

ST APPLICATIONS

Price: £1.50

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

Issue No. 13 January 1992

THIS MONTH

REVIEWS

- Hotwire
- GFA Draft Plus
- Avant Vector
- Printer-Q
- Mono Games

ARTICLES

- Traps for the Wary
- ST Internals
- Signum
- From the Hotline
- Cubase Part 6

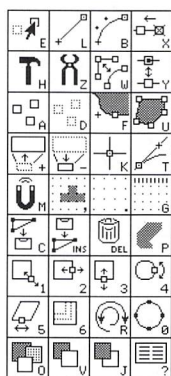
REGULARS

- News
- Jeremiah's Journal
- CAD Column
- STicks and STones
- Classified Adverts
- Programmers' Forum
- Desktop Discussions
- Forum
- A-Z of the ST

HOTWIRE v3

Version 3 of Codehead Utilities' Hotwire shell package is now available. Is it, as they claim, the most powerful ST shell that money can buy? Michael Baxter finds out.

Avant Vector



Vector graphics files are more flexible in use and less greedy of storage space than bit-mapped equivalents; neither is there any loss of quality when vector graphics are stretched or tweaked in some way. Avant Vector generates vector files from bit-image files - but how well does it do this? Joe Connor has the answer.

GFA DRAFT PLUS...

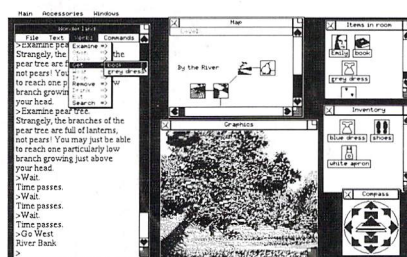
...is a grown-up version of GFA Draft version 2. At around £100, it seems to be aimed at amateur CAD users and at those seeking to upgrade from standard ST drawing packages. Dr. Steve Henderson is impressed....

Plus
Licenceware
Update

and our regular
round-up of the latest
PD offerings

MONO GAMES

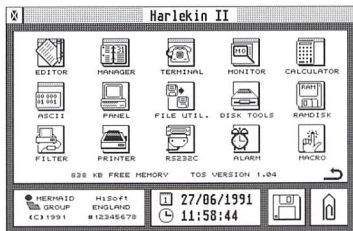
Andrew Wright takes a look at some of the games available for users of monochrome monitors. Although the range may be rather limited, he was surprised to find some very high quality offerings.



HARLEKIN 2

- your dreams can come true

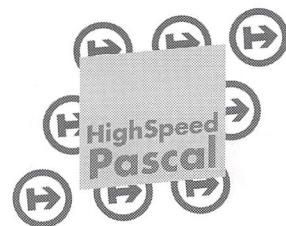
Harlekin 2 is a unique collection of utilities and applications for your Atari ST and TT computers. All programs are available from a single desk accessory, providing maximum convenience while taking up only one slot on the Desk menu:



- complete editor with search and replace, block-marking with the mouse, external clipboard with cut copy and paste, full page setup options for printing, word wrap and more.

- extremely powerful appointment diary/calendar/ ideas organiser called the Manager. This allows you to make notes of any size and assign dates, times, priorities, icons and alarms to them. Then print out your notes by day, month, year etc. for a complete time management system.
- dynamic printer spooler that takes just as much memory as it needs, comprehensive printer filter.
- full macro processor allowing keyboard shortcuts for Harlekin's modules and extensive keyboard macros, all totally under your control.
- communications package allowing X-Modem and Y-Modem protocols plus full modem set up and an extensive dial directory.
- many, many more utilities too numerous to mention in this small space, plus a 150-page, wire-bound manual.

Harlekin 2 is available now at a price of £59.95 inclusive. Upgrades from version 1 cost £24.95; just send your master disk back to HiSoft, together with your remittance.



HighSpeed Pascal 1.5

Version 1.5 of this immensely popular compiler is now available. Additional features over 1.1 are:

- inline assembler
- help desk accessory
- i/o-mapped maths co-processor support
- faster, improved editor; more compact libraries
- structured constants - an invaluable addition
- absolute-address variables

Upgrades from earlier versions cost £7.50 inclusive including new documentation.

For those not in the know, HighSpeed Pascal comes from Denmark, is extremely fast and friendly to use and is very closely compatible to the immensely popular Turbo Pascal on the PC, even including the graphics unit from the PC.

Compilation speed is roughly 20,000 lines per minute with excellent code generation for the ST and the TT.

ProFlight 1.2

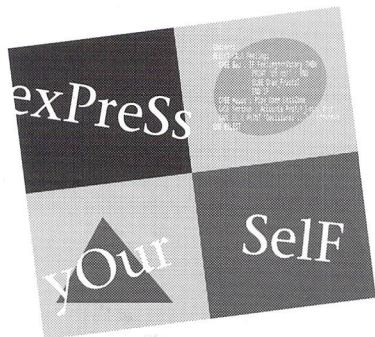
We are pleased to announce the release of version 1.2 of ProFlight, our immensely popular Tornado flight simulator, loved by reviewers and users alike.

This new version of simulator includes improved colour graphics, the ability to save your cockpit set-up, a pause key, the view angle and more ... it even works on the TT!



Registered users can upgrade by sending their master disk back, together with £2.50.

HiSoft BASIC 2



HiSoft BASIC 2 is here at last:-

- New, multi-window editor with lots of features
- Extremely fast development thanks to pre-tokenising
- Many more language features inc. static arrays
- Full support for the STE, MegaSTE and TT
- Completely new high level GEM toolbox
- Linking with Lattice C & DevpacST assembler files
- Resource construction set and debugger included
- 2-volume documentation of over 700 pages

HiSoft C

The ideal way to learn the difficult C language is with an interpreter and HiSoft C for the ST has all you need:

- try out your new C programs quickly and easily
- interactive editor with on-line help
- debugger with single-step
- extensive GEM toolbox
- complete manual with C tutorial

HiSoft C is already and has received reviewers

So take C and language talking

When you're ready, move up to Lattice C 5.



ready widely used been well by its users and alike.

the hassle out of learn the everybody's about.

Diamond Back II

Diamond Back is the hard disk backup utility that you have all been waiting for. Packed full of features and with an extensive manual, it is the fastest and friendliest package available:

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- Lattice C 5.06.02 @ £149.00
- ProFlight Tornado Sim @ £39.95
- HiSoft BASIC 2 @ £79.95
- HiSoft Devpac 2.25 @ £39.95
- HighSpeed Pascal 1.5 @ £99.95
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Expiry Date: Signature

All prices include UK VAT and postage within the United Kingdom. Goods will normally be despatched within 2 working days of receiving your order. Call, write or fax for export prices. All offers subject to availability.

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Special Offer

Please phone or write for upgrade details for HiSoft BASIC 2 and Harlekin 2.

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Read Me 1st

Subscription Expired? If you received this copy of ST Applications through the post, check the first line of your address label carefully: if it reads STA13, then either your subscription has expired with this issue or you have been sent a free evaluation copy of ST Applications. Either way, you must take out a new subscription in order to receive further issues.

Information

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New Address:

Mail sent to our old Stoney Street address will be forwarded and our telephone number is unchanged.

Owing to lease restrictions, we are no longer able to make retail sales from our offices. Callers by appointment only, please.

The ST Club is an independent organisation, not affiliated in any way with Atari Corporation or any other company or organisation.

Advertising

There is a limited amount of space for commercial advertising in each issue of ST Applications. Contact Nicky Wilson on 0602-410241 for further details and to request a media-pack. Subscribers can place free classified advertisements - see page 57 for details.

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12 issues : £18.00
 12 issues plus six Disk Mags : £26.50

Subscription and Order form will be found on page 57.

Overseas Distribution

Distribution overseas is dealt with via our agents:

Worldwide Magazines

Contact us for details of your nearest ST Applications stockist.

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.27, will be dispatched a few days after issue 14 is sent out.

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CREDITS

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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.

Benelux Computer '91

Benelux Computer '91 was held in the business- and technology-minded town of Eindhoven, the Netherlands, and in view of its title I had half-expected a show orientated towards business use. In fact, the format of the show was pretty much of the familiar leisure-orientated type - or "box-shifting" if you prefer!

Despite an entrance fee of 11.75 Guilders (about £3.50), a programme was not provided; however, there was plenty of room to move about, in spite of apparently good attendance. Several companies flew the flag for the UK (or rather flags, little ones projecting from the top of the stands) including Pandaal Marketing, Gasteiner Technologies and HiSoft, the latter offering substantial discounts on most of their software.

The show hall was nominally divided into thirds - for the Atari, PC and Amiga. Apple also made an appearance, but its presence was surprisingly low-key; this left the field pretty clear for Atari Benelux, which not only attended the show, but did so with great enthusiasm for the serious side of the ST and the TT. I don't think it is unfair to say that in the UK Atari's involvement with computer shows has often been minimal. It was therefore very pleasing to see Atari Benelux present under its banner promoting Desk-Top Publishing. Up to this point, I had regarded Atari's declared aim of challenging Apple's DTP market as being little more than wishful thinking, but their display at Benelux Computer changed my mind somewhat. Calamus SL was being shown to good effect on an Eizo Flexiscan colour high resolution screen, and the TT was also looking good with its TTM195 high resolution screen. The compact Atari SLM605 laser printer was on hand to provide hard copies.

Speaking to one of the Atari representatives, it was clear that Atari Benelux is keen to follow the lead of Atari Germany in serious applications of the ST, particularly DTP, and that there is a receptive market in the Netherlands. Apparently employees of Atari Benelux are led to believe that there is no serious push for serious uses of

September 20th to
22nd, 1991

the ST in the UK by Atari because most users are games players; if that isn't a self-fulfilling prophecy, I don't know what is!

The other half of Atari's display was dedicated to musical applications of the ST, and took the form of a demonstration stage featuring a rather strange-looking object known as the Atari HotzBox. Despite a superficial resemblance to a keyboard synthesiser, the HotzBox is actually a novel MIDI controller which seems to be designed to be as flexible and user-definable as possible. The large blue surface of the instrument is divided into touch-activated membranes (try imagining a large touch-sensitive version of the Sinclair ZX81's keyboard!), some of which are arranged in unmarked groups of button-like rectangles, but others of which are arranged in the style of a traditional keyboard.

Despite carrying the Atari badge very prominently, I understand that Atari was not responsible for the design of the instrument itself; however, they wrote the ST software which enables the HotzBox's outpourings to be interpreted according to the wishes of the user and to be output as appropriate MIDI information. I was told by the instrument's demonstrator that the HotzBox is now about 1½ years old; however, there seems to be no announced plans for the release of the instrument, although Jean Michel Jarre has one - well he would!

Even more unusual in appearance than the HotzBox was the display stand belonging to a Dutch outfit called the Brain Wave Lab. There was no shortage of people keen to experience the demonstration of the system, which involved sitting with headphones on and wearing a pair of special dark glasses which had an LED fixed to the inside of each lens. The idea of a red LED flashing away at my eyeballs at point-blank range doesn't appeal to me much, but the audience certainly seemed to be suffering no ill effects! I did

not get a chance for a demonstration myself, but the headphones were obviously carrying the sounds of a Yamaha FB01 synthesiser controlled by The Brain Wave Lab's software, together with the chime of a closely-miked small Tibetan bowl which was struck intermittently by the demonstrator. If you want more details of the software (which exists in two forms, 'Mini-Lab' and 'Standard-Lab'), the Brain Wave Lab may be contacted at Postbus 17199, 1001 JD Amsterdam, the Netherlands.

Musical applications of the ST (and, I suppose, the Amiga and the PC) were represented further by the presence of the Netherlands MIDI Association, and it was good to see stands for various Dutch computer clubs. If I interpreted (literally!) the catalogues correctly, PD disks in the

Netherlands seem to be priced about the same as in the UK, but the vast majority of disks seemed to contain only one main programme. I think it is true to say that there was little there that is not readily available through the ST Club and other PD distributors in the UK.

Benelux Computer '91 was not a massive show, and I doubt if many visitors came from outside the Netherlands (not even from Belgium or Luxembourg, I would have thought), but there seemed to be a healthy flow of people leaving the show with boxes of equipment, and so it was obviously a good show for Dutch bargain-hunters. From the point of view of the UK, I feel that the approach of Atari Benelux at such a show is something that Atari UK might profitably learn from.

Microdeal News

Hot on the heels of *Replay Stereo* is *Stereo Master* from Microdeal. It is an upgrade of the highly successful *Master Sound 2* adapted for stereo sampling. *Master Sound 2* has been discontinued as the release of *Stereo Master* has rendered it obsolete. *Stereo Master* features countless built-in programmable special effects, twin oscilloscopes, built-in sample sequencer for up to 18 samples, real time and step time entry of score on sequencer, fast fourier transform 3D display and built-in twin stereo spectrum analyser. It comes complete with a re-designed stereo cartridge and cable and costs £39.95.

Other new releases from Microdeal include the following:-
Harmony, a keyboard/sample

sequencer, available before the end of the year, price not known.

Payroll v4, an update of an existing product, available now at £49.95.

Quartet 2, yet another update of this sample sequencer, available before the end of the year at £49.95.

With the introduction of *Stereo Master* and *Stereo Replay*, Microdeal have cut the price of their mono sound samplers. *Replay 8* has been reduced to £59.95 and *Replay Professional* to £99.95. Microdeal samplers are currently being used by E.M.F., Paula Abdul, King Bee, Adamski and others in the pop world.

Microdeal are at PO Box 68, St Austell, Cornwall, PL25 4YB.

Educational News

Hot on the heels of *Fun School 4* come more educational releases. Scetlander Software have changed their name to Lander Software and launched two new titles. *Count and Add* is aimed at 4-7 year olds with the main character being a dog called Shades. *Spellbound* is a major release with graphics being com-

pared to those in the best ST games. It is aimed at 7-16 year olds. Both titles cost £25.99 each.

Logitech have recently released the *KIDZ* mouse at £49. It is aimed at 5-11 year olds (being small enough for a child's hand) and comes supplied with an educational package. Logitech have gone for novelty appeal with this product as it actually looks like a real mouse and comes with its own birth certificate!

An Apology!

I would like to apologise to *zzSoft* and ST Applications readers for misquoting *zzSoft's* new telephone number in issue 10. It should have read 0254 672965.

Atari News

Atari UK are getting tough over increasing copyright violation by Public Domain libraries. It appears that a number of Atari copyrighted programs have been creeping into a number of the less scrupulous libraries. Some of the titles mentioned included Microsoft Write, Hyperpaint, Hyperdraw, LDW Power, Joust, Prince, Star Raiders, Crystal Castles and Neochrome. With the exception of Neochrome, it is hard to believe that anyone could honestly mistake these programs for Public Domain.

As regards Neochrome, this is a controversial one. Without a doubt Neochrome v2.0 (commonly known as Neochrome Master) is a hacked version of Neochrome v1.0 with many added features. The fact that it is better than Neochrome is irrelevant: the product breaches Atari's copyright and is therefore illegal. No-one disputes this. However, what was disputed was the legal position regarding the original release of Neochrome. Bob Katz, Atari's Software Development Manager, includes Neochrome in his list of software which should be withdrawn from Public Domain libraries. However, v0.5 of the program has been acknowledged as being in the Public Domain by no less than Leonard Tramiel himself! I contacted Bob Katz and was re-assured that Neochrome v0.5 is Public Domain but later versions are not.

He has asked all PD libraries to contact him and he will supply them with a list of copyrighted material produced by Atari. A number of programs are released into the Public Domain by Atari each year. Those libraries who get in touch with Atari will have future PD releases sent direct to them. It must be stated that Atari are not 'head-hunting' at this stage, merely trying to clarify the situation and protect the rights to their property. However, they have warned that continued violation of their copyright will be severely dealt with.

Atari UK recently admitted to having employed a new member of its marketing team but were not willing to disclose the identity of the mystery man! It was rumoured that the new man had taken over as Marketing Manager after the departure of Peter

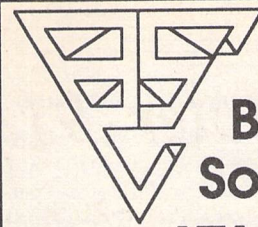
Staddon earlier this year. However, Atari strenuously denied this, stating that Staddon's replacement will be appointed in early 1992. Meanwhile, after a matter of weeks, the mystery man has departed to pastures new!

All TTs released in the UK since October have had the much sought after 1.44 Mb drive fitted as standard and the good news is that all Mega STE's (the STE/TT Hybrid) will also have it fitted as standard. An upgrade service is to be made available to existing owners. Regrettably the Mega STE has not yet been released in the UK although it is expected before the end of the year. In addition, the TT (and possibly the Mega STE?) is to have multi-tasking built in as standard from next Spring. It is unclear as to whether it will be true multi-tasking like that on the Amiga or merely program switching. More details should emerge in due course.

Regrettably, Atari's replacement for the ageing SC1224 colour monitor is not to be a low cost multi-sync designed to run in all three resolutions. It is a 14" colour monitor to be known as the SC1435. It is attractively designed in a similar way to the now defunct SM125 mono monitor with the built in tilt and swivel stand. Neither price nor expected release date was available when we went to press.

Atari UK have introduced yet another promotional pack for the ST. It started shipping at the end of October and is called the Discovery Xtra Pack. The four games titles - Escape From The Planet Of The Robot Monsters, 9 Lives, Sim City and Final Flight - will make up this 520 STE pack. All games can be operated by keyboard or mouse, and so a joystick will not be included.

The pack sleeve of the pack will advertise Atari's new range of software starter packs. There are eight modules in all covering Entry Level Productivity, Sound and Music, Home Accounting, Basic Programming, Word Processing, Database Management, Spreadsheets and Programming Utilities. The packs will cost £19.99 or £24.99 each and will be available through normal retail outlets.



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News In Brief

Europress Sales Up

Sales figures predicted in issue 11 of *ST Applications* for Europress Publications' titles have proved to be particularly accurate. We predicted sales of Atari ST User for the period Jan-June 1991 to have just broken the 40,000 copies per month barrier. In fact the actual figure was 40,093, an increase of 7.3%. *ST Applications* predicted sales of around 28,000 copies per month for the games mag *ST Action*. The actual figure was 27,735, an increase of 6.1%.

Top Distributor

Evenlode Soundworks were recently presented with an award at the 1991 Steinberg World Distributors Conference for Best Customer Support. This followed a survey undertaken by Steinberg earlier this year.

Epson Cut Prices

Leading printer manufacturers Epson recently announced price cuts on their range of 24-pin printers and the introduction of a low cost laser printer. The LQ-570 and LQ-1070 come down to £339 and £529 respectively and come with 10 built-in fonts. The EPL-4100 is a 6 page per minute laser printer and retails at £945. No details of in-built emulation or on-board memory were available before we went to press. The EPL-4100 is the first of a series of high spec laser printers being launched by Epson in the coming months.

Microprose Tie In With US Gold

Simulation specialists Microprose have signed a deal with US Gold to distribute their back catalogue through the Kixx label. Until now, Microprose have been one of the few software houses not to re-release its old titles at budget price. The deal involves 25 titles including such favourites as *Gunship*, *Airborne Ranger*, *Microprose Soccer*, *Silent Service* and *Rick Dangerous*. *Stunt Car* has already been released and at least one title per month will be added to the range over the next two years. All titles will retail at £9.99.

Ritz Move Into Computers

City Vision PLC, owners of the Ritz video chain have launched a new subsidiary dealing in computers, consoles and associated software. The new chain is to be known as Game Vision and opened its first two stores in Ruislip and Muswell Hill, London, recently. It is expected that a number of outlets will spring up throughout the country over the next year. Amongst others, Atari hardware and software as well as a selection of computer magazines is to be stocked. Each store will feature a 'Play before you Pay' area where customers can try out the latest releases.

HMV To Stock Computer Software

Record chain HMV are to stock games software for the ST, Amiga, PC and consoles on a trial basis in three of their stores. Should this prove successful, it will be extended to many more of their 80 stores nationwide. The three stores involved are the megastore in Oxford Street, London, as well as stores in Reading and Southend.

Monulator Updated

Moriarty Software's mono emulator, the Monulator, has been updated to v1.8. The latest version now features a green screen option for greater clarity, a text filter to eliminate fuzziness, inverse or normal display and easy selection of a scroll key. In addition, a number of bugs have been fixed and the Monulator is now even more compatible with rogue PD programs which refuse to run under other emulators. Monulator costs £19.95 (upgrades £5.00) and comes bundled with some monochrome PD software. For further details of the Monulator, refer to Joe Connor's CAD column in issue 11. Please note that Moriarty Software have moved. They are now at 1 Cedar Place, Langley Green, Crawley, W Sussex, RH11 7SB, Tel:0293 539215.

