8, 80, 16, 16},
/*18*/ {6, -1, -1, G_STRING, 0x0, 0x0, "Overscan", 32, 80, 64, 16},
/*19*/ {20, -1, -1, G_TEXT, 0x0, 0x0, &rs_tedinfo[2], 16, 0, 112, 24},
/*20*/ {5, 21, 21, 0x100|G_TEXT, 0x40, 0x0, &rs_tedinfo[3], 168, 112, 78, 16},
/*21*/ {20, -1, -1, 0x100|G_STRING, 0x60, 0x0, "\003", 64, 0, 8, 16},
};

```

```

OBJECT KBDPAGE[] = {
/*0*/ {-1, 1, 5, G_BOX, 0x0, 0x0, (void *)0xff1101, 8, 16, 256, 176},
/*1*/ {5, 2, 4, G_BOX, 0x0, 0x0, (void *)0xff1141, 0, 128, 256, 48},
/*2*/ {3, -1, -1, 0x400|G_BUTTON, 0x7, 0x0, "Cancel", 176, 16, 64, 16},
/*3*/ {4, -1, -1, 0x300|G_BUTTON, 0x5, 0x0, "Write", 96, 16, 64, 16},
/*4*/ {1, -1, -1, 0x200|G_BUTTON, 0x5, 0x0, "Reset", 16, 16, 64, 16},
/*5*/ {0, 6, 15, G_BOX, 0x0, 0x0, (void *)0xff1101, 0, 0, 256, 128},
/*6*/ {13, 7, 12, G_BOX, 0x0, 0x0, (void *)0xff1101, 8, 16, 240, 104},
/*7*/ {8, -1, -1, G_STRING, 0x0, 0x0, "Keyboard:", 8, 16, 72, 16},
/*8*/ {9, -1, -1, G_BOXTEXT, 0x40, 0x20, &rs_tedinfo[4], 88, 16, 104, 16},
/*9*/ {10, -1, -1, G_STRING, 0x0, 0x0, "Language:", 8, 48, 72, 16},
/*10*/ {11, -1, -1, G_BOXTEXT, 0x40, 0x20, &rs_tedinfo[5], 88, 48, 88, 16},
/*11*/ {12, -1, -1, G_STRING, 0x0, 0x0, "System:", 8, 80, 56, 16},
/*12*/ {6, -1, -1, G_BOXTEXT, 0x40, 0x20, &rs_tedinfo[6], 88, 80, 88, 16},
};

```

```

/*13*/ {15,14,14,0x100|G_TEXT,0x40,0x0,&rs_tedinfo[7],192,112,54,16},
/*14*/ {13,-1,-1,0x100|G_STRING,0x40,0x0,"003", 40,0,8,16},
/*15*/ {5,-1,-1,G_TEXT,0x20,0x0,&rs_tedinfo[8],16,0,152,24},
};

OBJECT DATPAGE[] = {
/*0*/ {-1,1,5,G_BOX,0x0,0x0,(void *)0xff1101,8,16,256,176},
/*1*/ {5,2,4,G_BOX,0x0,0x0,(void *)0xff1141,0,128,256,48},
/*2*/ {3,-1,-1,0x400|G_BUTTON,0x7,0x0,"Cancel", 176,16,64,16},
/*3*/ {4,-1,-1,0x300|G_BUTTON,0x5,0x0,"Write", 96,16,64,16},
/*4*/ {1,-1,-1,0x200|G_BUTTON,0x5,0x0,"Reset", 16,16,64,16},
/*5*/ {0,6,13,G_BOX,0x0,0x0,(void *)0xff1101,0,0,256,128},
/*6*/ {12,7,11,G_BOX,0x0,0x0,(void *)0xff1101,8,16,240,104},
/*7*/ {8,-1,-1,G_BOXTEXT,0x40,0x20,&rs_tedinfo[9],120,48,96,16},
/*8*/ {9,-1,-1,G_BOXTEXT,0x40,0x20,&rs_tedinfo[10],120,16,88,16},
/*9*/ {10,-1,-1,G_STRING,0x0,0x0,"Date format:", 8,48,96,16},
/*10*/ {11,-1,-1,G_FTEXT,0x8,0x0,&rs_tedinfo[11],8,80,136,16},
/*11*/ {6,-1,-1,G_STRING,0x0,0x0,"Time format:", 8,16,96,16},
/*12*/ {13,-1,-1,G_TEXT,0x0,0x0,&rs_tedinfo[12],16,0,120,24},
/*13*/ {5,14,14,0x100|G_TEXT,0x40,0x0,&rs_tedinfo[13],184,112,60,16},
/*14*/ {13,-1,-1,0x100|G_STRING,0x60,0x0,"003", 48,0,8,16},
};

/*
** Prototype the externally visible CPX functions...
*/

CPXINFO *cpx_init(XCPB *);
short cpx_call(GRECT *);

/*
** Prototype the internal functions...
*/

int handle_button(short,short *);
int popup(OBJECT *,short,char *[],int,int *);
int read_NVM(void);
void configure_box(void);
void evaluate_vars(void);
void read_box(void);
void update_panels(void);

/*
** Global variables...
*/

XCPB *xcpb; /* XCPB passed to CPX by XControl */
CPXINFO jump_table = /* List of CPX functions supported */
{cpx_call,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL};

OBJECT *box; /* Main display object tree */
short NVMbuffer[NVMSIZE/sizeof(short)]; /* Buffer for NVRAM contents */
int page = 0; /* The page currently displayed */

/*
** Configuration variables...
*/

int colours; /* Index of screen colours */
int monitor; /* Index of monitor type */
int columns80; /* TRUE if in 80 column mode */
int vertical; /* TRUE if vertical flag set */
int palmode; /* TRUE if in PAL mode */
int overscan; /* TRUE if in overscan mode */
int stmodes; /* TRUE for ST compatibility */

int keyboard; /* Index of keyboard layout */
int language; /* Index of system language */
int system; /* Index of system types */

int time_format; /* Index of time format */
int date_format; /* Index of date format */
char separator; /* Date separator */

/*
** Popup menu data...
*/

char *video_colours[] = {" 2 colours ", " 4 colours ", " 16 colours ",
" 256 colours ", " True colour "};
char *video_monitors[] = {" TV ", " VGA "};

char *keyboard_layouts[] = {" American ", " German ", " French ",
" British ", " Spanish ", " Italian ",
" Swedish ", " Swiss FR ", " Swiss GE ",
" Turkish ", " Finnish ", " Norwegian ",
" Danish ", " Saudi ", " Dutch ",
" Czech ", " Hungarian "};
char *keyboard_languages[] = {" English ", " German ", " French ",
" Spanish ", " Italian "};
char *system_types[] = {" Default ", " TOS ", " UNIX "};

char *time_formats[] = {" 12 hour ", " 24 hour "};
char *date_formats[] = {" MM/DD/YY ", " DD/MM/YY ", " YY/MM/DD ", " YY/DD/MM "};

/*
** Main entry point for all CPXs. It is called in two
** phases. First, during the boot phase; when the
** CPX should set up its default values, and initialise
** the hardware it controls. Secondly, if the user
** activates the CPX; when the CPXINFO structure should
** be filled in, and the current hardware values copied
** into the resource for manipulation. The function
** is passed a pointer to an XControl parameter block.
** The return value depends on the execution phase. After
** the phase 1 call, the function should return TRUE if
** any further events should be dispatched to the CPX, or
** NULL if the CPX is not to be further accessed. After
** phase 1, the return is always a pointer to the
** CPX's own list of vector handlers.
** Usage: table = cpx_init(service_list);

```

```

**
** CPXINFO *cpx_init(XCPB *);
*/

CPXINFO *cpx_init(in_xcpb)
XCPB *in_xcpb;
{
    xcpb = in_xcpb;
    appl_init();
    if (xcpb->booting == TRUE)
        return((CPXINFO *)TRUE);
    return(&jump_table);
}

/*
** The cpx call() function, which is the only required
** XControl interface for form CPXs. This is called when
** the user activates the CPX, after the phase 2 call
** to cpx_init(). The argument is a pointer to a GRECT
** which describes the work area of the XControl window.
** The function sets up its variables for a user interaction,
** calls the XControl Xform do() service routine to handle
** the interaction, acts accordingly, and then returns.
** The return code is TRUE if the CPX is to continue
** receiving event messages (only needed by event CPXs).
** Form CPXs should return FALSE, whereupon XControl will
** reinstate the CPX list.
** Usage: action = cpx_call(workspace);
** short cpx_call(GRECT *);
*/

short cpx_call(workspace)
GRECT *workspace;
{
    int code;
    short button, quit;
    short dx, dy, dw, dh, ox, oy, ow, oh;
    short pipe[8];

    VIDPAGE[0].ob_x = workspace->x;
    VIDPAGE[0].ob_y = workspace->y;
    KBDPAGE[0].ob_x = workspace->x;
    KBDPAGE[0].ob_y = workspace->y;
    DATPAGE[0].ob_x = workspace->x;
    DATPAGE[0].ob_y = workspace->y;
    code = read_NVM();
    configure_box();
    update_panels();
    wind_get(0,WF_WORKXYWH,&dx,&dy,&dw,&dh);
    objc_draw(box,ROOT,MAX_DEPTH,dx,dy,dw,dh);
    if (code == EGENRL || code == EBADRQ)
        form_alert(1,"[3][NVRAM data not valid !][Cancel]");
    do
    {
        button = (*xcpb->Xform_do)(box,0,pipe);
        read_box();
        quit = handle_button(button,pipe);
        if (quit == REDRAW)
            objc_draw(box,ROOT,MAX_DEPTH,dx,dy,dw,dh);
        else if (quit == REDRAW_OBJECT)
        {
            ow = (box+button)->ob_width;
            oh = (box+button)->ob_height;
            objc_offset(box,button,&ox,&oy);
            objc_draw(box,ROOT,MAX_DEPTH,ox,oy,ow,oh);
        }
    }
    while (quit != TRUE);
    return(FALSE);
}

/*
** Function to handle the values returned from
** XControl's extended form do() routine. The
** arguments are a pointer to the button index
** returned by Xform do() and the message pipe.
** The return value is TRUE if the interaction
** is to be terminated, REDRAW to redraw the
** box, or FALSE to continue without a redraw.
** Usage: end = handle_button(clicked,pipe);
** int handle_button(short,short *);
*/

int handle_button(button,pipe)
short button;
short pipe[];
{
    int dclick, ext_type, code;
    short obj;

    dclick = FALSE;
    if ((button != -1) && (button & 0x8000))
    {
        dclick = TRUE;
        button &= 0x7FFF;
    }

    ext_type = (box+button)->ob_type >> 8;
    switch (ext_type)
    {
        case CROSSBOX: (box+button)->ob_state ^= CROSSED;
            return(REDRAW_OBJECT);
        case NEXT: page = (page != LAST_PAGE ? page+1 : 0);
            update_panels();
            return(REDRAW);
    }
}

```