Micronet Shock!

In a surprise announcement, British Telecom have decided to axe Micronet, the leisure computing database within Prestel. After eight years, BT came to the conclusion that the service was no longer viable and closed it down on 31st October. A popular area within Micronet for ST users was 16/32 Microbase. Jason Brome, editor of 16/32 Microbase, is hopeful of resurrecting the ser-

vice on another network in the near future.

Linotron Service For Calamus Users

The CY Services of Nottingham are now offering a bureau service for Calamus users. They can output directly from Calamus to paper or film using a Linotron 300 typesetter. Users need only supply the Calamus CDK file along with all fonts used. The cost is £5 for an A4 page, reducing to £1.50 for quantities over 100. Contact David Hayes, The CY Services, 52 Beech Avenue, New Basford, Nottingham, NG7 7LQ; Tel: 0602 605377.

APL Upgraded

MicroAPL Ltd have just upgraded both level I and level II of APL.68000 for the ST. It now features multi-tasking with support for up to 4 APL tasks running concurrently. In addition, the ST can be used as a terminal on another computer, emulating the VT100. Full cut and paste between windows is supported and a single copy of the main program is shared between all tasks, thus saving memory. Numerous other improvements have been made to this version of the language and upgrades are available to existing users at £47. For full details contact David Eastwood, MicroAPL Ltd, South Bank Technopark, 90 London Road, London, SE1 6LN; Tel:071 922 8866; Fax:071 928 1006.

Reflex On The STE

Titan Designs have produced a low cost adaptor for their Reflex Graphic Card which allows it to be used on the STE. The STE adaptor costs £29.96 and has been designed to support most Mega ST expansion cards currently available. The Reflex Card is not memory dependant so it can be run on any ST(E) from a 520 upwards. It also supports a wide range of A4 monitors.

Also new from Titan Designs are the Eizo 5500 17" monitor at £821.33 and the Eizo 6500 21" A3 monitor at £1291.33. Both offer flexible scanning and dynamic focusing, producing a stable flicker-free display. These monitors are supported by the Reflex Card offering a resolution of 1024x870 and 1024x1024 respectively. An adaptor to connect them to a TT (also stocked by Titan) is available for £24.95. Contact Titan Designs Ltd, Institute of Research & Development,

University of Birmingham Research Park, Vincent Drive, Birmingham, B15 2SQ.

No Future For Express!

Future Publishing have finally axed their weekly title *New Computer Express*, two weeks short of the third anniversary of its launch. Despite forcing out its only competitor, *Popular Computing Weekly*, NCE never really achieved high sales figures. After disappointing figures for Jan-June 1991, Future made a brave move and put out a cover disk on each issue. This obviously failed to stimulate demand and the title was withdrawn. The failure is being blamed on the fact that the public have lost interest in multi-format publications.

Not to be seen to be resting on their laurels after the demise of NCE, Future have stepped up the frequency of their fledgling title *Public Domain*. From this month it is to appear on a monthly basis like its rival, *Shareware Shopper*. They have also announced a tie-in with Atari where the next 50,000 STs sold in the UK will have an issue of *ST Format* bundled with them.

More Wrangles Over Copying Devices

Several months ago an attempt was made to ban adverts for copying devices in the computer press. Several manufacturers of these devices objected strongly to the ban and questioned its legality. In addition, one of the leading publishers refused to back it. In an attempt to resolve the situation, Ocean have approached the respective manufacturers requesting the technical specifications of their hardware. Their argument is that, should they get this, future games releases can be protected against such devices.

Professional Fonts From Soft Logik

Soft Logik have licensed professional fonts and clip art from Image Club, a Macintosh developer. The collection comprises some 600 fonts in Postscript format for use in PageStream 2 or other Postscript compatible programs. There are two 16-font sets and two 8-font sets costing \$199.95 and \$99.95 per set respectively. These fonts are available from Soft Logik on (US) 314 894 8608 or (US) 800 829 8608. They should filter through to UK distributors in due course.

GFA DRAFT PLUS

Reviewed by Dr. Steve Henderson

On the odd occasion I have been in an architect's office, or (more often) seen one on television, I have marvelled at the technical drawings and plans attached to large drawing boards. How long have they taken to prepare? How many years had the draughtsman studied at University to be able to produce these works of art? Most importantly, could I prepare a plan of my kitchen without going to the expense of buying a load of undoubtedly expensive equipment? Up until fairly recently it was a case of do it yourself or hire one of these very expensive professionals to do the job. The third alternative arrived with the advent of Computer Aided Design - CAD. Initially CAD packages were only to be found in large companies and cost thousands of pounds. Now, the advent of powerful micros like our Ataris, and the appearance of several cheap CAD packages, put these facilities at our fingertips. Modern CAD programs remove a great deal of the hard work and skill required to produce plans and drawings and allow even a novice like myself to produce drawings faster and with greater precision than I could ever hope to attain armed with a sheet of paper and a pencil. Although the area of the monitor screen is small, large drawings up to A0 can be created quickly and accurately and hard copy can be obtained from a variety of devices ranging from 9 pin printers up to lasers and professional plotters.

GFA Draft Plus is a grown up version of version 2 and with a price tag of just under £100 (recommended) is not a program you would buy just to doodle with. Most of us would make the assumption that we are unlikely to make heavy use of a CAD package but what I find is that I also make extensive use of it as a drawing package instead of HyperDraw which, as I mentioned in ST Applications 8, I felt was rather limiting.

The package is supplied as

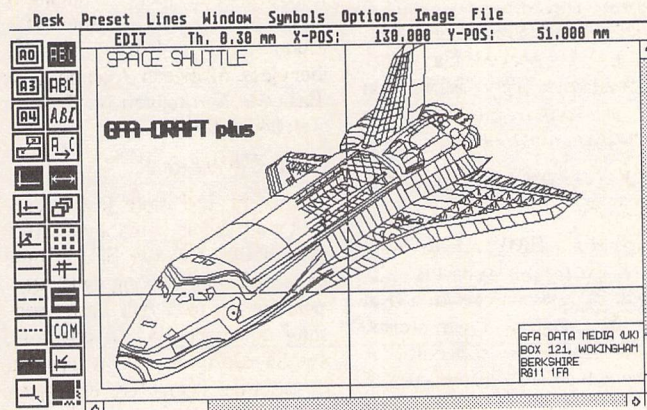


Figure 1

The ubiquitous space shuttle....

two unprotected double-sided discs and a 228-page ring-bound manual. The program can be run from a 520 with a single drive but two are desirable and a hard disc, as usual, makes life considerably easier. The program is STE compatible. The manual recommends running from backups if using a floppy-based system and if using a hard drive tells you to copy all files from both discs into a folder in the usual manner. Here I ran into a lot of problems which were solved by reading the Readme file on one of the discs. The program appears to get lost within the directory pathways, but having read the Readme file I found it a simple matter to set it up properly. Obviously, I am not the only person to have had trouble with this problem. I assume that the manual will be updated in the future to explain the matter. The program can be run from under Neodesk 3 without any problems, but when you quit a status error message is produced - this clears on clicking the mouse and you re-enter Neodesk. The manual is well laid out and equipped with an index. It rather belabours the explanation of directories and simple GEM operations to the tune of three pages. One of the appendices is a list of the most commonly asked questions to the support staff. This

is well worth reading before you 'phone for help. This should be included in more manuals as I suspect that support staff must get fed up with answering the same questions day after day. Like all good manuals, the first part of it takes the form of a simple get you going tutorial and right from the beginning has you drawing simple geometric shapes and lines. I like to get something on the screen fairly quickly rather than have to spend the first hour reading - but I may just be impatient. The manual recommends loading one of the supplied example files to illustrate various aspects of the program. Guess what? The ubiquitous space shuttle yet again! The main screen is rather impressive with not only the usual GEM menu bar across the top but also two columns of icons down the left hand side of the screen (see Fig. 1).

Those of you who have used version two of this program will note this to be a rather dramatic change to the main edit screen. Activate the window mode (more on this in a moment) and the right hand column changes to a further 10 icons. This overlaying of icons depending on mode is an obvious technique for expansion at some future date. These icons are all used to activate the most commonly used facilities in Draft Plus

and replace keyboard shortcuts of which there are none. I can see the point of this, but I am a great fan of keyboard shortcuts and find they speed up program operation. The GEM menu bar is standard apart from the location of the file menu which sits at the far right rather than its normal position at the far left. I found this to be rather irritating and I don't see any reason for it.

The main drawing area is a GEM-like window with sliders but without the facility to resize or close the box. Cross hairs are present if the cursor is in the drawing area and its x and y coordinates are shown just above the drawing area. You can select from a wide range of units including both metric and imperial. Moving out of this area restores the normal pointer. The default condition for coordinates is with the lower left of the screen having cartesian coordinates (0,0). Using relative mode allows the point at which the mouse was last clicked to be defined as (0,0). Polar mode uses polar co-ordinates (in which the length of the line and its displacement angle are defined) and is particularly useful when using circles, etc. The manual recommends using the mouse for normal movements and the cursor keys for fine adjustments. Although I had little trouble with fine adjustments using the mouse, the sensitivity of both the mouse and the cursor keys can be altered using the cursor option from the PRESET menu.

As you can see from Figure 2, the cursor keys can be adjusted to a very fine level and the answer is probably to have the mouse desensitised and the cursor keys as finely adjusted as possible. This menu option also allows you to choose between the default cross hairs and a simple cross type pointer.

There are three main modes of operation. Edit is the default mode and is used to edit existing drawings. Line mode is used to draw lines etc. The third mode is Window in which you manipulate

the size, orientation, etc., of drawings. Clicking on the right hand mouse button will restore you to Edit mode from either of the other modes or any other part of the program. Line handling is generally rather impressive. The thickness can be altered from 0.1 - 9.9mm and be solid or a variety of broken styles. Line types can be selected from the right hand icons and I found them to be very convenient when using a variety of different line styles. A problem I have had when drawing figures is that I want to join two lines but I end up with the lines either not quite meeting or overshooting slightly. This problem is dealt with in an elegant manner by selecting the Capture option from the Preset option (see Fig. 3).

This allows you to define a capture radius, and when you activate the line locking icon the end of any line you draw will automatically be joined to any other line ending within the capture radius. The reverse of this option is Break Line. This separates two lines which meet or intersect at a point. The Trim Lines option removes the overlapping ends of two intersecting lines. There is also an option to extend the length (but not direction) of an existing line. This facility can be particularly useful if you wanted to insert an electronic component into a circuit and the connections don't quite meet the main circuit. The facility to draw a line perpendicular to another is very useful as is the tangent to a circle option. A line may be drawn at any specified angle to another and this can take a lot of pain away from plan drawing. For the genuine draughtsman, the facility to round corners at line intersections is provided but I suspect that few users will utilise this option. These are the good points about the line facilities - now the bad. There is no provision made for altering the endings of lines. I got used to HyperDraw's choice of square or rounded endings to lines. This is particularly useful when you consider that the lines in Draft Plus can be as wide as 9.9 mm. There is no facility to use arrow endings on the lines and I regard this as a fairly serious omission.

The geometric shapes on offer however leave me with no room for complaint at all.

The menu shown (Fig. 4) at first appearance is rather disappointing but never fear, there is considerable hidden depth. Because Draft Plus works with vectors, all objects, even round

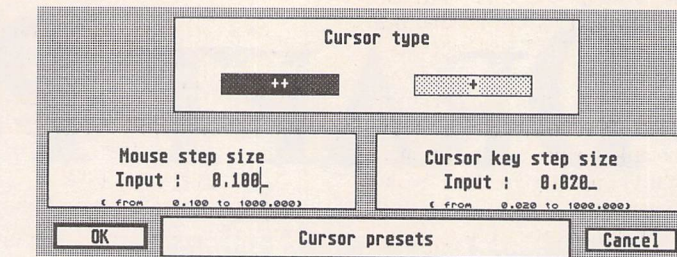


Figure 2

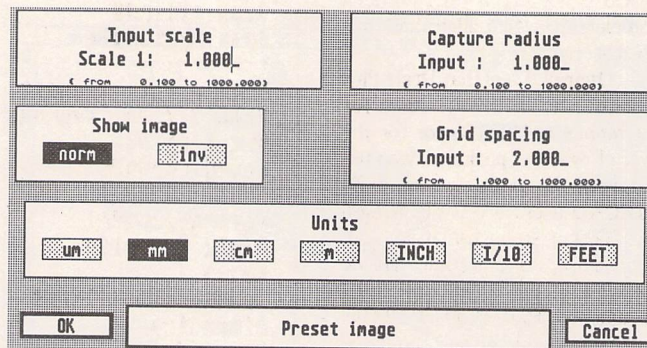


Figure 3

and curved ones, are built up from straight lines. A circle is therefore really a polygon with a large number of sides which gives the appearance of being a circle. The default value for the number of sides used to represent a circle is 36 but this value can be set to be anywhere from 3 to 180. Thus selecting five sides means that our circle will become a regular pentagon. This alleviates the problem of having a large menu to cover the number of regular polygons that users will want. The rectangle entry is necessary because it is an irregular polygon. If you want to draw irregular polygons you will have to do it by hand which is not that difficult using the join lines facility mentioned earlier. A problem I encountered with HyperDraw was the rather rudimentary curve drawing facility. This problem is dealt with using splines in Draft Plus. Select Spline from the option menu - this changes the cross hairs' shape; click at the points which you want to form points on your curve; press return and the curve is drawn in - beautifully simple and effective. You have the option of whether the final point will be connected back to the first point or not.

The Window mode deserves mention at this juncture. This is a really powerful area of the program and allows for a wide range of manipulations on both diagrams and text to be carried out (see Fig.

5). Selective zooming, deletion, translation, copying and rotation are all carried out in this mode. There are two different rotation icons on the panel. The first simply performs a 90 degree rotation of the selected component and the second is a selective rotation which produces an alert box inquiring by what angle you want rotation. Reflection can be performed in only the x or the y dimensions. The skew option is one which confused me. It appears to have little use other than to produce a sort of pseudo 3-D effect - CAD buffs may appreciate a deeper meaning than I do. Professional plans always use hatching for emphasis and this facility is well catered for.

Angle of hatch, spacing and single or double hatching are selected from this option and it produces a fast and effective result. You must ensure that the area you choose to hatch is fully enclosed or an error message results. Also be warned that if the area you want hatched is not fully enclosed but leads into a larger enclosed area, then the whole area hatches - I know!

Standard libraries of components are a feature of all CAD programs and Draft Plus is no exception. A series of standard libraries is included. These include electrical, electronic, flowchart, architectural symbols, etc. A student's girl friend studying archi-

ecture was rather scathing about the contents of the latter library, but for the non-specialist user I thought they were all useful. As users draw plans, etc., they will build up their own library of components by rubber banding them and saving them for later use. Loading of symbols from a library is a rather slow business from floppy and the manual explains how to set up a RAM disc to hold component libraries which you know you will be using. Try this on a 520! Symbols can be assigned to the ten function keys and this facility can save a lot of time if you are using several symbols repeatedly. Like virtually all CAD packages, Draft Plus offers multiple levels (layers in most other programs). These can be envisaged as superimposed layers of acetate, each containing a different aspect of the drawing. Only ten levels are allowed and as each level is stored on disc, either a hard disc or RAM disc is desirable to avoid excessive waiting as you move between levels.

Text handling is fairly good for annotation of diagrams and even offers the luxury of italics and proportional spacing.

One of the joys of our computers is the graphical front end. Input of commands is the premise of the Command Line Interpreter (CLI) equipped computers such as PC's, etc. I therefore read with surprise that Draft Plusplus was equipped with a CLI mode known as Command mode. This mode does to some extent negate my objection to the lack of keyboard shortcuts. Much to my surprise I found it quite useful for a lot of tasks, particularly those which result in a dialogue box being called into which you have to input values. You can compile a list of commands in a file which is then automatically executed by Draft Plus. It is possible to calculate parameters in your own basic program and these values are inserted into Draft Plus. This allows for displaying mathematical functions or statistics in graphical display without going mad with the mouse. The use of the Command mode is one of the more complex aspects of Draft Plus but the manual spends thirteen pages describing its operation and the effort spent in mastering it is worth while in the long run.

Because many CAD packages, and Molgraph, allow output in Hewlett Packard Graphics Language (HPGL) you can import these files into Draft Plusplus

because the execution of program files in the programming language of Draft Plus is related to the ability to execute program files in HPGL.

Output is via Draft Plus's own printer (or plotter) drivers and a wide range of these is supplied. As these are in ASCII, it is fairly simple to tweak one to your exact requirements if you have an unusual model, and the manual takes you through an example driver explaining what everything does in a very clear manner.

As I mentioned at the beginning of the article, there are additional programs supplied as utilities designed to be run outside the main program. LIST allows you to create a list of data from a drawing file which you might then want to store in a database. FORMLIST prints out the file of components produced from List. Names and numbers of components, measurements, etc., can be sorted, formatted and filed. The DXF convert program is used to convert a Draft Plus drawing file into the standard DXF file format and vice versa. If when you convert a DXF file into Draft Plus format, the resultant

file exceeds the 64K maximum that Draft Plus can handle, then the utility SPLIT will separate it into as many 64K files as required. The META utility will convert Draft Plus files into standard metafile format which will allow you to import your drawing into Timeworks DTP, etc., so that you can use more advanced typefaces than is possible in Draft Plus. In order to use this utility you must have GDOS installed. Guess what? GDOS is not supplied!! I am at a complete loss to understand this glaring omission.

Overall, I feel that Draft Plus is an excellent CAD package for the amateur CAD user or for the user of drawing packages who has outgrown HyperDraw, etc. Serious CAD users are going to lash out £600 or so on DynaCad. Less serious users than myself may do well to consider the recently relaunched MasterCad at £29.95. Apart from my gripes about the line endings, I have very few complaints about it and feel that for the money (-£75 mail order) it represents an excellent CAD-cum-drawing package which is fairly easily mastered.

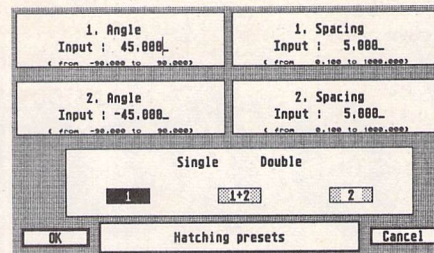


Figure 4

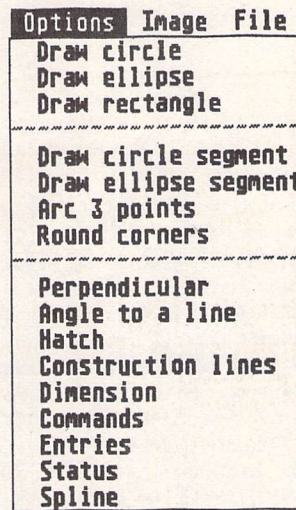


Figure 5

Product:.....GFA Draft Plus 3.0
Version:.....3.13
Price:.....£99.95
Distributor:.....GFA Data Media
(UK) Ltd
Box 121
Wokingham
Berkshire
RG11 1FA
Tel:.....0734 794941
Fax:.....0734 890782
Manifest:.....228-page
ring-bound manual,
2 d/s discs.
System:.....0.5Mb RAM;
medium, high
resolutions.

Redacteur3

The first version of Rédacteur became the standard word processor for the ST in France. For journalists working for the newspapers *Libération*, *Oeust-France* and *La Voix du Nord* it has become an indispensable tool. Its speed and features have attracted thousands of users.

The latest version of Rédacteur, version 3, has retained the speed of the original version and added a greater degree of flexibility, and many more functions and facilities:

- Multiple rulers, paragraph styles and page layouts;
- Choice of character height/width and line spacing;
- Footnotes and endnotes;
- Automatic creation of tables;
- Graphics handling (16 formats recognized);
- Programmable macros
- Built in switcher for toggling between programs;
- Font Editor and Editor for mathematical formulae;
- English and French spell checking plus Verb conjugation;
- Editor for user-defined dictionaries;
- Automatic Hyphenation;
- Option to save text files in compressed format;
- Saves in ASCII with or without end of line carriage returns, First Word (Plus), Word Perfect and Microsoft Word formats;
- Full configurability of most functions;
- Database and Mail Merge;
- Runs on any Atari ST(E) Mega ST(E) or TT with at least one megabyte of memory. Colour or monochrome display.

At last, this truly professional, flexible, and - above all - fast, wordprocessor is available in English. With over 7,000 users in France Redacteur 3 has become the standard by which all ST word processing packages are judged.