```

** Function to set the program variables according
*/
return (code);
}

verticl = (modecode & 0x0100) ? TRUE : FALSE;
overcan = (modecode & 0x0080) ? TRUE : FALSE;
palmode = (modecode & 0x0040) ? TRUE : FALSE;
column80 = (modecode & 0x0020) ? TRUE : FALSE;
monitor = (modecode & 0x0010) ? 1 : 0;
if (colours > 4) colours = 0;
colours = modecode & 0x07;
modecode = NVMbuffer[VIDEO_OFFSET];
time_format = %t;
if (% > 1) % = 0;
if (% < 4) % = 4;
date_format = %t;
if (% > 3) % = 0;
% = IDN code & 0x0F;
IDN code <<= 8;
separator = IDN code & 0xFF;
IDN code = NVMbuffer[IDN_OFFSET];
keyboard = %t;
% = AR code & 0x0F;
language = %t;
if (% > 2) % = 0;
if (% < 3) % = 0;
if (% > 5) % = 0;
% = AR code << 8;
AR code = NVMbuffer[ARX_OFFSET];
else system = 0;
system = 2;
else if (disk & 0x040)
system = 1;
if (disk & 0x080)
disk = NVMbuffer[DISK_OFFSET];
code = NVMbuffer[NVM_READ,0,NVM_SIZE, (char *)NVMbuffer];
short disk, ARX_code, IDN_code, modecode;
int code, %;
}

int read_NVM(void)
/*
** Usage: int read_NVM(void);
** analysed. There are no arguments and no returns.
** Is read into the program's buffer and then
** the current contents of the NVM. The block
** separator is read into the program's buffer and then
** analysed. There are no arguments and no returns.
*/
int read_NVM(void)
{
text = '\0';
text++ = separator;
text = tpr->text;
tpr = (TEXTINFO *) DIALOG [DATSER].ob_spec;
strcpy(tpr->text, time_format);
tpr = (TEXTINFO *) DIALOG [DATTIME].ob_spec;
strcpy(tpr->text, date_format);
tpr = (TEXTINFO *) DIALOG [DATDATE].ob_spec;
strcpy(tpr->text, keyboard_layouts[keyboard]);
tpr = (TEXTINFO *) KBDPAGE [KBDLHM].ob_spec;
strcpy(tpr->text, keyboard_languages[language]);
tpr = (TEXTINFO *) KBDPAGE [KBDLANG].ob_spec;
strcpy(tpr->text, system_types[system]);
tpr = (TEXTINFO *) KBDPAGE [KBDSTY].ob_spec;
strcpy(tpr->text, video_monitors[monitor]);
tpr = (TEXTINFO *) VIDPAGE [VIDMON].ob_spec;
strcpy(tpr->text, video_colours[colours]);
tpr = (TEXTINFO *) VIDPAGE [VIDCOL].ob_spec;
VIDPAGE [VIDVWID].ob_spec = verticl ? SELECTED : NOT_SELECTED;
VIDPAGE [VIDVMOD].ob_spec = overcan ? SELECTED : NOT_SELECTED;
VIDPAGE [VIDVERI].ob_spec = palmode ? SELECTED : NOT_SELECTED;
VIDPAGE [VIDVAL].ob_spec = column80 ? SELECTED : NOT_SELECTED;
VIDPAGE [VIDBGCOL].ob_spec = column80 ? SELECTED : NOT_SELECTED;
char text;
TEXTINFO *tpr;
}

void configure_box(void)
/*
** Usage: void configure_box(void);
** There are no arguments and no return values.
** to the current state of the program variables.
** Function to set the dialog box according
*/
void configure_box(void)
{
old_box = box;
if (page == 0)
box = %VIDPAGE[0];
else if (page == 1)
box = %KBDPAGE[0];
else box = %DATPAGE[0];
if (old_box != NULL)
(box+ROOT)->ob_x = (old_box+ROOT)->ob_x;
(box+ROOT)->ob_y = (old_box+ROOT)->ob_y;
}

}

OBJECT old_box;
}

void update_panels(void)
{
if (obj == 1)
{
NVMaccess (NVM_READ,0,NVM_SIZE, (char *)NVMbuffer);
read_NVM();
configure_box();
return (obj);
}
}

case WRITE:
evaluate_vars();
return (REBWM);
}
(box+button)->ob_state = %SELECTED;
}
if (code == 0)
form_alert(1, "1") || preferences_writen to NVM. || OK
}
else form_alert(1, "3") || Error writing to NVM. || Reset NVM
and try again. || [Cancel] "1";
}
(box+button)->ob_state = %SELECTED;
return (REBWM_OBJECT);
}
case CANCEL:
(box+button)->ob_state = %SELECTED;
return (TRUE);
}
}
if (box == %VIDPAGE[0])
{
if (button == %VIDCOL)
poppp (box, button, video_colours, NUM_COLOURS, &colours);
else if (button == %VIDMON)
poppp (box, button, video_monitors, NUM_MONITORS, &monitor);
}
else if (box == %KBDPAGE[0])
{
if (button == %KBDSTY)
poppp (box, button, system_types, NUM_SYSTEMS, &system);
else if (button == %KBDLANG)
poppp (box, button, keyboard_languages, NUM_LANGUAGES, &language);
else if (button == %KBDPAGE [KBDLANG])
poppp (box, button, keyboard_languages[language]);
else if (button == %KBDPAGE [KBDLHM])
poppp (box, button, keyboard_languages[language]);
}
else if (button == %DATDATE)
{
if (button == %DATTIME)
poppp (box, button, time_formats, NUM_TIMES, &time_format);
}
}
if (button == -1)
if (pipe[0] == %AC_CLOSE || pipe[0] == %NM_CLOSED)
return (TRUE);
return (FALSE);
}