The ST Club have been appointed the sole UK distributors for Redacteur 3. Pricing and availability details will be announced in issue 14 of ST Applications. An evaluation disk containing a demo version of Redacteur 3 is available at 75p - see order form on page 57. (Disk Mag subscribers will receive a free copy of this disk with DMG.27)

Hotwire v3

Codehead Utilities have recently expanded and upgraded their Hotwire shell package to version 3, and it is being promoted as the most powerful ST shell money can buy. But is it? Michael Baxter takes his ST for a joyride...

ST users have been battling with the limitations of the GEM Desktop ever since the computer's release way back in 1985. Since then, countless bolt-on utilities have been devised by amateur and professional programmers alike which have gone some way to alleviating the shortcomings and quirks of GEM. Gribnif killed the competition stone dead two years ago with its complete desktop replacement - it was fast, it was powerful and Wimp addicts instantly fell in love with it. Since then, few companies have come anywhere close to challenging its supremacy. Codehead Software, programmers of so many excellent PD and commercial utilities, may be about to change that with major updates to two of their existing titles, namely Hotwire and Maxifile which have both matured to versions 3.0. Together, they offer a complete and exceptionally powerful alternative to NeoDesk. Hotwire 3 forms the backbone of the partnership and is first to get the thorough ST Applications treatment, with Maxifile waiting in the wings until next month's issue.

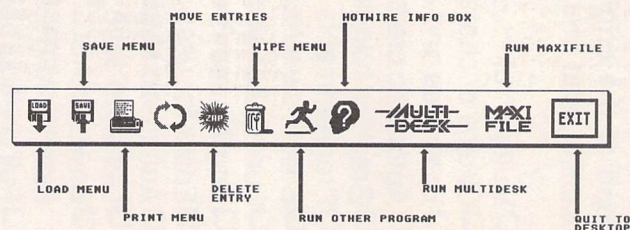
Package Contents

Hotwire is supplied on one double sided disk with an accompanying 42-page manual. Unfortunately, Codehead have not seen fit to upgrade the manual at the same time as the software, and as a result the supplied text refers to a much earlier version of Hotwire (v1.3 in fact) and is hopelessly out of date. The remedy to this is a lengthy Readme file on the master disk. Nevertheless, it is well set out, and clearly written in a gentle style which doesn't get carried away with technical jargon. There isn't an index, but the comprehensive table of contents and logical

layout makes up for this. As a complete guide to Hotwire, it obviously falls down badly, but at least it gives an overview of the operation of the software and will get users thorough the installation and basic familiarisation of the package. Codehead have filled up the remaining space on the disk with the latest versions of some of their shareware utilities, such as the Little Green File Selector, Pinhead 1.8, and BFix, which corrects a problem with double clicking in some programs running under TOS 1.4.

Installation

Hotwire is not copy protected, but you are required to enter your name and address into a small registration program which then creates a working version of the software on the master disk. This enables you to copy Hotwire onto as many of your own working disks as you like, but allows Codehead to come down on you like a ton of building materials should you decide to circulate illegal copies of the software yourself. Once that's out of the way, you can either manually install the resultant 115k program file in the auto folder of your boot disk, or run the supplied Kickstart program which automates the whole process and demonstrates some of Hotwire's features with example "HOT" configuration files.



The icon strip at the foot of the main menu screen.

Operation

Hotwire has two modes of operation. In can be run as an invisible extension to the GEM desktop, or, alternatively, it can be installed as a GEM-based shell. At this point, it might be wise to mention that Hotwire on its own is not intended to be a desktop replacement - it lacks the disk and file management functions of the built-in GEM desktop and NeoDesk 3. It does have built-in support for Maxifile III, however, and running these two programs in tandem will give NeoDesk a real run for its money, but that's another story...

So what's the thinking behind Hotwire? Primarily, it allows you to assign hot key combinations to up to 54 separate applications and run them with a simple keypress without having to wade through folder after folder to get to the program you wish to run. Alternatively, you can have all 54 files displayed on screen from within the GEM-based shell and switch effortlessly between them simply by clicking on them with the

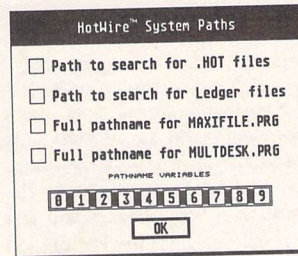
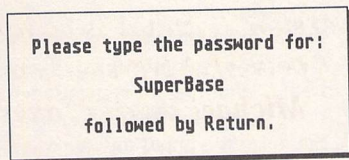
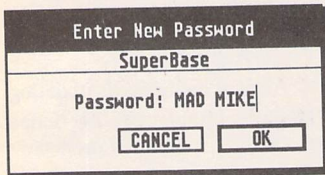
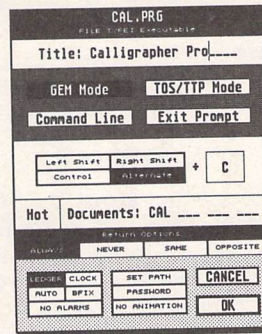
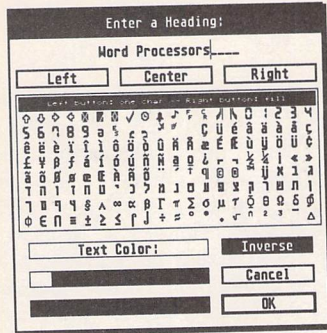
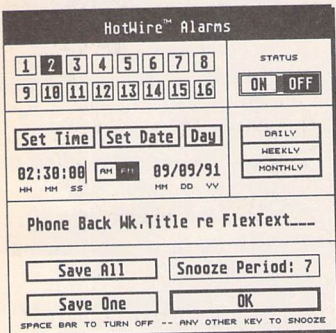
mouse. That's the basic idea, but Hotwire offers a hell of a lot more than simply a quick and convenient way to run programs. Read on...

Menu Options

Installing a program in Hotwire is simply a matter of clicking on a blank menu entry, locating the program using the file selector, and then setting the execution options for that particular application. This is where Hotwire scores heavily over all the competition. For the record, NeoDesk 3 allows up to 28 applications to be installed as icons on the desktop and run with a key combination or mouse click, but that is as flexible as it gets. Hotwire, on the other hand, treats each application separately, and allows certain parameters to be set before each individual program is executed. The running mode of the program can be specified, i.e. GEM, TOS, TTP, etc., and a command line dialog box can be forced, even for GEM applications. You can instruct a program to return to Hotwire or to the desktop when it quits. Alternatively, if you run a program from the desktop with a key combination, you can have it return to the Hotwire menu.

The often overlooked "Install Application" feature of the GEM desktop has been expanded to support four different file types, and allows two methods of passing filenames to applications, namely HOT and GEM. The GEM option emulates the way the GEM desk-





The Alarm, Heading, Install Application, Password and Install Application dialogues.

top handles installed applications: it sets the drive and path to that of the document file and passes the application a filename without path information. Subsequently, if the application needs to access a resource file, it won't be able to find it, causing a fatal error. Essentially, this means that for some applications, the data or document files must be stored in the same folder as the application itself, which is a silly and unnecessary restriction. The HOT option frees you of this restriction by passing the full pathname of the document, and leaving the application pathname unchanged. An elegant solution to an annoying 'feature' of GEM.

The built-in Hotwire accessories, such as the ledger, corner clock, caps indicator, alarm clock, password facility and the TOS 1.4 BFix system patch can be set to automatically switch on and off as required for each application. This is ideal for programs (such as Calligrapher) which don't get along with corner clocks and caps indicators very well. One oversight, however, is the lack of a similar option to automatically switch the blitter on and off - some applications simply aren't blitter friendly, and believe it or not, some actually run faster without it. Maybe in the next release, Codehead?

Text headings can be freely mixed with executable files on the menu, allowing you to group programs under general headings, and give the menu a more pleasing display. Completed menus are saved as HOT files, and you can create as

many different menus as you like. A nice touch is the ability to install HOT files on the main Hotwire menu, and then simply switch between them with a mouse click. I use this feature to install "Work Managers", more detailed submenus relating to specific applications. For example, double clicking on the WP/DTP entry (fig. 1) will bring up a list of small utility programs relating to DTP and Word Processing work, which are too specialised or trivial to be displayed on the main menu. You can even install document or data files on the menu provided an executable program has been installed for that file type. It's all very flexible and will be able to cope with most users' demands.

Global Block

In addition to the multiple menus, Hotwire allows the definition of a global block. This is simply a

group of up to twenty programs whose hot key combinations are permanently stored, regardless of which menu is loaded or which applications have been installed by that menu. You can keep your twenty most-used programs (?) in the global block area knowing that their key combinations will never change.

Chaining Programs

Hotwire allows you to form chains of programs that will be executed in sequence, and loop to the first program in the chain if required. Programmers are likely to get the most use out of this feature, using it to handle edit-compile-link-run (crash!) development cycles.

Work Files

This is a very clever and very powerful feature whose usefulness may not be immediately obvious.

It allows up to eight filenames to be specified in place of actual filename variables on command lines. This allows you to set up shell environments - normally the domain of programmers - which should never have to be changed. For example, suppose you were developing a C program, and the source file was called "I12BOMB", simply enter that name into the slot for work file 1. Instead of having to type the command line each time you wanted to compile/link a program, you could set up a default command line for your compiler, such as

-ih -Lg~1

which would be expanded automatically to whatever filename you had defined as work file #1, which in this example would expand to:

-ih -Lg "I12BOMB"

Ledger

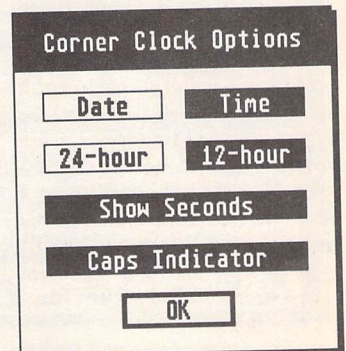
Hotwire has a novel "work ledger" facility which monitors the time you spend working with each application. Each time you quit a program which is monitored by the ledger, it updates a daily ledger file, recording the time you started the program, the time you left it, and the total time elapsed. Quite how useful this information would be to the majority of ST users I'm not sure, but it will certainly raise your eyebrows when you see exactly how much time you have spent slaving away over the keyboard!

Alarms

The Hotwire alarm is the most comprehensive such facility I have yet come across on the ST. It allows up to sixteen separate alarms to be defined which is surely enough for even the most time-conscious of people. These can be individually set to go off daily, weekly or monthly; alternatively you can use the seven day

HotWire Ledger File		Tuesday, September 17, 1991			Total elapsed time this session: 01:07:44
Application	Document	Start	End	Elapsed	
Calligrapher Pro		7:48:26 pm	8:32:16 pm	00:43:51	
1st Word Plus		8:32:28 pm	8:38:28 pm	00:06:00	
Fast Copy III		8:38:48 pm	8:42:06 pm	00:03:18	
Calligrapher Pro		8:42:30 pm	8:45:28 pm	00:02:58	
Hyper Paint II-STE		8:49:36 pm	9:05:32 pm	00:03:51	
PicSwitch		9:06:32 pm	9:07:28 pm	00:00:55	

The ledger shows how much time has been spent with different applications.



timer, where you can specify which days you wish the alarm to be active. It's flexible and it works; what more can I say?

Other Bits

Users of early ST models who are envious of TOS 1.4's ability to autorun any GEM application at bootup can now have the same facility via Hotwire's auto-start option. It operates in a similar manner, the only limitation being that Hotwire must be present in the auto folder of your boot disk. It works, and it's reliable, so that's one less system patch you'll need in your auto folder. Hotwire also allows you to create a custom desktop pattern and colour, although this only seems to work within the GEM based shell - the normal desktop remains unaffected. Like NeoDesk, Hotwire offers support for environmental variables, although unlike the former which can only support up to ten such variables, Hotwire will handle as many as you can cram into the dialog box. The vast majority of programs ignore environmental variables but a few development and utility programs can use them. For example, the popular PD archiving program ARC.TTP can use a TEMP variable to see which path it can use to store temporary files. The Hotwire work file function can also be combined with this facility, so that the above example could be written as TEMP=~1, where that temporary storage path would be the path defined for work file #1. If programs can make use of this feature it will be specifically mentioned in its documentation, so you can decide for yourself how useful this facility will be for you.

Codehead have gone to great lengths to make Hotwire as configurable as possible - for example, the zoom boxes can be switched on and off, and you can even specify

the display time for alert boxes. Thankfully, all settings and default paths can be saved.

TT/Mega STE Support

Hotwire III will run happily on TT's and Mega STE's, and will support the extended graphics modes and colours that the TT has to offer. However, owing to the differences between TOS 2.0 and earlier versions, Codehead have not been able to implement the desktop hot-key feature using legal programming techniques. This is not really a problem, since TOS 2.0 has a similar built in facility of its own, and the Hotwire GEM menu shell works without any problems.

Hooks for Multidesk and Maxifile III

Hotwire III has built in support for Maxifile III and Multidesk. Calling either of these programs up is simply a matter of clicking on its respective icon at the bottom of the menu screen. If either Maxifile or Multidesk has been installed as a desk accessory, they appear instantly; otherwise, they must be loaded from disk, causing a short delay, although it's hardly noticeable with a hard disk.

The path names for each program can be specified and saved in the Hotwire configuration file, allowing them to be placed anywhere on the disk, not necessarily in the same folder. As I mentioned earlier, running Maxifile III and Hotwire together should in theory give you a flexible alternative to NeoDesk, as Maxifile supports all the disk and file operations that Hotwire lacks.

The crux of the matter lies in whether Maxifile III is as flexible and powerful as NeoDesk in this department. I'll draw my conclusions next month.

Software Compatibility

This is always a big issue where replacement shells are concerned. One or two badly behaved programs don't like running from anywhere else other than the GEM desktop, as users of NeoDesk 2 found to their dismay. In this respect, NeoDesk 3 is far better, but the odd program still causes problems, the most noticeable of which is Protexit 5. I've tested Hotwire with several known problematic programs such as Stereo CAD3D-2, Zoomracks, Easy Draw, and the aforementioned Protexit, and I'm happy to report that all run without any apparent problems. I obviously can't guarantee this level of functionality with all existing ST software, but every application I regularly use runs faultlessly.

Hotsaver and Hotswitch

Two additional utilities are supplied with the Hotwire package. "Hotsaver" is a screen saver program the likes of which have been seen many times before in the public domain. It simply blacks out the screen display after a predetermined period of mouse and keyboard inactivity, to prevent monitor "burn in". The Hotsaver program goes a little bit further by bouncing the Hotwire logo around the screen, as well as displaying the time, date, and an inactivity timer. One nice touch is the ability to manually kick the saver into operation, locking out any further access until a password is entered. It will also park your hard drive in the process. "Hotswitch" allows you to reboot the computer with a different Desktop.Inf file and default Hotwire menu file with a single keypress. It also alleviates the problem with accessories which intercept system vectors - such accessories often crash the computer when you change resolutions owing to the operating system's insistence on pulling resident programs out of memory without any warning. It's a useful program, but I'm not quite sure why Codehead didn't build this facility into the main Hotwire program code...

Summary

Points For:

- ✓ Powerful GEM Desktop extension - hot-key feature works well

- ✓ Intuitive GEM interface, with keyboard shortcuts for all shell functions
- ✓ Claimed full compatibility with all ST software - I have no reason to doubt it
- ✓ Hooks for Maxifile and Multidesk give the option of a powerful NeoDesk alternative
- ✓ Good range of program running options
- ✓ Easily configurable to your own preferences
- ✓ Fast and compact - written entirely in assembly language

Points Against:

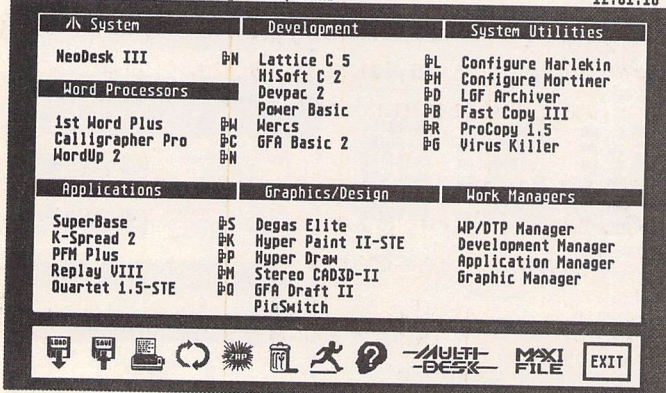
- ✗ Manual badly needs updating
- ✗ Blitter state can't be defined for each individual program

Conclusion

The ultimate shell? Well, Hotwire 3 does everything it claims to do, and falls over only in the manual department. It has obviously been very well researched and written, its compatibility is a tribute to that, so there can be no complaints about the program's quality. As regards to the usefulness of Hotwire to the end user, well that depends entirely on how many applications you regularly use. If you have a hard disk packed out with development software, word processors, spreadsheets and utilities, then I would have no hesitation in recommending Hotwire. If, however, you are using a floppy based system, regularly running perhaps two or three different programs, then you could probably live with the GEM desktop, and put the £30 towards something else more appropriate. It really depends on your requirements. If you fall into the first category, however, Hotwire III is worth a very serious look.

Desk File Edit Configure Options

12:01:18



The Main Menu

Product:Hotwire
 Version: 3.0
 Supplier:Codehead Software, c/o The Atari Workshop CSS, Windsor Business Centre, Vansittart Estate, Windsor SL4 1SE
 Tel: 0753 832212
 Fax: 0753 830344
 Price: £29.95
 Manifest: 1 double-sided disk, 42-page manual
 System: Any Atari ST/STE/Mega STE/TT system, mono and colour

Calligrapher Junior ?

Calligrapher Junior is a word-processor with a difference - it has powerful graphic and presentation facilities to give your words more impact.

- 1** Fonts provided in a variety of styles. **Real bolds. Real italics.** Five different families of fonts supplied as standard:

Zurich

Holland, Holland **Bold** and *Italic*

Unitype Medium and **Bold**

MathSymbols αβχδεφ ηΑΒΧΔΕΦ

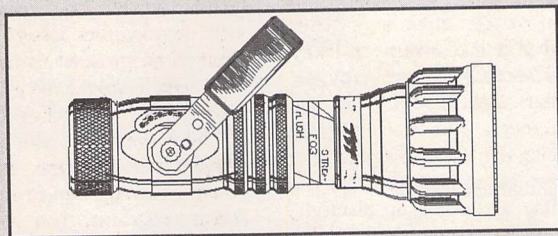
Ornaments ⊕ ⊗ △ ▮ ☎

- 2** Vector outline fonts allow you to print big headlines or small print from 6pt to 128pt.

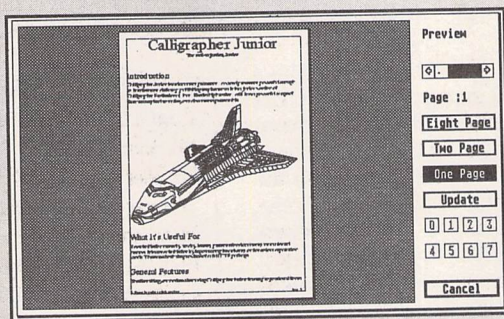
small print at 6pt using vector outline font

48pt Font

- 3** Imports .IMG and .GEM graphics, which can be freely resized within Calligrapher. You can also convert, crop and manipulate Degas and Neochrome pictures.

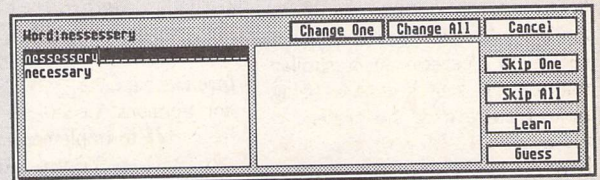


- 4** Preview your document before you print. You can view 1, 2 or 8 pages at a time.



- 5** Multiple columns. You can have several columns on the page, edit with multiple columns on screen and preview your work.

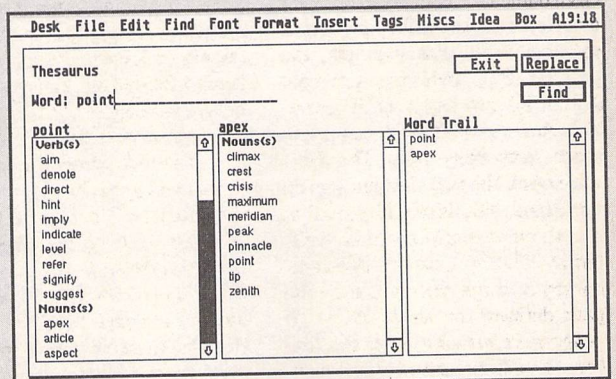
- 6** 80,000 word spelling checker, with phonetic and alphabetic guess. User dictionary, skip one or all occurrences. You can even check as you type.