}
/*
** Function to handle the popup menu interaction. The
** data required for the XControl popup service is
** obtained, and then the call is made. If the user
** alters the setting, the box is updated and the
** popup button redrawn. The input arguments are a
** pointer to the object tree, the index of the popup button,
** a pointer to the list of menu strings, the number of menu
** items and a pointer to the function returns the index of
** the selected menu item. The index variable will be updated.
** Usage: item = poppp (box, button, input, count, cur_item);
** int poppp (OBJECT *, short, char *) / int, int *)
*/
int poppp (box, button, input, count, cur_item)
OBJECT box;
short button;
int count, cur_item;
char input[];
}
short obj;
GETT button_box;
world;
button_box.g_w = (box+button)->ob_width;
button_box.g_h = (box+button)->ob_height;
obj_c_offset(box, button, button_box.g_x, button_box.g_y);
world.g_w = (box+ROOT)->ob_width;
world.g_h = (box+ROOT)->ob_height;
obj_c_offset(box, ROOT, world.g_x, world.g_y);
if (obj == -1)
{
if (obj != %XCPD->poppp (input, count, cur_item, IBM, button_box, &world);
return (cur_item);
}
if (obj != %cur_item);
return (cur_item);
}
configure_box();
}
}
obj_c_dram (box, ROOT, MAX_DEPTH, button_box.g_x, button_box.g_y, button_box.g_w, button_box.g_h);
}
return (obj);
}
}
/*
** Function to update the display of the individual
** panels within the CF. There are no arguments and
** no return values. Notice that each time the panel
** is changed, the previous position of the object tree
** is copied across into the new root object. This ensures
** that the new tree is correctly positioned, as Xform do()
** handles window movement internally.
** Usage: void update_panels(void);
*/

```

```

** Function to set the program variables according
*/
return (code);
}

verticl = (modecode & 0x0100) ? TRUE : FALSE;
overcan = (modecode & 0x0080) ? TRUE : FALSE;
palmode = (modecode & 0x0040) ? TRUE : FALSE;
column80 = (modecode & 0x0020) ? TRUE : FALSE;
monitor = (modecode & 0x0010) ? 1 : 0;
if (colours > 4) colours = 0;
colours = modecode & 0x07;
modecode = NVMbuffer[VIDEO_OFFSET];
time_format = %t;
if (% > 1) % = 0;
if (% < 4) % = 4;
date_format = %t;
if (% > 3) % = 0;
% = IDN code & 0x0F;
IDN code <<= 8;
separator = IDN code & 0xFF;
IDN code = NVMbuffer[IDN_OFFSET];
keyboard = %t;
% = AR code & 0x0F;
language = %t;
if (% > 2) % = 0;
if (% < 3) % = 0;
if (% > 5) % = 0;
% = AR code << 8;
AR code = NVMbuffer[ARX_OFFSET];
else system = 0;
system = 2;
else if (disk & 0x040)
system = 1;
if (disk & 0x080)
disk = NVMbuffer[DISK_OFFSET];
code = NVMbuffer[NVM_READ,0,NVM_SIZE, (char *)NVMbuffer];
short disk, ARX_code, IDN_code, modecode;
int code, %;
}

int read_NVM(void)
/*
** Usage: int read_NVM(void);
** analysed. There are no arguments and no returns.
** Is read into the program's buffer and then
** the current contents of the NVM. The block
** separator is read into the program's buffer and then
** analysed. There are no arguments and no returns.
*/
int read_NVM(void)
{
text = '\0';
text++ = separator;
text = tpr->text;
tpr = (TEXTINFO *) DIALOG [DATSER].ob_spec;
strcpy(tpr->text, time_format);
tpr = (TEXTINFO *) DIALOG [DATTIME].ob_spec;
strcpy(tpr->text, date_format);
tpr = (TEXTINFO *) DIALOG [DATDATE].ob_spec;
strcpy(tpr->text, keyboard_layouts[keyboard]);
tpr = (TEXTINFO *) KBDPAGE [KBDLHM].ob_spec;
strcpy(tpr->text, keyboard_languages[language]);
tpr = (TEXTINFO *) KBDPAGE [KBDLANG].ob_spec;
strcpy(tpr->text, system_types[system]);
tpr = (TEXTINFO *) KBDPAGE [KBDSTY].ob_spec;
strcpy(tpr->text, video_monitors[monitor]);
tpr = (TEXTINFO *) VIDPAGE [VIDMON].ob_spec;
strcpy(tpr->text, video_colours[colours]);
tpr = (TEXTINFO *) VIDPAGE [VIDCOL].ob_spec;
VIDPAGE [VIDVWID].ob_spec = verticl ? SELECTED : NOT_SELECTED;
VIDPAGE [VIDVMOD].ob_spec = overcan ? SELECTED : NOT_SELECTED;
VIDPAGE [VIDVERI].ob_spec = palmode ? SELECTED : NOT_SELECTED;
VIDPAGE [VIDVAL].ob_spec = column80 ? SELECTED : NOT_SELECTED;
VIDPAGE [VIDBGCOL].ob_spec = column80 ? SELECTED : NOT_SELECTED;
char text;
TEXTINFO *tpr;
}

void configure_box(void)
/*
** Usage: void configure_box(void);
** There are no arguments and no return values.
** to the current state of the program variables.
** Function to set the dialog box according
*/
void configure_box(void)
{
old_box = box;
if (page == 0)
box = %VIDPAGE[0];
else if (page == 1)
box = %KBDPAGE[0];
else box = %DATPAGE[0];
if (old_box != NULL)
(box+ROOT)->ob_x = (old_box+ROOT)->ob_x;
(box+ROOT)->ob_y = (old_box+ROOT)->ob_y;
}