- 7** Up to 7 documents can be held in memory at once. You can switch between them and cut, copy and paste from one to another.

- 8** Drivers for 9 pin printers and 24 pin printers. (Will also drive ink jet printers such as the BJ10e at 180 DPI). If you have GDOS bitmap fonts, Calligrapher can use these as well.

- 9** 200,000 Synonym thesaurus included as standard. (Requires 1 double sided disk drive).



- 10** Headers and footers on odd, even or all pages. You can change the headers and footers repeatedly throughout the document. Headers can contain multiple lines, rules and graphics etc.

- 11** Footnotes with identifying numbers. You can put almost anything in footnotes that can be included in normal text.

- 12** Calligrapher Junior can run on a 520 ST and is provided on single sided disks. 1Mb of memory is recommended.

- 13** Costs only **£69.00** all inclusive.

THE ONLY THING JUNIOR IS THE PRICE

Brochure and Demo disk from Working Title, PO Box 4, Eynsham, Oxford, OX8 1UD. Tel. 0865 88 35 92 Fax. 0865 88 32 33

Avant Vector

*Avant Vector generates vector graphics files from bit image files. Sounds simple doesn't it?
The power of this software suggests this is not the whole story.*

Joe Connor explores the possibilities...

Hands up all those who don't know the difference between a vector graphic file, a bit image file and a nail file. Hmm, I thought so. Read the inset panel first.

Why vectorise?

- * The File size is smaller, resulting in more storage and faster file handling. The paint splat (see fig 1) vector file was 30 times smaller at 380 Bytes compared to the original bit image file size of 11Kb.
- * Graphics can be infinitely stretched, squashed, skewed, tweaked, rotated and rescaled without loss of quality.

Both CAD and DTP users can benefit from auto vectoring software. Although CAD software has always employed vector graphics, the effective conversion of original hand drawings into CAD systems has long been the holy grail. Disk archives save office space and converted drawings and sketches may be edited and re-used.

Postscript and Calamus output showed DTP users that a single vector font could generate each point size as required for both true WYSIWYG screen display and printer output. Software like O Line extended the possibilities on the ST, but first you have to get the graphic into vector format.

Now both CAD & DTP users have the same aim, to scan in a logo, hand drawn sketch or

piece of clipart, manipulate it without loss of quality, as desired, and Export it to their favourite application.

Scanners produce - you guessed it - bit images. One solution is to use a digitizer instead of a scanner to manually trace each point of the drawing using a stylus/puck. This slow, tedious, error-prone process is actually more or less what Avant vector does completely automatically.

The needs of CAD and DTP users are slightly different and Avant Vector soon reveals it was created primarily for DTP use. The algorithms employed by Avant Vector are optimised to generate accurate FILLED vector shapes consisting of lines and Bezier curves, ideal for logos and font characters but not a major requirement for CAD drawings. The real give away is that a line converted by Avant Vector generates a rectangle of four vectors, two sides and two ends.

Up & running

Avant Vector is supplied initialised with your personal data. A back up or working copy may be made and the files copied onto a hard disk as desired. Load in a bit image to convert. All of the following formats are recognised and loaded, greyed out, into a GEM window ready for vectoring:

.IMG Gem image format

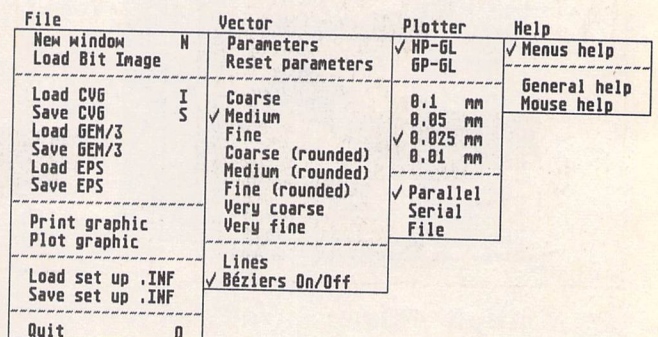
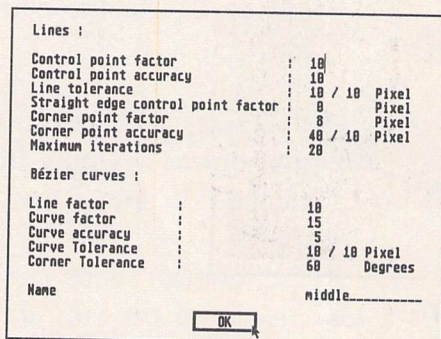
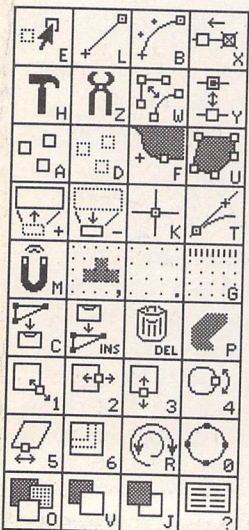
- .TIF Mac/PC image format
- .IFF Amiga image format
- .BLD Megapaint format
- .PIC/PAC STAD formats
- .PI3/PC3 Degas formats

Select a 'quality' option from the Vector menu, click the auto vectoring icon, frame the graphic and - er - that's it! An on-screen dialog keeps you informed of progress: small graphics are converted before you notice it. Vectors are drawn on screen as lines and curves with crosses and small boxes representing the curve control points and end points. To view the graphic as it will appear when output the display mode icon is selected. Each object can now be brought to the foreground, placed in the background, tinted (as a percentage) or have its outline thickness changed.

When you are happy with your graphic it can be exported for use in other applications or directly output at any desired percentage on the following printers:

Atari Laser, HP LaserJet, NEC P6, Epson FX80 and compatibles.

Avant Vector with plotter and extended pre-set vector options is sold as a separate product called Avant Plot. If you purchase Avant Vector and decide to upgrade to Avant Plot later the full price of Avant Vector can be credited towards Avant Plot.



Left: All icons are labelled with an associated keyboard shortcut, and there are no icon sub-menus to contend with. Above: Precise control over every aspect of the vectorising process is provided. If this brings you out in a cold sweat simply select one of the pre-defined settings from the Vector drop down menu. Top right: The Plotter drop down menu, EPS import/export and some of the Vector preset options are only included with Avant Plot.

Plotted output using Avant Plot is compatible with Hewlett Packard (HP-GL) or Graphtec (GP-GL) compatible plotters. Output can be rotated 90 degrees, mirrored and framed if required.

Summary

Comments:

Avant Vector blurs the boundaries between CAD and DTP applications particularly in the signmaking arena. The inclusion of .EPS import/export and Atari, Amiga, PC and Mac bit image formats is a healthy direction other software would be shrewd to follow, a true multi-platform utility. CAD users really need a line vectoring option and the inclusion of .DXF import/export. This would further enhance the multi platform multi format philosophy behind the software.

Avant Vector is fast at both vectoring and editing: a standard 8Mhz ST can move, stretch or skew all but the largest graphics in real time. Professional Atari DTP users will want this product at any price and compared to the Mac/PC competition Avant Vector cannot be considered overpriced. By offering Avant Plot separately System Solutions have attempted to broaden the potential users by keeping the cost of Avant Vector down.

Points for:

- ✓ Fast, Precise control of vector parameters



Fig. 1

if you like to dabble and a good range of preset settings if you don't.

- ✓ Good import/export options.
- ✓ Manual covers the basics with clear examples.
- ✓ On line help.

Points against:

- ✗ Currently no line vectoring or .DXF support.
- ✗ Price

Conclusion

Avant Vector/Plot bridges the most difficult gap between graphic file formats and gives excellent results. An example of ST/TT software capable of outperforming the competition on any hardware platform.

Alternatives:

Corel Draw (£249) for PC users;

Adobe Streamline (£375) for Mac/Spectre owners;

Didot lineArt (£399) for the ST: see review in STA issue 11.

Currently, German ST products such as *Convectur 2* and *tms Vektor* are not available in this country.

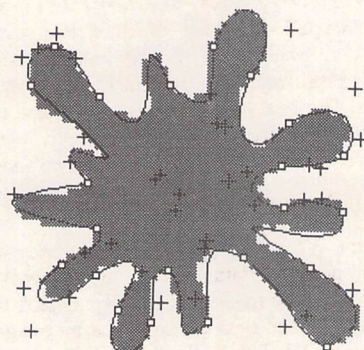


Fig. 2

Graphic File Format

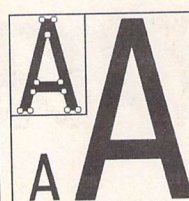


Figure 1

Vector Graphic

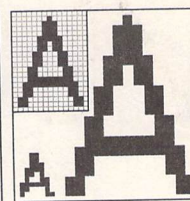


Figure 2

Bit image Graphic

Vector graphics, also called object orientated graphics, are stored as a list of mathematical descriptions. Each vector has both a length and a direction. This information is all that is needed to perfectly reconstruct the vector (as pixels on screen) each time it is changed.

Figure 1 shows a letter A constructed from a group of vectors. To change the character, a suitable equation modifies each vector in the list. To create the double-size A each length was multiplied by 2, and the directions kept the same. Stretching, rotation and skewing modify the vectors using different equations.

Bit image graphics, also called pixel or raster graphics, simply record the status of every pixel. A pixel is a single dot of a screen display. The closer the pixels are together the better the apparent 'quality' or resolution. Unfortunately, when groups of pixels are manipulated resolution is lost (see figure 2). To create the double size A the number of pixels, both horizontally and vertically, is doubled, each pixel generating 4 pixels. The resulting loss of accuracy is called pixellation, aliasing or the staircase effect. Subsequent transformations degrade the graphic further.

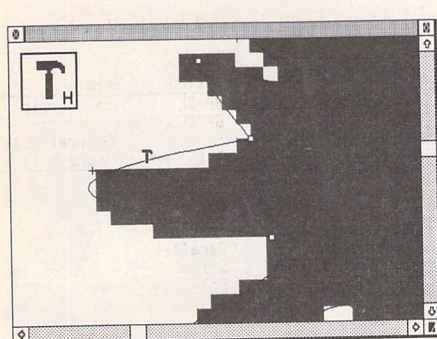


Fig. 3

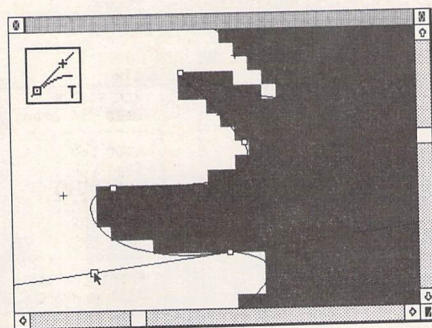


Fig. 4

Fig 1: A good range of editing functions is provided in Avant Vector

Fig 2: The greyed out bit image is unconvincing as a paint splat. The vector parameters were adjusted to give a loose fit to the original image.

Fig 3: The paint splat is fine tuned by hammering in an additional Bezier curve.

Fig. 4: Turning on this icon provides visual feedback enabling smooth connections between control points to be maintained. Control and end points can be dragged to new positions as desired.

Product:..... Avant Vector
& Avant Plot
Version:..... V1.3
Supplier:..... System Solutions,
Windsor Business Centre,
Vansittart Estate,
Windsor, Berks, SL4
1SE.
Telephone:..... 0753 832212
Fax:..... 0753 830344
Price:..... Avant Vector £249 +
VAT
Avant Plot £499 + VAT
Manifest:..... 60-page ring-bound
manual in slip case, 1
single-sided floppy disk.
System:..... Monochrome monitor
required. Runs on all
ST/TT models.

Games in Black & White

Hardly a month goes by without the famous quote "Show me someone who says he doesn't play games and I'll show you a liar" being attributed to someone prominent in the world of games development. Everybody enjoys some form of relaxation and while there are undoubtedly people for whom games hold no interest at all, the vast majority of us have a favourite game.

Those with multisync or colour monitors have a wide choice of "leisure" software to choose from, from the latest arcade action to the more cerebral yet still colourful adventures. The monochrome user, on the other hand, has very little choice - or has he? A careful look at the games scene reveals a few surprises for those with only a black and white perspective on the software world.

Although Atari's SM124 monitor is excellent at displaying monochrome graphics such as scanned images and drawings, the lack of grey scales in between black and white severely limits its use in portraying a three dimensional landscape or a complex shoot-em-up with a number of different fast-moving sprites. To get the best from a mono monitor, dedicated routines need to be written to drive the screen, making use of the technique known as cross-hatching which simulates different shades of grey by creating various patterns of black and white pixels. Such routines are costly to write, requiring almost as much development as the colour version, and software houses are understandably reluctant to put much effort into satisfying mono users' demands given the size of the market.

Andrew Wright offers a long-awaited rundown of some of the games available for users of monochrome monitors. The range might be limited but there are some surprisingly high quality offerings about.

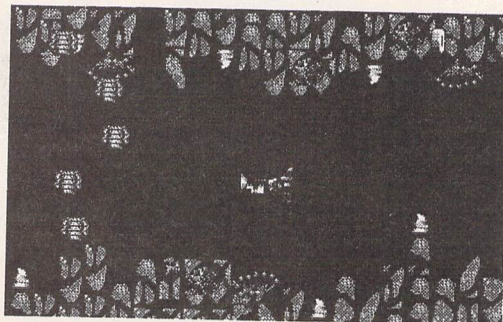
Flight Simulators and Arcade Action

There are actually three flight simulators available which run tolerably well in monochrome. SubLogic's *Flight Simulator 2* and *Jet* have both been around for a while now but they have been joined by the more recent Tornado simulator from HiSoft, *ProFlight*. Although the monochrome displays illustrate the problems involved in differentiating the backgrounds, they are both good sims with a lot to offer the mono user.

Arcade games are well-represented in the Budgie licenseware catalogue and in the public domain. *Hostile Reception* is a horizontally scrolling shoot-em-up in the traditional mould and is well worth the money for moments of weakness when the desire to blow something up takes over completely.

Space Duel is another Budgie game for two simultaneous players - a sort of Asteroids for two. From the ST Club's PD catalogue comes the classic pair, *Megaroids* and *Space Invaders*, with which most people will be familiar.

Starglider 2 was one of the first best-selling games to be mono-compatible and it still ranks as one of the top arcade games for the ST. The simple shaded graphics still offer a challenge but for the best entertainment the strategy and adventure games probably represent the best buy, being less likely to suffer from restricting graphics.

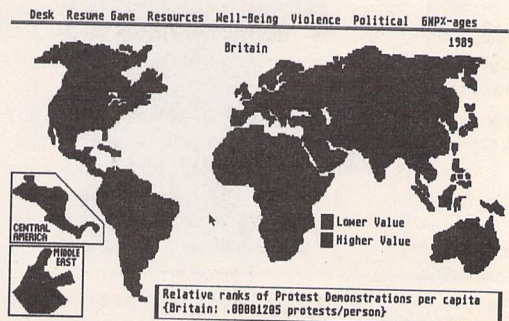


For shoot-em-up fans Budgie's *Hostile Reception* offers a good challenge and reasonable graphics.

Strategy games

Electronic Arts' *Imperium* is my first choice - a space conquest type game, the object is to take on the role of leader of an Earth-based empire and dominate the rest of the galaxy using any military, economic or diplomatic means available. There is a vast depth to the game with taxation levels, trade embargoes and a variety of military strategies to choose from, although it has been criticised for being too tough. As long as you're not bothered if you never make it to the top, it deserves a place next to every mono monitor.

Mindscape's *Balance of Power* is a similar game, a little older and with standard GEM interface but equally absorbing. For wargamers there is the classic *UMS* or *Universal Military Simulator*, from Micro-Prose which actually benefits from the clarity of the mono screen and, in my opinion, looks better than in colour. Unfortunately the sequel, *UMS II* does not run in mono. Look out for secondhand copies of Interstel's *Empire*, a superbly simple yet compellingly addictive game, but no longer available.



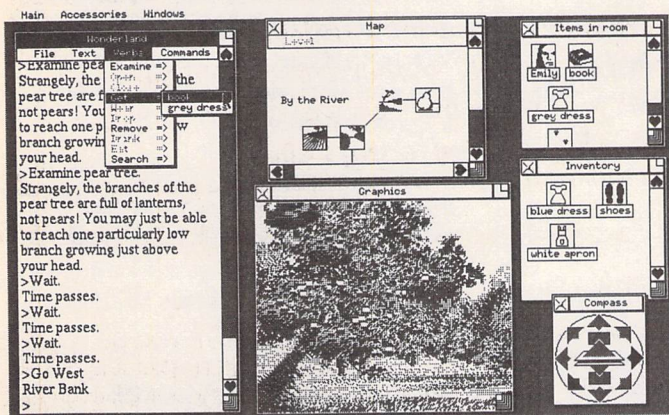
Balance of Power

Aside from being an entertaining strategy game of global domination, Mindscape's *Balance of Power* is also a mine of (useful?) information.

Adventures

In the world of adventure games, there is much more to offer. The new game from Magnetic Scrolls, *Alice in Wonderland*, features an extraordinary window-based user interface which marks a radical departure from the command line found in most adventure games. No longer need you type 'Get item' - just click on the icon and drag it into the inventory window instead. The windows have the look and feel of a top-end UNIX workstation and the game is well worth trying just for the pleasure of using the interface.

Other adventures which look equally entertaining in mono are, Sierra On-Line's 'Quest' series including *King's Quest 1-4* and *Police Quest*. Surprisingly for a series of graphics adventures, the mono versions are just as watchable despite the loss of colour. *Mortville Manor*, from the French company Langkhor, is also a worthwhile adventure with some excellent atmospheric sound effects.



Magnetic Scrolls' Alice in Wonderland

Classics

At the other end of the games spectrum are the classic games such as chess or bridge. The majority of these programs support mono as buyers are more likely to be 'serious' users. In addition many of them use GEM which makes it much easier from a programmer's point of view to build in mono capability. For chess on a mono monitor, Oxford Softworks' *Chess Champion 2175* and Mindscape's *Chessmaster 2000* are excellent programs with plenty of features and massive libraries of opening moves.

Bridge is also well supported on the ST, with two programs in particular capable of running under mono. Oxford Softworks' *Bridge Player Galactica* offers little in the way of graphics but plays a good game. Atari's own *Bridge Master* plays a less competent game but the graphics are nicely done, particularly in the way each hand is dealt out card by card building up a nice, realistic atmosphere. A companion program, *Bridge Tutor*, is also available for those who need to learn the game from scratch or get some practice.

Other classic games which need little explanation are the oriental classic, *Go Player*, and another traditional game, *Backgammon Royale*, again from Oxford Softworks. Even football is covered to some extent, although not in the same way as the many 3D simulations currently topping the software charts. Budgie's *Football 88* and ESP Software's *Football Crazy* are two examples of the game on a strategic level without the graphics. For a similar treatment of the US soccer game try *Headcoach* from Qualsoft.

In Germany the majority of users have mono based systems and a number of top quality mono games are available over there. The latest monochrome game is *Esprit* from Application Systems Heidelberg (developers of the Script word processor) which should find its way into the UK soon. The same company also wrote *Bolo*, a superb breakout type game with stunning graphics and gameplay. Try the demonstration version on ST Club Disk GAM.46 or contact UK distributor Signa.

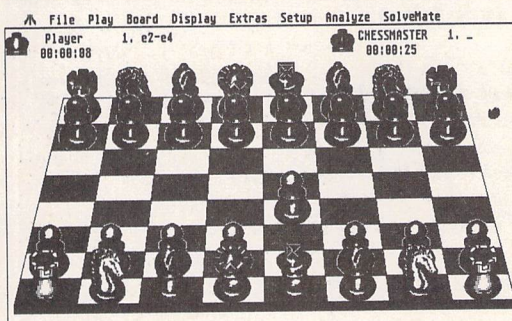
There are a limited number of games available for the mono user, whatever the budget and whatever the taste. It is interesting to note that we may become increasingly dependent on the European software houses for monochrome support but perhaps this is not entirely inappropriate with 1992 only a few months away.