}

OBJECT old_box;
}

void update_panels(void)
{
if (obj == 1)
{
NVMaccess (NVM_READ,0,NVM_SIZE, (char *)NVMbuffer);
read_NVM();
configure_box();
return (obj);
}
}

case WRITE:
evaluate_vars();
return (REBWM);
}
(box+button)->ob_state = %SELECTED;
}
if (code == 0)
form_alert(1, "1") || preferences_writen to NVM. || OK
}
else form_alert(1, "3") || Error writing to NVM. || Reset NVM
and try again. || [Cancel] "1";
}
(box+button)->ob_state = %SELECTED;
return (REBWM_OBJECT);
}
case CANCEL:
(box+button)->ob_state = %SELECTED;
return (TRUE);
}
}
if (box == %VIDPAGE[0])
{
if (button == %VIDCOL)
poppp (box, button, video_colours, NUM_COLOURS, &colours);
else if (button == %VIDMON)
poppp (box, button, video_monitors, NUM_MONITORS, &monitor);
}
else if (box == %KBDPAGE[0])
{
if (button == %KBDSTY)
poppp (box, button, system_types, NUM_SYSTEMS, &system);
else if (button == %KBDLANG)
poppp (box, button, keyboard_languages, NUM_LANGUAGES, &language);
else if (button == %KBDPAGE [KBDLANG])
poppp (box, button, keyboard_languages[language]);
else if (button == %KBDPAGE [KBDLHM])
poppp (box, button, keyboard_languages[language]);
}
else if (button == %DATDATE)
{
if (button == %DATTIME)
poppp (box, button, time_formats, NUM_TIMES, &time_format);
}
}
if (button == -1)
if (pipe[0] == %AC_CLOSE || pipe[0] == %NM_CLOSED)
return (TRUE);
return (FALSE);
}

}
/*
** Function to handle the popup menu interaction. The
** data required for the XControl popup service is
** obtained, and then the call is made. If the user
** alters the setting, the box is updated and the
** popup button redrawn. The input arguments are a
** pointer to the object tree, the index of the popup button,
** a pointer to the list of menu strings, the number of menu
** items and a pointer to the function returns the index of
** the selected menu item. The index variable will be updated.
** Usage: item = poppp (box, button, input, count, cur_item);
** int poppp (OBJECT *, short, char *) / int, int *)
*/
int poppp (box, button, input, count, cur_item)
OBJECT box;
short button;
int count, cur_item;
char input[];
}
short obj;
GETT button_box;
world;
button_box.g_w = (box+button)->ob_width;
button_box.g_h = (box+button)->ob_height;
obj_c_offset(box, button, button_box.g_x, button_box.g_y);
world.g_w = (box+ROOT)->ob_width;
world.g_h = (box+ROOT)->ob_height;
obj_c_offset(box, ROOT, world.g_x, world.g_y);
if (obj == -1)
{
if (obj != %XCPD->poppp (input, count, cur_item, IBM, button_box, &world);
return (cur_item);
}
if (obj != %cur_item);
return (cur_item);
}
configure_box();
}
}
obj_c_dram (box, ROOT, MAX_DEPTH, button_box.g_x, button_box.g_y, button_box.g_w, button_box.g_h);
}
return (obj);
}
}
/*
** Function to update the display of the individual
** panels within the CF. There are no arguments and
** no return values. Notice that each time the panel
** is changed, the previous position of the object tree
** is copied across into the new root object. This ensures
** that the new tree is correctly positioned, as Xform do()
** handles window movement internally.
** Usage: void update_panels(void);
*/

```

```

** to the state of the dialogue box. There are no
** arguments and no return values.
**
** Usage: void read_box(void);
*/

void read_box(void)
{
    columns80 = VIDPAGE[VID80COL].ob_state & CROSSED;
    palmode = VIDPAGE[VIDPAL].ob_state & CROSSED;
    overscan = VIDPAGE[VIDOVER].ob_state & CROSSED;
    stmodes = VIDPAGE[VIDSTMOD].ob_state & CROSSED;
    vertical = VIDPAGE[VIDVERT].ob_state & CROSSED;
    separator = *((TEDINFO *) (DATEPAGE[DATSEP].ob_spec)) ->te_ptext;
}

/*
** Function to evaluate the current state of
** the program's variables, translating the
** results into a modified NVRAM buffer. There
** are no arguments and no return values.
**
** Usage: void evaluate_vars(void);
*/

void evaluate_vars(void)
{
    short disk, AKP_code, IDT_code, modecode;

    modecode = colours;
    if (columns80) modecode |= 0x0008;
    if (monitor == 1) modecode |= 0x0010;
    if (palmode) modecode |= 0x0020;
    if (overscan) modecode |= 0x0040;
    if (stmodes) modecode |= 0x0080;
    if (vertical) modecode |= 0x0100;
    NVNbuffer[VIDEO_OFFSET] = modecode;

    if (system == 1)
        disk = 0x80;
    else if (system == 2)
        disk = 0x40;
    else disk = 0;
    NVNbuffer[DISK_OFFSET] = disk;