GAMES IN BLACK AND WHITE

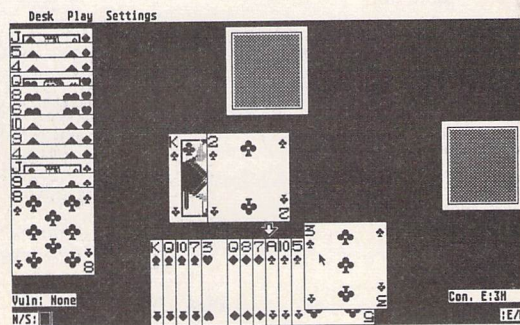
Game title	Supplier	Price	Type
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Balance of Power 90	Mindscape	24.99	St
Bolo	Signa	20.00	A
Bridge Master	Atari	24.99	C
Bridge Player Galactica	Oxford Softworks	30.60	C
Chess Champion 2175	Oxford Softworks	30.60	C
Chessmaster 2000	Mindscape	24.99	C
Esprit	Application Systems	N.K.	A
Flight Simulator 2	SubLogic	39.99	S
Football 88	Budgie UK	2.95	St
Football Crazy	ESP Software	19.95	St
From Little Acorns	Budgie UK	2.95	Ad
Go Player	Oxford Softworks	25.49	C
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Jet	SubLogic	29.99	S
King's Quest 1-4	Sierra On-Line	24.99	Ad
Mortville Manor	Langkhor	24.99	Ad
Othello	Budgie UK	2.95	C
Police Quest	Sierra On-Line	24.99	Ad
Proflight	HiSoft	39.99	S
Space Duel	Budgie UK	2.95	A
Starglider 2	MicroProse	24.99	A
UMS	MicroProse	24.99	St

Key:

- St = strategy
- S = simulation
- A = arcade
- Ad = adventure
- C = classic game



Pawn to King 4 with Oxford Softworks' Chessmaster 2000.



Atari's own Bridge Master looks good in monochrome - even the different suits are easy to spot. The atmospheric graphics enhance the game but the standard of play leaves a lot to be desired.

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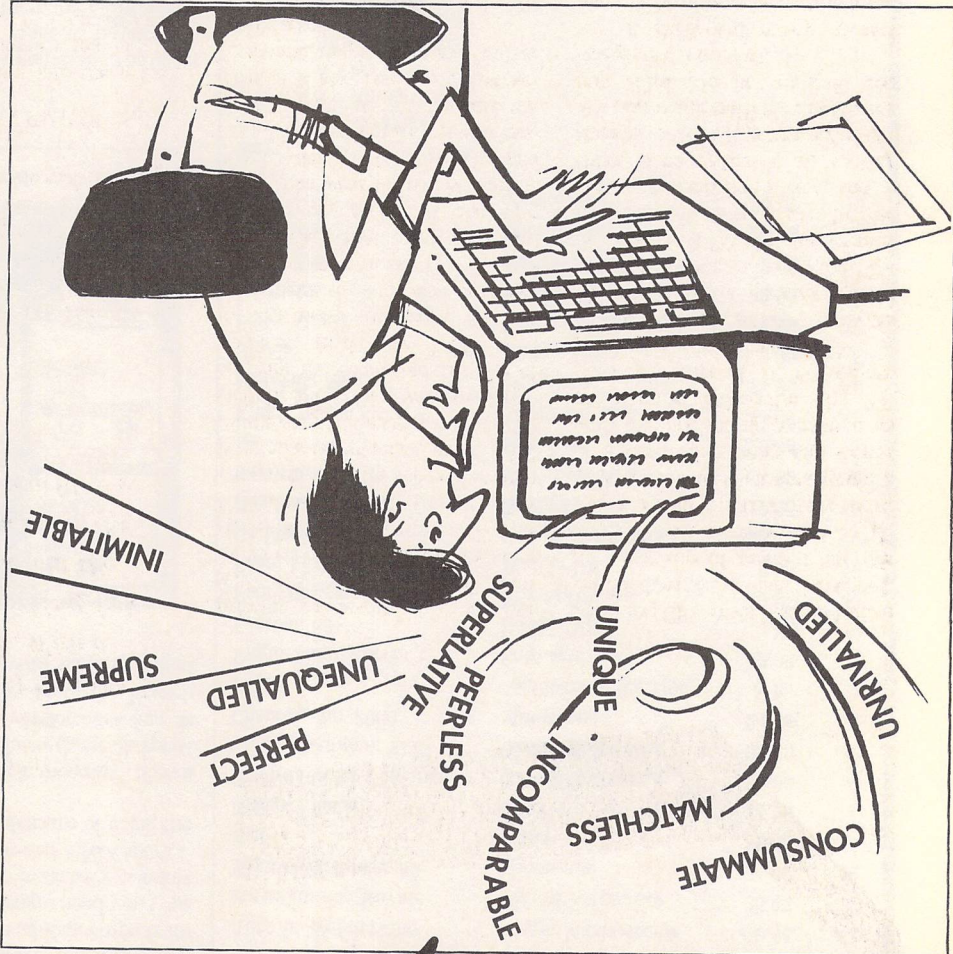
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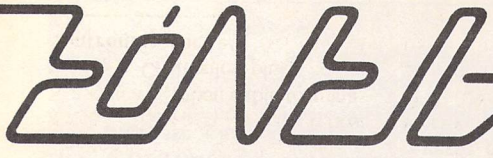
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✗ Both Protext 5.5 and Prodata require 1Mb of memory



PRINTER-Q

by Derryck Croker

Picture the scene - it is late at night, the local photocopying bureau has shut its doors for the weekend, and you must have three copies of that thesis that you have been working on for so long. With a heart-felt sigh you save the file to your working disk and prepare to wait whilst your WP churns out the result. If you're lucky, the WP will let you enter the number of copies that you want; if not, you will have to attend to each one individually.

That used to be the case, anyway. One of Frontier Software's Printer-Q printer buffer's fortes is its ability to let you print up to eight copies, and once they have been done, another eight, and so on. Not so much of a big deal you might think, but for all of this time your WP thinks that the print run is over and so you can get on with another task, or even switch off the computer altogether whilst Printer-Q gets on with printing. Notice that I haven't used the word "ST". Printer-Q works just as well with your 8-bit Atari (fed through an appropriate interface, of course) as it does with any other computer that uses the standard Centronics printer port, yes, even an Amiga.

Coupled with the above is the great speed advantage offered by printing through the buffer, since it will accept characters from your computer as quickly as it will send, and while it isn't full will continue to do so, whilst the printer does its best to keep up. You can continue to print as many documents as will fit into the buffer's memory, and these will wait their turn until the printer is ready for them, hence its punning title!

The "Q" lives in a neat alloy case with black plastic end pieces. The front panel holds clear and repeat push button switches, a couple of red LEDs and a row of 8 green LEDs, whilst the back is host to a captive ribbon cable terminated in a Centronics plug, and a Centronics socket. An on/off

switch and socket for the 9V power pack complete the case, the PSU is of the familiar standard 13A mains plug top variety. Overall the "Q" is very smart and is about the same size as a modem.

Using the Printer-Q

Plugging the unit into the printer chain didn't require reading the manual, but I soon needed recourse to it to find out whether it was normal for the printer (a Citizen Swift 24-pin) to perform a complete reset, including the reloading of the configuration macro, when the "Q" was switched on. During my perusal I discovered that this also occurred when the Clear button was pressed, a point I shall refer to later. I also discovered that it was possible to get the "Q" to perform a self-test and to print out Frontier's logo with their address, the software revision, the amount of buffer memory installed and the results of the test. All passed with flying colours and 128K.

Resetting the printer is one of the Clear button's tasks; the other is to clear out the "Q"'s memory. When our hero of the opening paragraph set his micro to print, the "Q"'s buffer started to fill and the green LEDs lit up in sequence right to left, and as the printer did its stuff they extinguished in reverse order, just like a bulb thermometer heating and cooling. Once the task has finished, and provided that the buffer hadn't been overrun (in which case

printing carries on as before, but with only the amount of print material contained in the memory buffered), the other red LED next to the repeat switch lights. That indicates that the repeat function is available, and one green LED illuminates for each press of this switch. The printer will now begin to print the requested number of copies, and one LED will extinguish for each copy that has been made. At this point our hero switched the micro off, and, having checked that the printer had enough paper, left it churning away and went to bed. Should he have noticed a mistake or changed his mind, the clear key would cancel the printout, and because the printer is also reset, any characters remaining in its internal buffer would also be cleared.

There is no doubt that the "Q" works very well indeed with the common-or-garden print work carried out by the majority of users of programs such as First Word Plus that use only the printer's own built-in fonts. This is in keeping also with the "Q"'s ability to be used with other computers. There is only the requirement to ensure that the particular WP sends a form feed to advance to the next sheet at the end of each document that is "Q"d!

Many printers are able to print using user-defined characters down-loaded to the printer's memory. The "Q" copes well with these, but the use of the clear key to erase a print-out from its memory preparatory to starting a new one means that these are lost when the printer resets, and the characters have to be down-loaded again - a trivial task maybe with the Fontswitch accessory. Frontier Software have advised me that they will supply a "Q" with pin 26 of the Centronics printer plug left unconnected on demand, which will overcome this problem. My printer manual describes pin

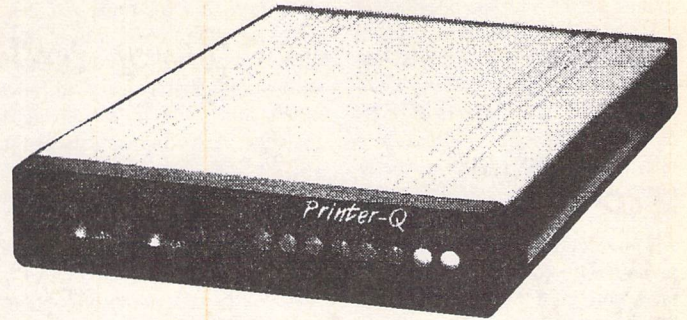
26 as the CPU reset line, and since the ST does not support this signal, no harm should result from this mod. If you already own a "Q" then it would be a trivial matter to build a back-to-back arrangement of a Centronics plug and socket with this line left unconnected as an adaptor. Otherwise, the "Q" does not respond to the master printer reset command [ESC]@.

GDOS programs such as WordUp show absolutely no benefits when used with the "Q". So slow is GDOS that the printer has time to empty the buffer before the next line is sent, and so there is no reduction in waiting time or repeat function availability, since the buffer contents are not valid (do not contain the complete document).

A different story awaits users of programs such as Signum, Script or Calamus. Their use of proprietary print routines to send the graphic renditions of the various parts of the page at high speed means that the "Q"'s buffer rapidly fills before the printer has a chance to empty some - and with a page of 360dpi graphics occupying probably 1 Meg at least, my 128K of buffer memory became swamped. This had the rather unfortunate effect that a test page from Script took almost double the time to print than it did before, whereas a much shorter test of just a couple of lines worked perfectly and did indeed speed the release of the computer - and was a reminder of just how much memory such high resolution graphics occupy. That means that you must have a "Q" that is populated to its full 1 Meg capacity for such work, which leads us nicely to a look...

...Under The Bonnet

Unlike much electronic equipment of today, there are some user-serviceable parts within. In this instance, the manual helps us to open



the case to enable extra buffer memory RAM chips to be added in steps of 128K at a time - you'll need an extra 7 chips to take the "Q" from the basic 128K up to the full 1 Meg. The chips are 120ns 511000P DRAMs, which are obtainable from Frontier or many electronics stores - Maplins stock them at £8.25 each, for example. Also evident is an EPROM, which presumably contains the control program, since the "Q" must act like a printer so far as the micro is concerned, yet at the same time be a micro to the printer with hand-shaking in both directions. Presumably the "Q"'s output lines are buffered, which may help owners of some printers, such as the Taxan Kaga, which load the ST's sound chip and cause garbled printouts - there are of course cheaper methods of overcoming this sort of problem!

Conclusions

The Printer-Q doesn't corner the market as far as printer buffers go, but far cheaper than these or the "Q" are the print spoolers that

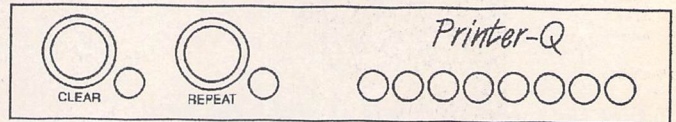
are available from PD libraries for little more than the price of a disk. They all use RAM space that always seems to be in such short supply, and if you should suffer a crash whilst the buffer contains material yet to be printed then it will be lost. The "Q"'s ability to continue printing without the micro's support is an obvious bonus, especially coupled with its ability to print multiple copies - a feature that is apparently popular with PC owners.

Some printers offer the use of their own buffers as either print buffer or down-loaded character space but not at the same time, and in this case the "Q" offers the obvious benefits, as it does to those printers that cannot have extra buffer memory added to them internally in the form of extra chips.

On the down side is the problem outlined with graphics printing, as we have seen graphics occupy a LOT of memory. This is less severe with the 240x216 of 9-pin printers, but the 360x360 offered by most 24-pin printers means that even a "Q" fitted with

the full 1 Meg complement may not be sufficient. Perhaps this could be "topped up" with a RAM based printer spooler, which will not of course offer the multiple copy option. If you are satisfied

with plain vanilla printing, then any size of "Q" will be perfectly adequate, with the obvious advantage that it can be easily and fairly cheaply upgraded and when circumstances dictate.



Product: Printer-Q printer buffer
 Manufacturer:..... Frontier Software
 PO Box 113
 Harrogate
 N. Yorks
 HG2 0BE

System:..... Any computer and printer that uses the Centronics standard.

Prices:

128K:.....	£49.99] plus VAT
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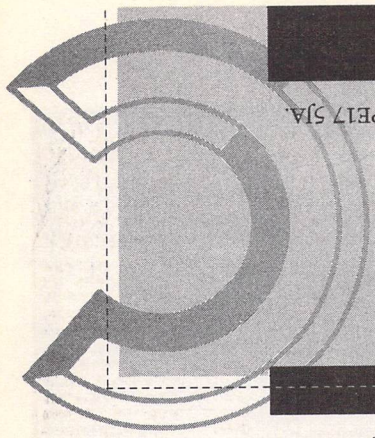
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ST Internals

The prototype of the Atari ST was made using ordinary TTL chips and must have covered several square feet. To enable the machine to be affordable and small enough the parts had to be shrunk. The method chosen was to put most of the circuitry (apart from the memory and processor) onto especially designed devices known as ASICs - 'Application Specific Integrated Circuit'. The circuit designer puts his TTL design into a powerful computer which produces a layout for the ASIC and also simulates the end result, so that the chip works first time. If it doesn't, then it is very expensive and time consuming to have to rework the design. Once the design is finalised the chip is very inexpensive in large volumes, and it also makes the machine much more reliable and helps prevent cloning.

The ASICs in the ST-FM

From 1985 to the end of FM production the chips used have remained identical, there being the MMU, GLUE, DMA and shifter. Each of these is covered below.

The Memory Manager Unit

This device is supplied usually in a 64-pin 'J' leaded PLCC, the pinout of which is shown in Figure 1. Just to add to the confusion, the MMU is manufactured by two companies. One of these, 'IMP', make an MMU chip that cannot access 2.5MB of memory. Another variant, much rarer, is in an 84-pin gullwing rectangular package which is always surface-mounted onto the PCB. Most of the machines using the ordinary PLCC chip have it in a socket, but a few have it surface mounted - probably when Atari's designers were experimenting with surface mounting for the Stacy and TT.

The MMU is mainly a DRAM controller. It handles memory addressing and provides the RAS, CAS, R/W lines; it also handles the memory refreshing automatically. In addition to this the MMU holds the DMA registers at 0xFF8600-0xFF8800 and divides the clock down to 8MHz and 4MHz.

The DMA Controller

In order to cope with the high data rates possible with SCSI devices a Direct Memory Access

channel is required. In the ST this is implemented with a 40-pin 0.6" DIL chip. The DMA chip takes in the 16 data bits and produces an 8-bit tri-state buss (CD0-CD7) which controls both the ACSI or DMA port and the floppy disc controller. The pinout of this device is shown in Figure 2.

The Shifter

Like the DMA chip, this is a 40-pin DIL chip. It lives inside the metal screening can in the middle of the ST: its pinout is shown in Figure 3. The shifter reads in data from main memory over the 16 data lines and combines the data with the screen mode and colour palette to produce the video output. The shifter's output is on 3 binary lines for each primary colour, and these binary levels are combined in a resistor-based digital to analogue converter that produces an analogue signal which can have 2^3 levels (8) for each primary. Thus the maximum number of colours is 8^3 , which is 512.

The mono output is on a separate line and can only be black on white or its inverse. Screen savers in colour can simply set the palettes to black, whereas simple mono ones can only toggle the palette to invert the screen.

The GLUE chip

The GLUE chip contains the rest of the circuitry that wouldn't fit anywhere else. Like the MMU, it comes in a 68-pin PLCC or occasionally an 84-pin gullwing package. The GLUE (see Figure 4) takes in all of the address lines and produces the ROM decode signals, the miscellaneous chip select lines, the 2MHz and 500KHz clocks, the BERR (buss error) signal and the monitor sync signals.

The Blitter Chip

This device is only available in a square 68-pin PLCC package. At one time a 64-pin DIL to connect on top of the processor was expected, but it never materialised. Originally, the blitter was only fitted to Megs. Later FM's acquired space on the main board for fitting the necessary socket. In order to use the blitter, TOS 1.2 or greater is required. The pinout for the blitter is shown in Figure 5. For reasons that are difficult to explain, some FM's have no links to undo when

Paul Rossiter

Part 9:

This article covers the remainder of the devices that allow the ST to work, including the differences between the FM and the E.

installing a blitter - most boards have two of these links as do Megas and ST-E's. Still, they manage to work apart from the few machines that refuse to handle the blitter, which may be due to untested tracks on the board.

Newman and Sproull invented a function called RasterOp. This function was subsequently refined and appeared in the Smalltalk-80 language as the BitBlit function. The Atari Blitter is a hardware implementation of this function.

It moves by hardware over the DMA buss rectangular blocks of memory at a very high speed. The rectangles can even overlap and also a clipping area can be defined. The data in the block can be masked, undergo boolean transformation and even be merged with a halftone pattern. To use the blitter, its registers (at location 0xFF8A00-30) are filled with the locations of the blocks and its instructions. It is then set off. All of this is transparent to the user. The nett result is a speed up of VDI routines and line A calls (no game speed increases!). Unfortunately, 'software' blitters such as Turbo ST and Quick ST do not speed up much with a blitter, as they have already intercepted the calls for their own hand-crafted routines.

Bus Control

As the blitter works under DMA, care has to be taken not to hold onto the buss for too long in case interrupts are not serviced in time. The blitter can thus operate in two modes, controlled by the aptly named 'hog' bit. If this is not set, then the 68000 and the blitter share the buss equally for 64 cycles each; if the hog bit is set the blitter can hold the buss for as long as it wants unless preempted by other DMA devices. Most operations do not use hog mode and so the speed increase obtained is nowhere near optimal.

XB IOS and the blitter

The XB IOS has a function number 0x40 which is called by the XB IOS as word Blitmode(flag). The word returned in the low bits of d0 (if flag was set to -1) has the following significance:

- bit 0 0 - software 1 - hardware
- bit 1 0 - no blitter 1 - blitter in
- bit 2-14 reserved
- bit 15 must be 0

If flag was set not equal to -1 then the blitter is set by:

- bit 0 0 - use software 1 - use hardware
- bit 1-14 reserved
- bit 15 must be set to 0

This XB IOS call is safe in all TOS versions and any attempt to switch on a non-existent blitter is simply ignored. Owing to the overhead of setting up the registers and usually not using hog mode, the blitter does not give the expected increase, especially with small block transfers. The speed up with large screen monitors such as that used with the Titan Reflex card is much more noticeable.

MMU Pinout Fig 1

D4	1	68	D3
D5	2	67	D2
D6	3	66	D1
D7	4	65	D0
16Mhz clk	5	64	MAD9
CASOM	6	63	MAD8
CASOL	7	62	MAD7
RASO	8	61	gnd B
latch	9	60	MAD6
+5v	10	59	MAD0
A16	11	58	MAD1
A17	12	57	MAD2
A18	13	56	MAD3
A19	14	55	MAD4
A20	15	54	MAD5
A21	16	53	dtack
LDS	17	52	DE
RASI	18	51	vsync
4Mhz clk	19	50	A1
8Mhz clk	20	49	A2
CASIL	21	48	A3
CASIM	22	47	A4
W/E	23	46	A5
DMA	24	45	A6
WDAT	25	44	+5v
UDS	26	43	A7
gnd A	27	42	A8
CPMCS	28	41	A9
DCYC	29	40	A10
RDAT	30	39	A11
DEV	31	38	A12
AS	32	37	A13
RAM	33	36	A14
R/W	34	35	A15

DMA Pinout Fig 2

R/W	1	40	+5v
A1	2	39	clk 8Mhz
FCS	3	38	RDY
D0	4	37	ACK
D1	5	36	CD0
D2	6	35	CD1
D3	7	34	CD2
D4	8	33	CD3
D5	9	32	CD4
D6	10	31	CD5
D7	11	30	CD6
D8	12	29	CD7
D9	13	28	gnd
D10	14	27	CA2
D11	15	26	CA1
D12	16	25	CR/W
D13	17	24	HDCS
D14	18	23	HDRQ
D15	19	22	FDCS
gnd	20	21	FDRQ

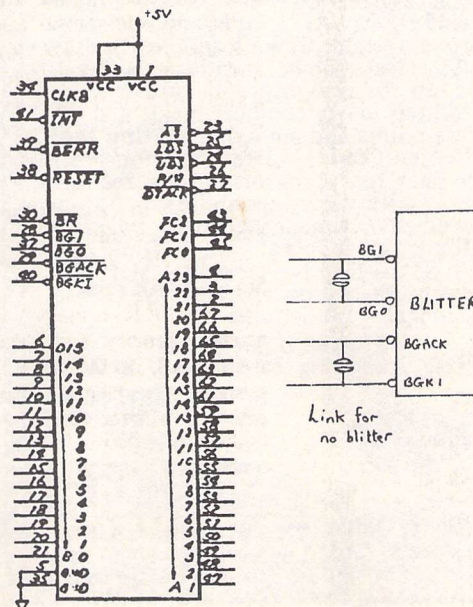
GLUE Pinout FIG 4

+5v	1	68	A13
A14	2	67	A12
A15	3	66	A11
A16	4	65	A10
A17	5	64	A9
A18	6	63	A8
A19	7	62	A7
A20	8	61	A6
A21	9	60	A5
A22	10	59	A4
A23	11	58	A3
AS	12	57	A2
FC2	13	56	A1
FC1	14	55	R/W
FC0	15	54	clk 2Mhz
VMA	16	53	SNDCS
ROM4	17	52	gnd
ROM3	18	51	MFPSC
ROM2	19	50	IACK
ROM1	20	49	D1
ROM0	21	48	D0
reset	22	47	UDS
RAM	23	46	LDS
DMA	24	45	BGO
DEV	25	44	MFPINT
FCS	26	43	clk 500Khz
BGI	27	42	6850CS
RDY	28	41	BGACK
VPA	29	40	BR
Berr	30	39	DE
dtack	31	38	vsync
IPL1	32	37	hsync
IPL2	33	36	blank
8Mhz clk	34	35	gnd

SHIFTER pinout FIG 3

XTL0	1	40	+5v
32Mhz XTL1	2	39	clk 16Mhz
D0	3	38	CS
D1	4	37	DE
D2	5	36	A1
D3	6	35	A2
D4	7	34	A3
D5	8	33	A4
D6	9	32	A5
D7	10	31	R/W
load	11	30	Mono
D8	12	29	R0
D9	13	28	R1
D10	14	27	R2
D11	15	26	G0
D12	16	25	G1
D13	17	24	G2
D14	18	23	B0
D15	19	22	B1
gnd	20	21	B2

Blitter Pinout Fig 5



On something such as text scrolling on an SM124 the speed increase is around 50%. The HiSoft blitter demo program shows how to obtain dramatic graphics improvements - if only all programs worked this way!

The ST-E

With the benefit of three years' more progress in integrated circuit design and fabrication, Atari took the opportunity to re-engineer the ASICs. What a pity they didn't do it correctly! (DMA port problems, etc.)

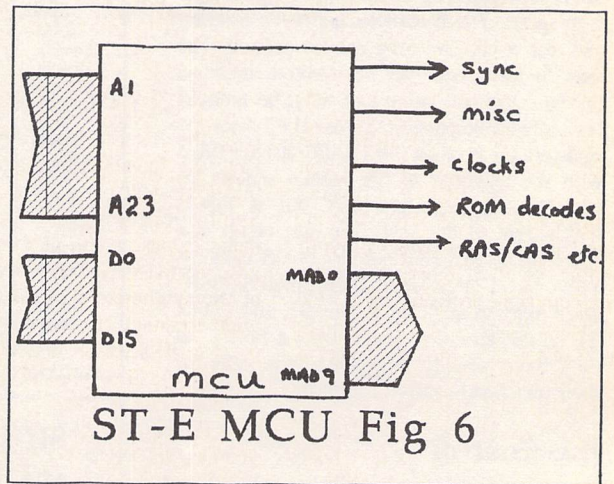
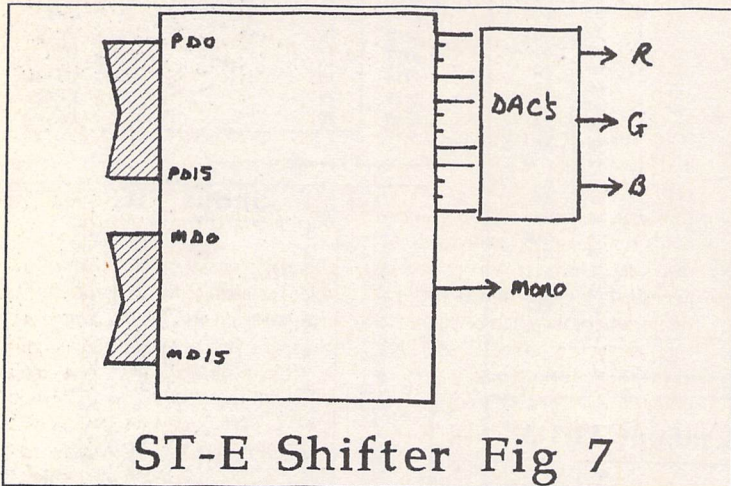
The ST-E now has most of the MMU and GLUE incorporated into one monster chip, a 144-pin gullwing surface mounted device. See Figure 6 for this chip's block pinout.

The SHIFTER has been converted also, now having the larger colour palette with 4 levels for each colour. This device is in an 84-pin PLCC package which is usually socketed. Figure 7 shows the SHIFTER's block pinout.

The remainder of the chips (DMA, blitter, 68000 68901, etc.) are the same as in the FM.

The TT

With the TT, Atari's engineers had a field day! The small main board is covered with dozens of ASICs, mostly with strange names such as 'FUNNEL'. Unfortunately, technical descriptions of these devices are difficult to obtain. Once they are available a detailed article will emerge.



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Part Six

Getting to grips with CUBASE

This month Ofir Gal looks into the use of Synthworks programs in conjunction with Cubase under the M.ROS multi-tasking environment. Also: a quick comparison with the alternative Softlink multi-program environment by C-Lab.

If you own an ST with 2Mbyte or more, and use Cubase, you can benefit from the multi-tasking capabilities MROS offers by investing in a Synthworks Synth editor. As all Steinberg programs are copyright protected by a 'key' which is inserted to the cartridge port of the ST, you will require a Steinberg key expander which takes up to 3 keys, or the more expensive Midex and Midex+ which have 4 key slots among many other features. A 4Mbyte ST could run Cubase, up to three Synthworks editors and Satellite, all at the same time.

In this article I will concentrate on the Synthworks SY77/TG77 editor, but most of the information can be applied to any of the other Synthworks editors, and to some extent to Avalon, a sample editor which I am hoping to examine in the near future.

A synth editor works by sending/receiving system exclusive information to/from a synthesizer, and is totally dependent on the functions and parameters that can be addressed on that synth. This is improving all the time as synthesizer manufacturers are increasing the number of addressable parameters. In the case of the SY77, there are some functions that cannot be accessed without a synth editor, and the Synthworks program is the only one I know that lets you create your own FM algorithms.

The SY77 editor, like all the other Synthworks editors, has many pages that allow (on top of editing voices and multis) managing a library with semantic attributes. You can, for example, call up all the voices you have that fit to the description 'Synth Pad' or 'Brassy'. The program features too many pages and menus to describe here, but in principle there are three main pages, the library

page, the voice edit, and the multi edit page. In each, clicking on certain icons will open more pages. Synthworks programs always make extensive use of icons and graphics to ease the understanding of the synthesizers' sound generation architecture. There is also a custom file selector, and scrolling through the library is the fastest I have seen on the Atari.

If you only have a 1040ST, you can still benefit from having a Synthworks program. It is possible to save Synthworks banks to disk, then load them into Satellite, where voices/patches/programs can be sent to the synth one at a time, and in most cases edited as well, all while Cubase is playing (see Getting to Grips with Cubase Part 4).

Synthworks SY77/TG77

Editor and Librarian

The latest generation of Yamaha synthesizers offers improved FM synthesis (AFM) with the addition of multi-sampled waveforms (AWM). Each voice can use up to four elements, each element can be a complete FM synthesizer, or an AWM sample. On top, there are

two filters per element, each with a dedicated envelope generator, two LFOs, white noise generator that can be individually assigned to each of six operators in each element and more. 16 voices can be accessed in the multi-timbral mode, where they can be routed to two separate effects sections. There are also complex panning options, with pan envelopes coupled with velocity sensitivity, key position, etc.

Editing such a complex machine is very near impossible without a computer, and with the Synthworks editor it is made quite simple.

Icons and Pages

When loading the program(s), the first thing you'll notice is the complex graphical display and icons. Unlike most programs I know for the ST, the program allows quick and easy access to all main edit pages. A click on the library icon takes you to the library page, where the available icons change to display the most likely pages you are likely to go to from there. The program makes extensive use of menus, but the icon system is so much quicker that you will

hardly ever need to reach for the menus.

The Multi Page

This page enables you to select a voice for each of the 16 multi-timbral parts on the SY77. You can transpose, fine tune, pan and assign to effects and outputs. You can also edit the effects, and if you have a TG77, assign parts to individual outputs. It is possible to edit a voice while in a multi, which could be very useful when used with Cubase playing at the same time. Pressing the '4' key on the ST keyboard will open the 'Edit Voice from Multi'. The ability to edit a sound from within a multi is somewhat reduced, because you have to OK an edit and return to the multi page before you can hear the results of the edit. This bug appeared on V1.13 last year, and is yet to be fixed.

The SY77 editor has a few other bugs, one of which is a tendency to switch the effects on the SY/TG off when used with Switcher.

Voice Edit

As I mentioned before, you can access the voice edit page from a multi. This has one disadvantage: you cannot change the number or type of elements the voice is using. A 'four AWM elements' voice can be changed to a 'two FM elements' voice, only by using the Voice edit proper, which can be accessed by clicking on the 'Voice' icon. The voice buffers are independent of the multi buffers, so effectively there are eight, not four, buffers.

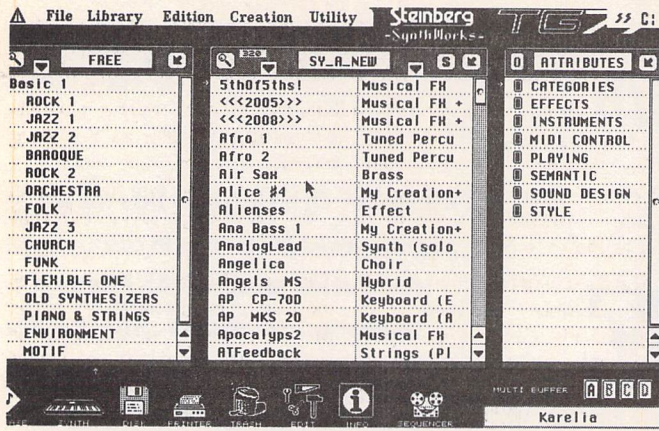
The Library

The Multi and Voice pages differ with each Synthworks program, and Steinberg use the synth ter-

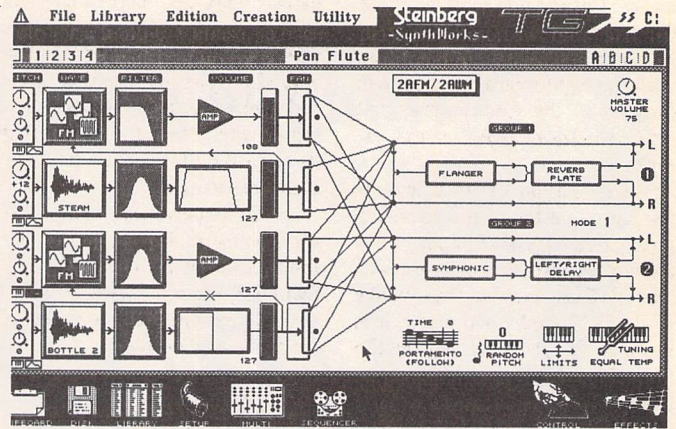
There are Synthworks programs available for the following synthesizers:

DX7/TX7	V3.02	£175
M1	V2.01	£175
D50	V1.54	£175
Proteus	V1.11	£175
K1	V1.51	£130
D110/D10/D20/MT32	V1.54	£130
SY77/TG77	V1.13	£175
Korg Wavestation	-	£175 ?

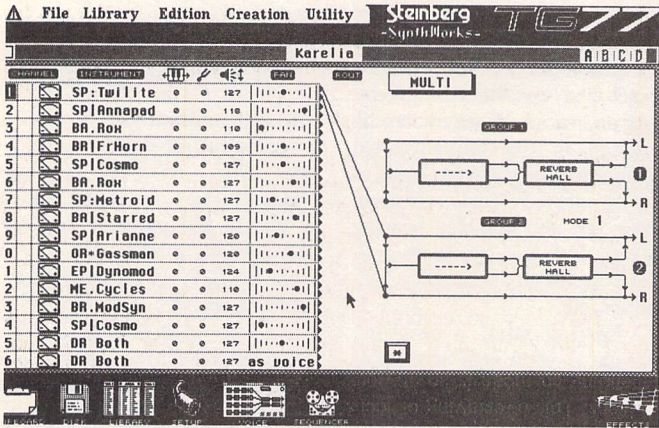
All these programs are MROS compatible and are capable of communicating with Cubase.



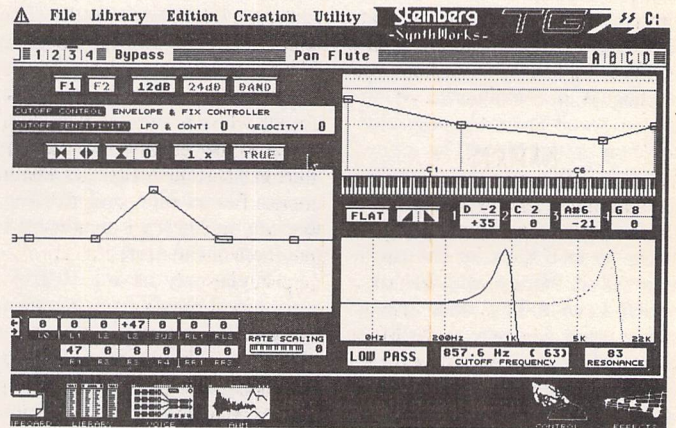
The Library Page



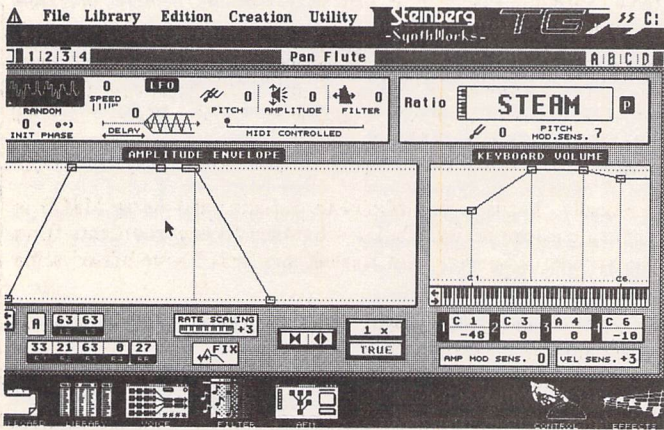
Voice Edit Page



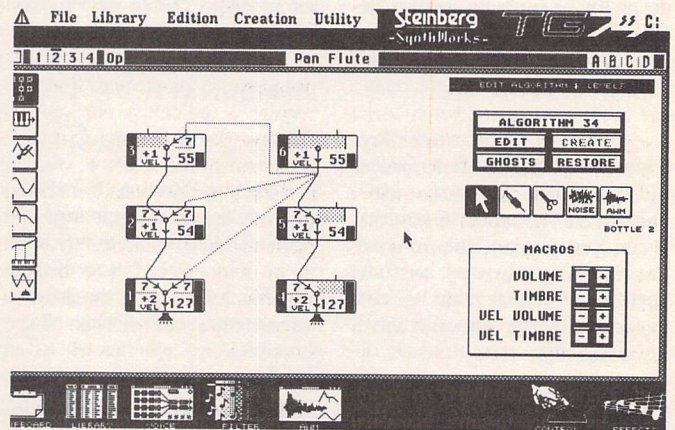
Multi Page



Voice Edit / Filters



Voice Edit / Envelope



Voice Edit / FM Algorithm design

minology where possible. The D110 editor for example has a Patch and Tone edit pages; the M1 uses Combis and Presets, etc.

The Library page allows loading of banks, voices and multis into a library, where they can be sorted in many ways. You can, for example, view all the voices that use one FM element, or all the Voices that were added to the library before a certain date. Synths programs let you use multi-

ple categories to define a sound. You can assign the attributes bass, analog and metallic to a voice, and perform searches through the library for all voices that have one or more attributes. You can even remove all voices that have the attribute 'synthy' from view, if you are looking for realistic sounds. The only hitch is that you have to spend a bit of time defining all the sounds in the library, but it is definitely worth it. It is a great

time saver in the studio.

An important feature of the library is the ability to pass a voice or a multi to Cubase, so once you have a multi set up for a song you can paste all the data, including the 16 voices data, to Cubase. The data will appear in a Cubase again you must delete the previous pasted part, otherwise the new multi will be pasted on top of the old one which will not be visible - you can imagine the possible chaos resulting. To pass an

and paste the data at the beginning of a song. Coming back to work on a song months later is easy: I just play the first few bars and the multi and its voices appear on the SY77 within seconds. Note that before passing data to Cubase again you must delete the previous pasted part, otherwise the new multi will be pasted on top of the old one which will not be visible - you can imagine the possible chaos resulting. To pass an

item to Cubase you must be in the library page, where you click on its name under the four buffers with the right mouse button, than drag it to the Cubase icon and release it by clicking on the left button.

Clicking on the disk icon at the bottom of the screen reveals a menu allowing you to import items from other libraries, convert DX7 and TX81Z sounds, load banks from SY77 banks and more. It is possible to format a disk in the SY77 format and save banks to be loaded later directly into an SY77, using its own disk drive. You can save banks as TOS programs that can be executed directly from the ST desktop, and even as TTP programs, which can be used in conjunction with hardware devices such as Midex. TOS files can also be loaded into Satellite.

MROS

In addition to passing whole multis and voices to Cubase, it is also possible to send parameter changes via MROS to Cubase, where they can be recorded in the form of sysex, just like any other MIDI data. On playback, Cubase will duplicate the parameter change. This can be used to change the effects settings half way through a song, or anything else you can think of. Another MROS feature is the ability to pass a drum kit to the drum edit page on Cubase, so that all the entries will correspond with the drum kit being used.

While using any Synthworks program, it is possible to control the main playback functions of Cubase without the need to switch back to it. The numeric key pad allows you to play, stop, rewind, fast forward, jump to left and right locator and switch cycle mode on and off. There is also a tape/sequencer icon that can be

used to play and stop Cubase by clicking on it. The tape even moves when Cubase is playing. Cubase will also sync to incoming time code while you are tweaking a sound with the editor, or looking through the library for that ultimate bass sound.

My experiments show that the minimum RAM required by the program is 925k, for use with Switcher, though to get the most out of the program you would need at least 100k more.

Misc.

Synthworks programs employ a clever way of dragging screen objects around. Clicking on an icon or 'draggable' item with the right mouse button makes the item 'float', so that you can release the button. The item now moves freely with the mouse and can be released by clicking on the left button. This prevents accidental mouse button release, and I can't see why other programmers have not implemented this idea in other applications.

The programs use so many menus and sub-menus that almost anything you click on reveals another menu, and some menu selections will bring up yet another menu.

When used with Switcher, MROS reserves 32k per program for a screen buffer, so switching between Cubase, Satellite (loaded as a program), and a Synthworks program is quick and does not require a tedious screen redraw. Synthworks programs feature a replacement file selector, which is nothing like Universal Item Selector, but is still a great improvement on the ST selector. It features point and click drive buttons which only appear if the program senses other drives than the A floppy. There are also file extension buttons that change their contents according to the operation being performed. Very useful! The only question it leaves is why we don't have the same thing on Cubase?

Drawbacks

This is not a real drawback but rather a compromise Steinberg had to make. The SY77 voices are complex and contain hundreds of parameters at best, and as a result need large chunks of the ST RAM when residing in the library. To offset this, the program only loads the directory of the library, then each sound is loaded when needed

Softlink vs. MROS

Last month I reported about MROS and its multi-tasking capabilities and I thought it would be appropriate to make all Steinberg fans aware of C-Lab's multi-program environment, namely - Softlink. I will make an attempt to compare the two systems, an almost impossible task, because the two adopt very different approaches to MIDI multi tasking.