    AKP_code = language > 2 ? language+1 : language;
    AKP_code <= 8;
    AKP_code |= keyboard;
    NVNbuffer[AKP_OFFSET] = AKP_code;
}

```

```

IDT_code = time format << 12;
IDT_code |= (date_format << 8);
IDT_code |= separator;
NVNbuffer[IDT_OFFSET] = IDT_code;
}

Listing 3
=====

/*
** Listing 3.
** Programmers' Forum STA 46 (October 1994)
**
** Icon for NVRAM.CPX. This is a modification of
** an .ICN file created by DERCS. Do not compile
** this file, simply save it for subsequent
** processing by DERCS.
**
** Filename: NVRAM.ICN
** Written on 1 July 1994
*/

static short BBDA0[] = {
    0x0000,0x0000,0x0000,0x0000,
    0x0001,0xFFE0,0x0003,0xFFD0,
    0x0007,0xFFB0,0x000F,0xFF70,
    0x001F,0xFFD0,0x003F,0xFF90,
    0x007F,0xFFB0,0x00FF,0xFF70,
    0x01FF,0xEDE0,0x03FF,0xD9A0,
    0x07FF,0xB120,0x0FFF,0x7E20,
    0x1F0B,0xDE20,0x1E1F,0x9A00,
    0x3FFF,0x1200,0x3FFF,0xE200,
    0x3FFF,0xE200,0x3FFF,0xA000,
    0x3FFF,0x2000,0x1FFC,0x2000,
    0x1000,0x2000,0x0000,0x0000,
};