MROS stands for MIDI Realtime Operating System - it takes over all realtime calculations, the most important part of music sequencing. Taking this path, Steinberg made it possible for programs to communicate with each other, enabling control of real-time functions such as play and stop from all programs, as long as they are MROS programs. Other programs may be loaded, but compatibility is not guaranteed and passing data between such programs and Cubase is impossible.

Switcher may be loaded without Cubase, when it serves as RAM-partitioning software, enabling more than one program to be run at any one time - RAM permitting! You could use Switcher to load a word processor and a graphics program at the same time, and then use Switcher to switch from one to the other at will. Again, not all programs are happy running from Switcher.

Softlink, on the other hand, is not an independent program and can only be accessed via Notator/Creator. It is, or at least claims to be, more compatible with other MIDI software owing to the fact that it is not a real-time OS, and thus not requiring software authors to make any provisions in their programs to make them Softlink compatible. I should note here that as I had no hands-on experience of Softlink I can not confirm this. Softlink looks promising when it is used with Polyframe - a new generic synth editor from C-Lab. Softlink then operates in what C-Lab call level 3, which, like MROS, provides real-time control of Notator from Polyframe.

It is possible to adjust how available RAM will be partitioned directly from Switcher while Softlink requires the loading of a separate program. This makes Switcher much more RAM hungry than Softlink, which is a crucial factor in a multi-program environment.

Both systems will require key expanders. Steinberg's expanders start at £95, the C-Lab one is around £170. Steinberg are now offering a special package consisting of Cubase, Midex* and an MROS utilities disk (which I will be reviewing next month) for £645.

Personally, I still prefer MROS to Softlink, and using MROS is slightly cheaper as well, but I will welcome any comments from anyone who is familiar with Softlink and feels I have missed some important points.

Thanks to Mark Gordon from Sound Technology plc for technical information about Softlink.

Cubase and Bigscreen

In my attempts to improve my computing set-up, I have found that the PD program BigScreen works happily with Cubase. That's the good news. The bad news is that it interferes with MROS handling of screen buffers, so the whole system crashed when I tried to load the SY77 editor as well. If you only use Cubase on its own, give it a try, you might like it.

MROS and Memory Management

When assigning a program its RAM partition there are a few points to note:

- * Each program requires 32k for a screen buffer; this is used to speed switching between programs and is very effective. This feature cannot be switched off by the user.
- * Each program has to allocate RAM to desk accessories and auto programs. If you like LGSelector for example, it normally uses about 40k of RAM, but if you have two programs resident, LGSelector will use twice as much, and the same applies if you have more programs resident. Actual loading time of these programs is not affected.

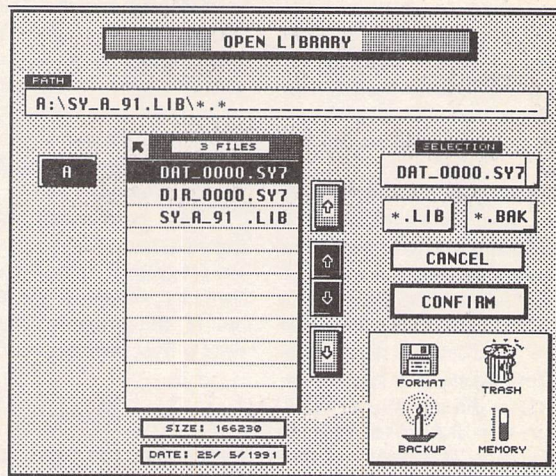
and remains in RAM until that RAM is needed for other sounds, so you must have your library disk in the drive when searching for sounds. There is also a definite delay until the sound is loaded from disk and sent to your synth. Sooner or later you will get fed up with swapping disks every five minutes, and unless you have a hard disk, you will be looking to buy a second floppy drive. This is not the case with all Synthworks programs, but I suspect that as synthesizers become more complex, more and more editor/librarian programs will utilise this method of 'virtual memory'.

Steinberg do not update their Synthworks line of products as frequently as with Cubase, probably because there are not that many users, and synthesizers tend to come and go out of fashion. The future lies with so-called generic synth editors. These will be able to deal with any new synth by the addition of a 'template', a file that contains all the necessary sysex codes to address the synth para-

meters. It should be possible for the keen MIDI hacker to write his own templates and customise existing ones. At the moment it is C-Lab who are about to release such a program, and I am sure Steinberg will follow. Until then, we will have to buy a separate editor for each synth we use.

Questions or comments may be sent to:

Ofir Gal
ST Applications/Cubase
22 Rodway Road
Bromley
Kent BR1 1JH



Conclusion

A synth editor gives you more than you would expect when used in a multi-program environment. Unfortunately, it also costs more than you would expect. Apart from the program itself, you will need at least 2Mbytes of RAM and a key expander (around £100) or a Midex/Midex+, to be able to make use of the multi-tasking abilities of MROS. Even then, a second floppy drive or a hard disk is recommended. If you can afford it, your way of work will be totally transformed, and you'll be wondering how you ever managed without it. Highly recommended.

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Going On-Line

Part Two: Setting Up

Last month we decided going on-line had something to offer, so how do we do it? Mark Baines looks at setting up the software and hardware. The emphasis on money-saving strategies is maintained.

Modems

Modems are very reliable and so second-hand ones are a good buy. You can pick one up in the computer press and on-line - get an on-line friend to advertise for you. At the very least buy a V22 standard 1200 bps modem (about £50 second hand) or better still, a V22bis 2400 bps one (£80 -£120). Don't get a V23 1200/75 (£20) modem unless you are desperate for cash as the transmit rate is very slow and so sending files is incredibly expensive, although receiving files and text is acceptable. Many BBS won't accept this rate, so beware. If you do get one of these you must get the ST to run its RS232 port at this split rate and you will need V23EMU.TOS, a program from David Jones (ST Club's COM.20). Run this before your terminal program. For those just testing the water this setup is acceptable. If your expenses can go to it, get a modem with MNP5 or even V42/V42bis error correction/data compression protocols. These will get rid of errors in transmission and will speed up throughput by 2 to 4 times if connected to similar modems. These are expensive, a new 2400 bps MNP5 modem costing about £300.

Terminal Software

The software I recommend is Uniterm 2.0e on ST Club's COM.16. It is PD, fully featured and easy to use. Here is some advice for a quick, easy setup.

Before you start it is a good idea to make a backup copy of the UNITERM.SET file or a written note of all the settings to fall back on. Most of these default settings are OK but some need changing.

Under RS232 Setup in the Settings menu, change the Baud rate to the maximum rate of your modem and Flowcontrol to Xon/Xoff, Parity None, Databits 8, Stopbits 1, and Mode Full. Under the Terminal 1 dialog use only VT terminal emulations e.g. VT200 and set Wrap to Auto. Under the Terminal 2 dialog I have a macro file that is automatically executed called UNITERM.MAC (see below) and this is entered at the bottom.

The Buffers dialog allows the setup of Uniterm's buffers, the sizes obviously depending on your available memory. The History buffer should always be on and should have the largest amount of memory possible which will be what is left after setting the others. The Clipboard of about 2K is fine. For file transfers set the Transfer buffer to about 50-100K. This should suffice for the majority of PD programs you will download. The RS232 buffer can be left to the default setting: 5000-10000 bytes should be OK. If you intend to run other programs from within Uniterm, such as ZModem or a text editor, then the System buffer should be large enough to accommodate these programs. As a rough measure, add up the program files including .RSC and any data files and add a bit more! For ZModem, 50K should do.

In the File menu select ASCII and go to File Transfer dialog. Change Translate EOL to CRLF. Go back to File menu and click on YModem. In the File Transfer dialog change Packet Size to 1024 and Error Check to CRC.

In the Dialler dialog enter some BBS details such as InterNet and 0296 395935. Ignore the macro column. Set the Prefix to ATDP or ATDT if you can tone dial. Leave the other settings. You may enter a number in the Retries line: I have 10. This will cause Uniterm to redial an engaged number after the number of seconds in Timeout. There is a bug in version 2.0e that causes problems when logging on, however. When you dial up and get the CONNECT message you will need to press a key several times until the number of retries left in the buffer has cleared and the 'Uniterm Dialing' message has gone. Leave it blank if you are unhappy with this.

This is the minimum setup. Make sure that YModem is ticked in the Transfer Menu and save the settings as UNITERM.SET and dialling numbers as UNITERM.TEL.

Enhancements may include an auto-execution macro file - an ASCII text file. The History buffer must always be on. This will record all that you do and receive and you can then save it at the end of the session to view at your leisure either in Uniterm, an editor or viewer. My UNITERM.MAC contains the line - history(1) - which will switch the History buffer on automatically at the start. I have also changed the popup menu so that frequently used items and external programs are instantly available. You do this with the popup command in this macro file, such as popup(10,16,'SaveHist') which will place 'SaveHist' in the

10th box in the popup menu. When this box is clicked, Uniterm command 16 (Save History file) is carried out. You will have to investigate the manual's appendices for these.

When it comes to transferring files, ZModem protocol is the best. It is faster and more efficient than X/YModem in Uniterm. ZModem is on ST Club's COM.29 although more up-to-date versions will be found on the BBS. I will explain these important protocols in another article but as my emphasis is to get you on-line with the least cost you need to know how to install it in Uniterm. Uniterm can run external programs such as ZModem without problems if the System Buffer space is big enough to hold them. Rename the ZModem Receive program to RZ.TOS and the ZModem Send program SZ.TTP. Under the Function Keys dialog choose a key such as SHIFT F1. Type in this Uniterm command with the path of RZ.TOS e.g. %run('G:\ZMODEM\RZ.TOS',"). The double backslashes are necessary. You can do the same thing with the SZ.TTP program under SHIFT F2 key. When on-line, pressing SHIFT F1 will run RZ.TOS and it will receive whatever file you chose on the BBS. You can also set up your ID and password combinations and other command sequences so that they are sent to the BBS quickly and accurately, again saving time and trouble.

Next month, we go on-line!

In the Public Domain

DC FKeys

One of another new set of DC utilities to hit the public domain, this one is a must for all STers who use more than one word processor or other text-based programme on a regular basis. It allows you to assign text macros to function keys. Alternate, Control and Shift can all be used in conjunction with F1-F10. You have a maximum of 49 assignable function key macros. Up to 40 characters can be assigned per macro, and you can include all printable characters.

You run this utility either from the desktop or auto folder. Once installed, DC FKEYS can be switched on and off at will. An excellent utility, as we are coming to expect from Double Click.

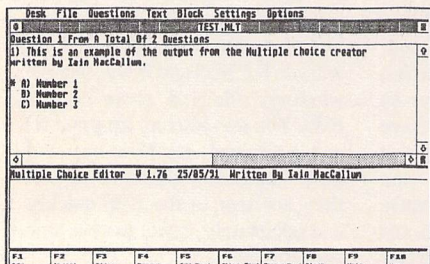
SuperBoot 7

So, what do you want to do when you boot up? Choose which desk accessories to load? Choose which order to run the programmes in the Auto folder? Choose one desktop/resolution from a pre-saved set? Choose which ASSIGN.SYS file to load from a set? Display a 'welcome' screen? Play some digitised sound? Set the time and/or date? Put a password on your system? Set the floppy disk seek rate? Turn off 'Write Verify'? Save your favourite configurations so that they can be loaded at the press of a function key? Autoboot a GEM program?

Well, obviously, you need SuperBoot. Now at version 7 and going strong, this really is the boot utility to beat all others. With it you can do all of the above, and then some. Super Boot is shareware, and registration will cost you \$15. But any ST user, and hard disk owners in particular, will not find much to grumble about at that price!

Treeview

Treeview is for all those of us who secretly wish their ST was a PC. It lets you get a PC-like tree file display. You can run the program either as a desk accessory, or as an ordinary programme, and in any resolution. Whichever option you choose the result is the same - a pretty display of your file structure. TREEVIEW can be switched on



Public Domain Software reviewed by Sandra Vogel

and off at will, and there is a small array of keystroke options for you to obtain printouts, open folders, switch from tree to normal display, etc. This programme works to its best advantage if you also run Gemini. In this case, you can use the same fonts for display as Gemini is using, drag icons into the tree window for a look at their contents, etc.

The DIY Disk

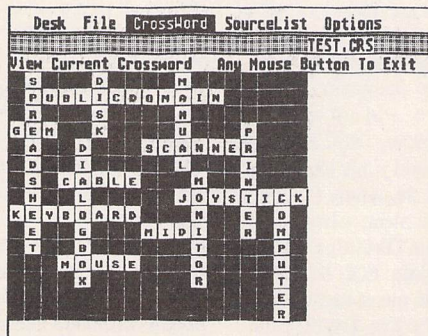
Now we all know how expensive those little bits and pieces we attach to our STs are. Well, this disk tells you how to produce five such bits and pieces, at a fraction of the normal cost. The disk author claims to have successfully wired all the projects he describes on the disk. According to his manual, 'only doing something completely bonkers in the cables will damage your computer - like pouring beer in them'. Hmmm.

So, what are the fabulous five things you can do to your ST with the aid of this disk? You can make a four way joystick port (i.e. to connect four joysticks at once); wire a device that lets you boot from either drive A or drive B; wire an RS232 cable; wire a printer cable; and modify your ST to provide a sort of stereo output.

Information for all of these projects comes in two stages. You need to read the text file supplied, which gives you an introduction to the project, a list of all the items required and the necessary 'how to' instructions. You also need to look at the wiring diagrams, saved as low res Degas format. This disk will go down well with DIYers.

Word Puzzle Creators

Iain McCallum has written a suite of four programmes which he has released on this disk. They comprise a multiple choice quiz generator, a word square generator, a crossword generator and a word spiral generator.



All of the programmes are quite sophisticated, and worked well for me despite the author's warning that they are not, in this release, entirely bug free. The programmes look and feel like a suite, so that once you have got to grips with using one with the help of its manual, you should have little problem with the others without bothering to read their manuals.

All four programmes, however, do come with quite extensive manuals, and they also come with a sample file for you to play with. The crossword generator is particularly impressive, and handles the setting up of the grid, and the entering of words and clues very well. Printouts are easily generated from all of the programmes, and the quality is high. You are presented with a choice of layouts, and can put your own headers and other information on the puzzles. Certainly a set of programmes worth looking at.

Chemistry For Beginners

This programme is a learning aid for all those getting to grips with covalency, ionic bonding, radicals, balancing equations and the good old periodic table. In fact, it contains most of the information you will need to speed you on your way in GCSE Chemistry. The programme is based around pictures. You move the mouse pointer over the pictures, clicking as you go. Various bits of information then pop up onto the screen. You can save positions to return to them at a later date, so you can go over things you are unsure of time and time again. Anything that makes chemistry a bit more interesting has to be worth something!

Software for this month's column was supplied by:

Budgie UK, 5 Minster Close, Rayleigh, Essex, SS6 8SF

Public Dominator PD Atari, PO Box 810, Bishops Stortford, Herts. CM23 3TZ

South West Software Library, PO Box 562, Wimbourne, Dorset, BH21 2YD

Software reviewed in this month's column is also available from the ST Club:

- DC FkeysDMG.25
- Super Boot 7UTI.156
- The DIY Disk.....INF.38
- Word Puzzle Creators.....UTI.180
- Chemistry for BeginnersEDU.35

The author of Treeview expressly prohibits the distribution of this utility as a 'PD disk'. A copy of the program is available direct from the author: Stephan Gerle, Ruthstr. 8, D-4600 Dortmund 1, Germany. Remember to include a disk and return postage.

Two of the puzzles from Iain McCallum's suite of four on ST Club disk UTI.180

KEY

(M) - Runs in High Resolution Mono.
 (C) - Runs in Medium or Low Resolution Colour.
 (DS) - Double-Sided Disk
 (1Meg) - Needs one megabyte of RAM.
 (Not TOS1.6) - Will not run under TOS 1.6 (STe) or TOS 1.4 (most recent STFM's).
 (\$) - source code included.
 (\$C) - C language.
 (\$ASM) Assembler.

Doubled Up: With the exception of a few specially formatted disks, all single-sided disks in this catalogue are now available on double-sided disks. Doubled-Up disks have a disk code in the format: AAA*NN. All PD disks are the same price - there is no surcharge for double-sided disks.

Copyright: To the best of our knowledge everything on the disks in this catalogue may be freely distributed. If you know otherwise please let us know and the offending software will be immediately withdrawn.

This catalogue is originated and copyright the ST Club.

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Ordering Details

Please note that we do not accept orders by credit card. Orders accompanied with a cheque or postal order are dispatched by 1st Class post on the day we receive them.

All PD disks are copied onto high quality disks from known manufacturers. The price you pay us for PD disks covers only the costs of acquisition, duplication, cataloguing and distribution.

Disk Prices

PD Disks: Standard and Doubled-Up disks.

	up to 6	7+
Non-Subscribers	£2.80	£2.50
Magazine Subscribers	£2.50	£2.25
Disk-Mag Subscribers	£2.35	£2.05

Licenceware disks cost £2.95 or £3.95 each.

All prices include VAT, packing and 1st Class post.

The Order Form for these disks is on Page 57

Licenseware

A brief look at some of the latest offerings from Budgie U.K.

Budgie Games - £2.95 each

GBU.79: SHARKS by Donald Campbell. A decent and cute hang-man game, except that you don't get hanged, you get eaten by a shark. Excellent for younger users. A file creator is included to allow you to add more words. And, to cap it all, the music is by the Shapeshifters! **BRAINSTORM** by the ASE crew also included (memory tiles). (C)

GBU.80: TRAVEL GAME by Mike Duncan. Another very original game from OZsoft, again with full GFA 3 source code. You have to visit 37 cities across the globe in a specific order. Money is limited but may be replenished by selling photographs from your trip. (DS:C)

GBU.81: DEAD OR ALIVE...? by Kev Davis. Just when you thought your life as a private detective couldn't get any worse - it ended. Rather messily. Being rudely awoken from the dead to find that you've been reduced to a skeleton is only the first of your many, many problems in Chaos Software's witty text adventure. (DS:C)

GBU.82: CRUSH by James Gaunt. Your city is being bombed by a malicious craft. But, by using the rubble and bricks around you, you can escape over the walls to live another day. Superb 68000 code and sound effects. (C)

GBU.83: CYBERSTORM by Kathy Steinbach. Move over Jeff Minter, this is the real article. Defender/dropzone at its most frenetic. Great music, awesome sound effects, ultra-smooth horizontal scrolling (50 frames/sec), cloaks, smart bombs, radar, stranded scientists, psychedelic explosions, they're all there! This is the new Budgie masterpiece.. (C)

Compendium Disks at £3.95 each

COM.25: SUPER LEAGUE SOCCER by Adam Medley. Football simulation featuring: League table, Squad selection, Transfer market, visits to the bank, youth teams and extra training. Plus Football Genius quiz by Camy Maertens. (DS:C)

COM.26: COLONY Disk from the Bomb-Out Bros! **COLONY (!)** - the excellent scrolling "missile command" variant from Dave Scantlebury, with a multitude of special effects and some great extra graphics from Keith Jones, this really gives a new lease of life to a classic

Update

game! Plus: Operation Wimp - a simple and amusing game of reflexes by Adrian Speight. Written in STOS, it won't have FTL or Psygnosis worried, but it's suprisingly addictive. **SoundTracker Demo 2** - Another tracker module converted from the Amiga and played using the PD Tracker player. (DS:C)

Budgie Magazines - £2.95 each

MAG.13: The Untouchables Disk Magazine Vol 2. Second Time Lucky. Bad language starting to creep in. On the other hand, the disk is definitely improving. News, cheats, games reviews, and loads of source code. Kick-off 2 goals also included. (DS:C)

MAG.14 DISK SPACE by Jason Raucassel and Friends vol 1. A pleasantly written diskzine with no swear words, intelligent reviews, short stories, vast quantities of games hints and cheats and some decent utilities.

MAG.15 THE LEDGERS vol 3 by The Untouchables. Third in the series. Fonts, tons of source code, interviews, cheats, fourteen games reviewed including Manchester United. The program folder contains the brilliant FVK virus killer from Pacman. A real gem.

Budgie Demo's - £2.95 each

BDE.03 Ooh Crickey wot a Scorcher by The Lost Boys. The greatest yet!