Listing 4
=====

prefix E:NVRAM.HDR
from
    E:\SYSTEM\LIBRARY\CCPX.O
    E:NVCONFIG.O

library
    E:\SYSTEM\LIBRARY\LC.LIB
    E:\SYSTEM\LIBRARY\LCG.LIB

to
    C:\CPX\NVCONFIG.CPX

```

# X-Debug

## Advanced Debugger for Atari ST/TT computers

X-Debug is an advanced debugger for the Atari range of computers. It is both a low-level debugger, showing memory dumps and register contents, and also a medium-level debugger, understanding about certain high-level languages and allowing source display single-step, and local variable access, for example.

The best support is for Lattice C, as that is the only compiled language that outputs full debug information, but it also supports line-number debug (as created by HiSoft Basic and Devpac 3), and symbol-only debug (usable with virtually all ST compilers).

Crucial to the whole debugger is the X-Debug language. This is a simple yet powerful script type language that allows complex operations to be built up from a sequence of standard operations. It supports a full expression evaluator, aliases, and procedures with parameters. It is also an important factor in customising the user interface, allowing specific commands to be attached to particular keypresses.

X-Debug runs on STs and TTs with any monitor type. One megabyte of RAM is recommended, and TOS 1.4 or later avoids problems with larger programs. Written by Andy Pennell, the creator of MonST.

**£24.95**

**FaST Club**  
7 Musters Road  
Nottingham  
NG2 7PP

1 68010 Registers	2 Disassembly PC
00:00000000 A0:00000000	e00030> move.m #52708,sr
01:00000000 A1:00000000	e00034> reset
02:00000000 A2:00000000	e00036> cmpl.l #5fa52215f,fa0000
03:00000000 A3:00000000	e00040> bne.s #e0004c
04:00000000 A4:00000000	e00042> lea #e0004c(pc),a6
05:00000000 A5:00000000	e00046> jmp #fa0004
06:00000000 A6:00000000	e0004c> move.l #5888,d0
07:00000000 A7:00000000	e00052> movec d0,cacr
SR:0000 010 xnzvc	e00056> moveq #0,d0
PC:010E0B9C A7:0117844	e00058> movec d0,vr
move.m #52708,sr	e0005c> pmove.l #e30e34,tc
#2708	e00064> pmove.l #e30e34,tt0
	e0006c> pmove.l #e30e34,tcl
	e00074> bsr #e3fff0e093.m
00000000 602E 0301 \oo	e0007a> beq.s #e00088
00000004 00E0 0030 a B	e0007c> lea #e00084(pc),a6
00000008 0100 111C v/3	e00082> bra #e0008e
0000000C 0100 11C4 v/i	e00086> bne.s #e0008a
00000010 0100 11C4 v/i	e00088> move.b #424.m,5fff0001.m
00000014 0100 11C4 v/i	e0008E

MonST-emulation script installed OK

1 68010 Registers	2 Mon.C
00:0100193A A0:00000000	1202: ;
01:010F0970 A1:0000093A	1203: /* zoom (or zoomon) a window */
02:000000FF A2:010E0210	1204: word zoom.Window(window num)
03:FFFFFFE4 A3:0110F650	1205: {
04:00000000 A4:01117654	1206: word rx,ry,rw,rh;
05:00000000 A5:0111365E	1207: struct ms *mptr;
06:00000000 A6:01113750	1208: word err;
07:00000001 A7:01113650	1209: word w;
SR:2304 513 xnzvc	120A: ;
PC:010E0B9C A7:01117844	120B: mptr=1st(mnum);
jsr -init.diss	120C: if (mptr->type==MTYPE_DEAD)
510f17ee 41FA FFD2	120D: return 0; /* cannot zo
	120E: if (mptr->zoomed==FALSE)
00000000 602E 0301 \oo	120F: {
00000004 00E0 0030 a B	1210: mptr->ox=mptr->x; mptr->oy=mptr->
00000008 010F 0360 a0m	1211: mptr->om=mptr->w; mptr->oh=mptr->
0000000C 010F 0206 a0m	1212: ;
00000010 010F 0206 a0m	1213: mnum;
00000014 010F 0206 a0m	1214: if (mptr->type==MTYPE_MEM)
	1215: ;

Trace at PC:510e0b9c  
Trace at PC:510e0b9c

1 68010 Registers	2 Mon.C
00:0100193A A0:00000000	10e0b0> bsr -init.Windows
01:010F0970 A1:0000093A	1791: -init.proc();
02:000000FF A2:010E0210	10e0b8> jsr -init.proc
03:FFFFFFE4 A3:0110F650	1794: -init.symbols();
04:00000000 A4:01117654	10e0b2> jsr -init.symbols
05:00000000 A5:0111365E	1795: -init.exceptions();
06:00000000 A6:01113750	10e0b0> jsr -init.exceptions
07:00000001 A7:01113650	1796: -init.diss();
SR:2304 513 xnzvc	10e0b6> jsr -init.diss
PC:010E0B9C A7:01117844	1797: -init.mech2(default.diss,&default.d
jsr -init.diss	10e0b4> pea -Sc(a6)
510f17ee 41FA FFD2	10e0b8> pea -0(a6)
	10e0bc> jsr -init.mech2
00000000 602E 0301 \oo	1798: -init.source();
00000004 00E0 0030 a B	10e0b2> jsr -init.source
00000008 010F 0360 a0m	10e0b0> lea #10(a7),a7
0000000C 010F 0206 a0m	1799: ;
00000010 010F 0206 a0m	1000: res=open.Window(1,0,0,30,14,NULL,MTY
00000014 010F 0206 a0m	10e0bc> moveq #1,d0

0003.pl3  
window mode 2 mixed

## For Sale

HiSoft C Interpreter £15, War in the Gulf £15, Reach for the Skies £15, Digita Home Accounts £6, Bart Simpson Space Mutants £3. All absolutely mint, boxed, with manuals. Tel: Dave, Notts (0602) 397354. (48)

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)

PC hardware emulator for Atari ST, PC-Speed, £30. AT-Speed (285 emulation) £60 ono. Will fit any STFM or STE; hardly used - selling because of real PC purchase! Phone Stephen on 0553 829142. (46)

TW2 + "Companion" (brilliant guide) £35. Superbase Personal 2 £35. Touch Up v1.84 £25. Equinox Small Business Accounts £20. CalAssistant £12. Hyperpaint £8. Falcon F16 £8. Spellbook 4-6 £5. All originals with manuals. Keyboard case with coiled lead (separates ST keyboard from computer) £20 - all post inclusive. Jon 0785 46783. (47)

STE 1MB + monitor + ext. d/s dd drive + clock + Timeworks, 108 mainly magazine disks, and other accessories. £260. Tel: 021 744 3602. (46)

Books: Atari Graphics and Sound, Atari Peeks and Pokes, Atari Basic Training Guide, Atari Tricks and Tips, as new, £25 the lot. Phone Evelyn Mills on 0275 854693 after 6pm. (48)

Hardware: 520 STE (upgraded to 1MB); Seikosha SP-1900 Plus printer; mouse; 2 joysticks. Software: Discovery Extra

# Classified Adverts

Classified adverts are free to subscribers.

Please use the form on page 58.

Pack, ST Basic, Sensible Soccer, Football Director II, Campaign, Pacific Islands, F19 Stealth Fighter, European Football Champ, RBI 2 Baseball, Face-off Ice Hockey, 1st Division Manager, Gazza II, Tenstar Pack containing: Asterix, Chess Player 2150, Drivin' Force, Live and Let Die, Onslaught, Pipe Mania, Rick Dangerous, Rock 'n' Roll, Skweek, Trivial Pursuit. Write to: Barrie Little, Sheilagh, The Whins, Mof-fat DG10 9JL. (46)

4MB STE with separate keyboard £220; 40MB hard drive, Calamus, PageStream, DA's Vector, NeoDesk 3 and much more: £150. 400dpi scanner + Touch Up £65; Star SJ48 inkjet printer £135. All items in excellent condition. Tel. Alan on 0232 672338. (46)

Hard disk - Seagate 296N SCSI (85MB formatted) in excellent condition, very reliable, no bad sectors: offers in region of £90. Also K-Spread 4 £25, K-Graph

3 £20, Superbase Professional £35, Tempus 2 £15, and various other bits and pieces of software, all with manuals and boxes. Offers considered. David Brook on 0908 265170. (46)

ST expanded to 2.5Mb Ram, SM124 monitor, Microvitek colour monitor, 2 external floppies, 40MB hard disk, mouse and joystick, PageStream 2.2, Harlekin 2, Superbase Pro, UIS III, HyperDraw, Spiritware Concordance v3 with NIV and Greek NT, Backpack utility cartridge, EasyDraw 2, Script, dbMan database, Personal Finance Manager Plus, K-Spread 2, Fun School 3, some games, plus huge quantity (200+ disks) software, and lots of ST magazines from 1986 on! £400 ono, might split. Low price as HDD sticks! Bob Almond, 081-304-5760; fax 081-304-7697. (46)

19" monitor and interface card. Genuine Atari board for Mega STs. 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 503128 evenings & weekends. (46)

Canon 105K + sheeffeed £160. Spectre GCR £150. GI Opto-mech mouse £8. Cumana CSA 354 £35. K-Spread 4 £50. Superbase Pro £40. Lattice C v5.04 £30. UIS III £10. UVK v5.9 £5. View II £10. Oxford Chess 36. Starglider 2 £5. Mega STE SCSI host adaptor £40. CManship Complete £8, Users' Guide to Timeworks £5. All as new with manuals, etc. Phone Ray on 051 929 3129 weekends. (47)

2MB STE, Family Curriculum Pack, 2nd Manual, SCART lead, Mavis Beacon Teaches Typing, Bolo and other games £170. 1MB ST dead power supply & disc drive. offers:- 0666 837074 Nr Chippenham. (46)

ATARI TT 030: 8 Meg RAM, 200 Meg Hard Disk, c/w Proscreen TT (A4) high res mono monitor. £1000 - no offers please. Phone Bryan Cox on (0298) 78071. (47)

Calamus 1.09N with 9 Font Disks and Manual: Offers (081) 989 9672. Reflex Graphics card for STE and Mega ST. (48)

MiniS 85 MB autobooting, self-parking and self-powered hard disk complete with ICD link to connect to DMA (ACSI) port on ST/TT/Falcon and ICD hard disk software and manual; still under warranty. Reason for sale: I'm buying a bigger one! Cost new £309, yours for £220 including delivery charge. John Bowsher 01304 369405.

ProGate R44 SyQuest 44 MB removable cartridge hard drive complete with three cartridges. 132 MB capacity now, no limit to how much you increase it. Complete with cable to connect directly to DMA (ACSI) port on ST/TT/Falcon, its

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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 pic-

ture 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 Bad-dow, 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, Hull-

bridge, 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 Peckar-mans 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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### Scanner Manager

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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 Transceiver

Atari STE - Morse and RTTY transceiver. 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

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Mega ST upgraded to 4MB (TOS 1.04) £200, SM124 Mono Monitor £50 (or both for £230), DaataScan Professional 400dpi H/H Scanner £50, AT Speed (8MHz 286) fitted in Speed Bridge Board for fitting in Mega ST (inc DR Dos) £60, Golden Image Mouse £10. If you think I'm asking too much, make me a sensible offer!!! Phone Adam after 7.00pm (0932) 829822 (NW Surrey). (47)

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2.5MB 1040 STFM 1986 vintage (Frontier Xtra RAM fitted), SM124 with enlarged (10" diagonal) display £150 the pair. Protar 80MB series 1 SCSI hard drive, utterly reliable, 50% full of quality PD £200. Roland CM32L synth module £100 inc. editor software. Please haggle. All well cared for, boxed with manuals. Delivery negotiable. K.J. Wood, Crawley (0293) 884039. (47)

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bow Warrior £3, Backlash £2, Starwars £2. 0323 500910. (47)

Calligrapher Professional with manual - full version, 5 disks, with Flextext, formula editor and indexer. £35 inc. postage. 0737 210794 evenings (Tim). (47)

Mastersound 2 sound sampler. Software and cartridge £10. Metacomco

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Cambridge Lisp £10. Protex 5.5 £25. 0738 637165 evenings. (47)

SM124 monitor (excel. cond.) £60, Straight Fax £25, PC Speed £30, PC Ditto2 board (needs attention, hence £10), SpeedoGDOS £20, STFM keyboard £5, WordUp £10, 2400 baud modem £30, Mastersound cartridge with mods for users A-to-D projects £10. I also have a large number of ST Format magazines going back to issue 1 of ST/Amiga Format (!) and some games and other applications for sale. Kevin Millican on 0493 782176. (46)

SM124 monitor £50, Cumana external disk drive (own PSU) £15, Prospero Fortran £20, Proflight £10, NeoDesk v3, Harlekin v2, Diamond Back v2, Superbase Personal v2, Write On v1, Calligrapher Lite, PFM Plus, Fontkit Plus v3, Turbo ST, Warp 9, Quartet v1.5, HiSoft C, STOS, all £5 each. Call Steve on 0928 568686. (46)

Parallel data switch box 3-way and lead £15. 0709 372970. (47)

Calamus 'S', new, unregistered, £90 ono. Megapaint 2 £20. Quantum Paint £15. GFA Artist £20. Mavis Beacon

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Teaches Typing! £10. Tel David on 021 777 1802 any time. (46)

Portfolio computer/notebook, 32K memory card, serial interface, new batteries: £80. 081 699 3672. (46)

Calligrapher Gold £45, Tempus 2 £10, games from £1 each. S.A.E. to Gary Hawtin, 2 Eden Road, Crawley, West Sussex RH11 8LZ or tel. after six 0293 534415. (47)

RGB monitor: Amstrad CTM 640 plus lead for ST (see STA 40) £40 + carriage. P. Farmer, 0872 865176. (47)

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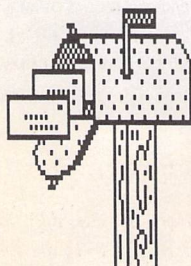
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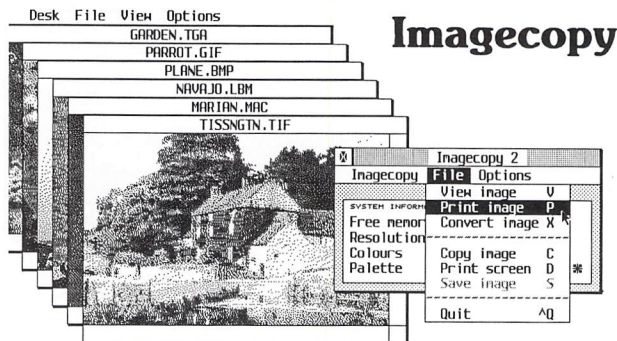
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