The ultimate 3D fractal graphics main menu. Good enough to go out at £30. And that's just the menu... (DS:C)

Shoestring Software - £2.95 each

LCW.03: PICTURE MIX 6+: an electronic jigsaw puzzle for the over 6's. (C)

LCW.04: ROBOT WORDS: A new version of the old hangman idea. Played over three levels. The child is given the opportunity to guess a word letter by letter and the idea is to complete the word before the robot is fully built. Mouse or keyboard entry may be used and the words may be tailored to a child's needs with the supplied word editor. Sampled sound is used to good effect along with various animation sequences throughout the game. (C)

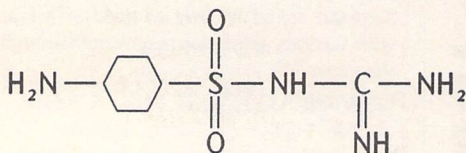
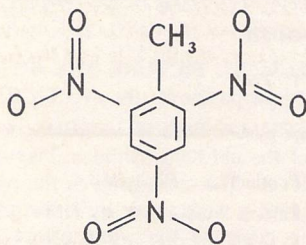
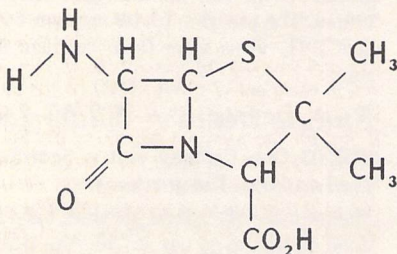
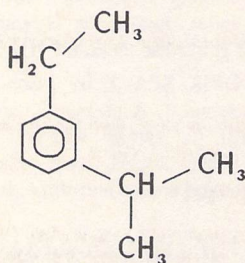
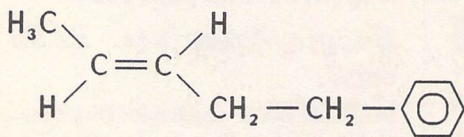
LCW.05: ALPHABET MIX: A jigsaw puzzle for younger children. Includes 26 pictures, one for each letter of the alphabet. The perfect program to exercise young minds. (C)

SIGNUM:

The Jewel In The Crown

Graham McMaster

STRUCTURAL FORMULAE



Apropos Of Signum

Signum, which is of German origin, first became available in this country in 1987. It was upgraded a year later to Signum 2, in which form it has remained and acquired legendary status for quality and reliability as a technical document preparation system. It is called a document processor because it does not fit neatly into either of the mainstream categories of word processor or desktop publishing system. It is not reckoned to be a day-to-day word processor (although many use it as such) because it has neither a spelling dictionary nor a mail merge facility; and, although it uses multiple, proportionally spaced fonts (up to seven per document), supports multi-column layouts and handles images, it does not provide the full range of text flow, rotation or scaling features usually associated with DTP. On the other hand, the positional control that Signum gives to the user is the envy of the best DTP systems.

With the vast majority of word processors and DTP systems we are constrained to move the cursor in increments of one line space vertically and one character space horizontally and these are simply not fine enough when laying out mathematical expressions, chemical structural formulae or tables (see Examples 1 & 2). In Signum the movements of the cursor, and therefore the positioning of symbols, are independent of the current line and character space settings. A symbol can be positioned anywhere on the page (and on the screen) in vertical increments of 1/54" and in horizontal increments of 1/90". Positioning is one factor - arguably the most important - contributing to the power and flexibility of Signum. The other two are the macro facility and the WYSIWYG display.

Signum's macro facility goes well beyond recording long technical words and oft repeated phrases to produce a genuine extension to the system. Indeed without the macro facility (particularly with the ability to record cursor key presses) the large compound symbols - so much a feature of Signum - for summation, integration, square root, etc., the sets of large brackets and the chemical ring structures could not be created (or would need to be recreated on each occasion as required). Two macros may be attached to each character key, including those on the numeric keypad, allowing more than 120 macros to be

defined. For example, in SCISET, which is a unified collection of text and technical fonts, in addition to the above compound symbols, there are accented characters covering all the main east and west European languages and the whole set is contained in a file of 120 macros.

The key element in a WYSIWYG display is that corresponding screen and printer characters should have exactly the same proportional space. With such an arrangement you can be confident that all on-screen placements and formatting will be exactly reproduced in the printout. It is not necessary to have a 'trial' printout.

The Desktop Metaphor

Signum is not a standard GEM application. It does not use GDOS, supplying its own printer and screen drivers and fonts (so there is no hassle with ASSIGN.SYS and GDOS.PRГ). The document window, of which there is just one, has no sliders for scrolling. Instead ESC key combinations are provided for stepping through a document paragraph by paragraph and page by page. In addition there are combinations to take the cursor to the top/bottom of a page, into the header/footer areas and to the beginning/end of a line. Selecting a character with the right mouse button places the cursor immediately to the right of its proportional space (from where it can be deleted by backspace); selecting it with the left button places the cursor on the character.

For some, their first encounter with the flexibility of Signum and the above non-standard operations can be daunting but if you adhere to the Desktop metaphor, which Signum sustains, you cannot go far wrong. Imagine that you are about to write a report or pen a letter. What would be the sequence of operations? I always need to look for a pen and usually find the one I don't want: Signum needs to be told where its fonts are and which ones to load. Next I would select a sheet of paper: Signum allows you to define a 'standard page' in terms of page length, dimensions of header and footer, and positions of left and right margins; and to set line, index line, word and character spacing. All of these parameters which are accessed as menu options on the Parameters menu, can be changed and applied to different parts of a document and a preference set of values may be saved and loaded automatically when Signum is loaded.

Text, Images And Equations

During text entry Signum breaks the line at a convenient word space in the vicinity of the right margin. At this stage neither hyphenation nor pagination occurs, allowing a document to be entered as one long, continuous page. Thereafter the logical sequence is to request justification followed by pagination. If either left or full-out justification is required the user may select either automatic or manual adjustment of line lengths. In automatic mode the user still has an influence which is exercised by defining the width of a 'hot zone' at the right margin. The effect of this parameter is to specify the maximum amount of white space that is considered acceptable to redistribute

SCHROEDINGER'S EQUATION: ONE ELECTRON ATOMS

In time independent, spherical polar coordinate form -

$$-\frac{\hbar^2}{2\mu} \left\{ \frac{1}{r^2} \frac{\partial}{\partial r} \left(r^2 \frac{\partial \psi}{\partial r} \right) + \frac{1}{r^2 \sin^2 \theta} \frac{\partial^2 \psi}{\partial \theta^2} + \frac{1}{r^2 \sin \theta} \frac{\partial}{\partial \theta} \left(\sin \theta \frac{\partial \psi}{\partial \theta} \right) \right\} + V(r) \psi = E \psi$$

Look for solutions of the form: $\psi(r, \theta, \phi) = R(r) \Theta(\theta) \Phi(\phi)$

and obtain the three equations:

$$\frac{d^2 \Phi}{d\phi^2} = -m^2 \Phi : \frac{1}{r^2} \frac{d}{dr} \left(r^2 \frac{dR}{dr} \right) + \frac{2\mu}{\hbar^2} [E - V(r)] R = \alpha \frac{R^2}{r^2} : -\frac{1}{\sin \theta} \frac{d}{d\theta} \left(\sin \theta \frac{d\Theta}{d\theta} \right) + \frac{m^2 \Theta}{\sin^2 \theta} = \alpha \Theta$$

with solutions:

$$\Phi_m(\phi) = \exp(im\phi), \quad |m| = 0, 1, 2, 3, \dots,$$

$$\Theta_{\ell, m}(\xi) = (1 - \xi^2)^{|m|/2} F_{\ell}(\xi)$$

and

$$R_{n, \ell}(\rho) = \exp(-\rho/2) \rho^{\ell} G_n(\rho), \text{ where}$$

$$\xi = \cos \theta, \quad \alpha = \ell(\ell + 1)$$

$$\rho = 2\beta r, \quad \beta^2 = -(2\mu E)/\hbar^2$$

$$\ell = |m|, |m| + 1, |m| + 2, |m| + 3, \dots$$

$$n = \ell + 1, \ell + 2, \ell + 3, \dots$$

and

$\Theta_{\ell, m}(\xi)$ are associated Legendre functions.

$R_{n, \ell}(\rho)$ are associated Laguerre functions.

among the existing word spaces on a line when the last word is moved to the next line. If more than the specified maximum would result, Signum will hyphenate the last word. All this is done automatically and rapidly throughout the page. Nevertheless I prefer the manual mode in which Signum presents each line of a paragraph in turn, indicating by the position of the cursor the maximum extent of each line. With the mouse, the user selects the position at which the line should be broken and this may involve hyphenation.

Pagination is an interactive process in which Signum indicates, again by the position of the cursor, where it would paginate and the user may either accept that recommendation or click on the line that will start the new page. If footnotes are present, the footnote management system ensures that footnote reference and footnote always stay together on the same page. Pages may be rejoined and new, blank pages may be inserted anywhere in the document. Multi-column layouts are created by defining standard page widths equal to the required column widths and by defining a template (in a dialogue box) which Signum uses to assemble the components of the layout. The technique is neat and elegant, if somewhat memory hungry.

Unless you buy additional hardware and software, images for use with Signum are acquired by the screen capture desk accessory supplied (Serncop.Acc). After initialization it is activated by the Alt-Help key combination when it captures the current screen (640x400 pixels), writes it to disc and increments the file extension .I<nn> in readiness for the next call. As part of the process of transferring an image to the current document, the user has the options of specifying the physical dimensions and of cutting a section by positioning guide lines around the required area. The physical dimensions are specified in an unusual but logical way as a pixel density (dpi). The relationship between length, number of pixels and pixel density is: (number of pixels)/

(length)=(pixel density). Knowing any two of the quantities determines the third. Since the number of pixels is fixed (640x400), specifying the pixel density determines the image dimensions and if given as an integer factor of the printer resolution, ensures optimal rendering of the image. Pre-set values are available for each of the main printer resolutions. For example, the laser printer values of 100, 150 and 300 dpi yield dimensions of 640/100 x 400/100 = 6.4"x 4"; 640/150 x 400/150 = 4.3"x 2.7"; and 640/300 x 400/300 = 2.1"x 1.3". At the latter size the text in a dialogue box is just about readable.

Rather than talk about setting out equations and print quality I have provided two examples of the sort of results that are routinely obtained. I used SCASET to produce these examples because the standard fonts distributed with Signum do not contain chemical bonds or ring structures. Other than that no special effort was required.

Warts And All

If Signum is used with a dot matrix printer it is probably best thought of as a one-off or master document production system from which either plates or photocopies can be made. A well-filled A4 page, printed at 360x360 dpi on a 24-pin printer can take up to 5 minutes. With a laser printer all restrictions are removed and Signum can be used, additionally, as a day to day word processor. Those who use it in this mode would welcome a spelling dictionary and a mail-merge facility. Producers of newsletters and church notes would welcome larger characters: nothing dramatic, probably 18 or 20 point would suffice (the current limit, set by the font editor, is about 14 point). Writers of books and manuals need more than Signum's accumulator to compile an index. As laser printers continue to fall in price the ability to specify alternate pages to take advantage of double sided printing, is becoming an imperative. Many of these facilities are available from third party develop-

pers but their omission from the original system has to be considered a defect.

Conclusion

In technical document preparation Signum has no peer. To obtain comparable results you have to resort to a page description language and invest a great deal of time in learning the commands and how to use them. The most compelling arguments I have encountered for preferring Signum to a PDL are the comprehensive and enthusiastic accounts of what is involved in using one of them (TEX) on the ST (See ST Club Newsletters 17 & 26; STA 2, 7 & 10). If Signum had been developed for the PC (PC's of the day were not powerful enough to support it), it would have been a household name now and page description languages would have been irrelevant, eccentric curiosities used only by masochists. Leaving aside cost considerations, if pressed to say which unique service the ST provides, it would have to be the ability to produce technical documentation with the same ease with which a letter is produced on a word processor. Signum is indeed the unique jewel in the crown.

Product:.....Signum 2
 Price:.....£188 inc. VAT
 From:.....Signa Publishing Ltd.
 Unit 16
 Farnborough Business Centre
 11 Eelmoor Road
 Farnborough
 Hants. GU14 7XA
 Tel:.....0252 370066

Jeremiah's Journal



Splinterbone

The great British Winter drives Jeremiah to despair and he decides to go in search of the sun. His wanderings take him to the far shores of Maupiti Island in the sundrenched Indian Ocean.

Bognor Regis it certainly isn't ...

The first adventure to come from French software house Lankhor was called *Mortville Manor* and had you taking on the role of Jerome Lange, private investigator extraordinaire (and related, at least in spirit if not in fact, to one Hercule Poirot). Now, Lange is back in a brand new graphic murder mystery set in the sultry tropics of Maupiti Island.

Whilst journeying around the world, Lange finds himself on a yacht travelling from Madagascar to Karachi when the imminent threat of a hurricane sends the craft scurrying for the nearest landfall. This turns out to be the harbour at Maupiti Island and both crew and passenger pass the night in relative safety whilst the hurricane passes them by.

In the morning, a woman called Maguy comes to visit Lange. She is terribly upset, as a young girl named Marie has disappeared during the night. She fears either kidnap or murder, or both. Desperate, she asks Lange to help. As it will be a little time before his boat will be ready to set sail again, he agrees to do what he can. So begins the unravelling of a very tangled tale.

The first thing to do, of course, is to explore the island itself in order to acquaint oneself with its environs and inhabitants. Apart from Jerome, the yacht is home to a crew of two - Bob and Anton. There is also a fishing boat in the harbour manned by three sailors - Bruce, Roy and Chris. There are two employees of Maguy's living at her house, Sue and Anita. Marie also lived here prior to her disappearance. Finally, there is Juste. A native of Maupiti and the last of his race, he works as a general handyman around the island and supplements his income by fishing off the north beach. You also find, in the course of your enquiries, that another girl

called Lucie also used to live on the island before she too disappeared very suddenly and unexpectedly. This gives you a total of ten possible suspects (eleven, if you think that Lucie may have secretly returned to the island), any one of which might possibly have committed the dastardly deed.

Maupiti itself is not a very big island. To date I've only managed to find 23 separate locations, and since 7 of these are on board the two boats and a further 6 are in Maguy's house, that doesn't leave very much to cover the remainder of the locale. In short, there are also a couple of beaches, a pond, a well, a garden and Juste's house which will require extremely careful examination if you are to uncover all the clues they hold.

Investigative Tools

There are a number of actions available to facilitate your conduct of the investigation. When scrutinising locations it is possible to examine in close-up detail any part of the scenery, to thoroughly search drawers and cupboards, and to carefully appraise all objects discovered by looking, feeling, smelling or listening to them. You should be extremely particular to observe all the detail of your surroundings in order to identify small objects or facts which are cunningly crafted to fit unobtrusively into the scenery and which could easily pass totally unnoticed otherwise.

You will also find it necessary to question in depth each of the occupants of the island. During the course of your questioning, you can enquire as to what they have been doing at any time of the day or night, what they have noticed while they've been going about their business around the island, what they are doing at the moment, and what their opinion is concern-

ing certain facts that you've uncovered. This last option is probably the most interesting as the list of possible items about which you can solicit opinions grows longer as you uncover more and more of the facts surrounding the case. It is probably the only indication you get that you are actually making some progress in the game.

As well as seeking information from the other characters, it is possible for you to actually contradict their statements and challenge their opinions by quoting from comments and facts communicated to you by others. This is done by using a *Memorise and Remember* command which allows you to store and quote up to nine replies at a time. If this fails, then the option exists to use bribery or force to elicit the answer you need (although the latter option isn't recommended unless you are really desperate).

Other tools at the investigator's disposal are the ability to observe the actions and communications of others, both overtly and covertly, and to shadow suspects without their knowledge in order to confirm their movements and check their statements.

This is a wholly graphic-based adventure, with a small text window for brief messages, controlled by use of a simple and easily accessible point and click interface, utilising a number of drop-down menus which appear when the mouse pointer is moved to the top edge of the display. You just click on the action you wish to perform from the relevant menu, and then click on the place on screen where you wish to perform it. Interviews are conducted by clicking on items or questions from a number of nested lists which grow longer as time passes and the adventure progresses. The system is very straightforward and appears to

encompass most of the features that one would hope to find in an adventure of this type. Should you have any trouble in getting to grips with the system, then it is possible to load the game in a demo mode (1 meg memory machines only) which will show you the features and commands which are at your disposal, and may just give you the odd clue or two as well.

Interesting Sounds

Since this is a graphic adventure, and a French one at that, you would expect to find screens of a very high artistic standard, and you would not be disappointed. Each screen is mainly static in nature, although some do boast small animated sections (waves rolling into shore, palm trees swaying in the breeze), and is crafted with great skill and meticulous attention to detail. Each is very pleasing to look at and requires the very closest scrutiny in order not to overlook any of the small facets built into the picture. In addition, some pictures change slightly as time passes by (a cigarette butt appears where there wasn't one before, a previously locked glass cabinet is found smashed open), and you have to be alert to pick up on the changes as they occur as some of them are by no means obvious. The various inhabitants of Maupiti are depicted by their own small cameo picture, equally diligently crafted, which only appears when you are actually interviewing them.

If the graphic quality of the game was somewhat expected, then the copious use of sound effects and speech came as a bit of a surprise. Each location seems to have its own particular set of sound effects which turn themselves on and off intermittently to match what is occurring within the location at that particular time. These range from the pound of surf on sand, the tinkle of piano keys and the cries of tropical birds in flight, to the thump of doors opening and closing, the nudging of boats against the pier and the hum of smoothly functioning machinery. All of these work to very good effect and help to enhance the overall atmosphere of the game.

The more interesting development however is the use of digitised speech as the basis for conducting interviews with your suspects. When you ask someone a question, you don't just get a text message detailing their answer, they actually talk to you and tell you their answer themselves. Short animated sequences to simulate mouth movements in the cameo picture of the suspect serve to complete the illusion that the person is really communicating with you. This is a technique which I've only seen used before in the U.S. Gold adventure "Mean Streets", and then only in brief snatches. Here it is used much more extensively and to much greater effect. Unfortunately, on an STFM each voice tends to sound just about the

same as every other voice, with the females slightly higher pitched than the males, and all have a tendency to come across as a trifle robotic. This does tend, after a while, to becoming a touch trying on the nerves and there is thankfully a facility to turn the voices off and just read text replies instead. However, this is still a very welcome development and on a more sonically versatile machine it should be possible to give each character their own distinct voice and mannerisms in order to make them more realistic. I wonder how it comes across on the STE?

Intricate Plotting

The plot appears to be fairly complex and builds upon itself in a steady and interesting fashion. I say that it appears to be because I haven't quite unravelled it all yet, and it may be that I'm totally on the wrong track and reading more into the game than is actually there, but I don't really think so. You start off by investigating a case of kidnap and quickly become aware that there is an underlying current of fear present on the island, mainly concerning white slavery. You also find that Maguy is really a madame, and that Sue and Anita are not her assistants but are actually her "girls". Then there's the mysterious disappearance of Lucie (who I'm almost convinced was really a policewoman investigating the slavery racket), and the strange behaviour of Chris, who is certainly not a seaman (but could be an undercover policeman sent to look into Lucie's disappearance). There's the locked trapdoor which is hidden under the carpet in Maguy's room, there's the strongbox which unexpectedly appears floating in the pond early one morning, there's the occurrence of additional murders (no, I'm not going to tell you who gets the chop) which you seem unable to prevent, and a great number of other odd occurrences and events which you have to sort out into some kind of order and sense. No easy task, and you only have a limited amount of time in which to satisfactorily accomplish the job. The investigation starts at 10.00 am on the 31st January and will end at 11.00 pm on the 1st February when the proper authorities will arrive on the island to take over the case from you. Time passes at a rate roughly equivalent to five game minutes equalling one real minute, so all too soon you will find your deadline looming and lots of questions still unanswered.

It is regrettable that just as this game boasts some of the very best features to be found in French products, it also possesses some of their biggest defects also. How I long for the day when I can write a review of a French product which will not refer in some way to "nice graphics - shame about the gameplay". Perhaps that day will sometime come, but not yet I'm afraid. There are a number of things about Maupiti Island which had me gnashing my

teeth in frustration and despair.

The first thing is that the game requires a save disk which is formatted as single-sided with a volume label of "Maupiti". It is quite adamant about this and rejects absolutely any disks which are either double-sided or haven't got the correct volume label. In this day and age, I am at a total loss to understand why this kind of stringent regulation is either required or advantageous. Still, it's an ill wind as they say. At least I now know how to format disks that are single-sided and contain volume labels. I'd never had to bother using either of those particular features before!

The other big disappointment with the game is its tendency to come to an abrupt end without any kind of warning or reason being given. All you get is a brief message to say that your lack of diplomacy or psychology has resulted in your failure to solve the case. I can understand this happening if you try to rough up somebody who shouldn't be roughed up, but I can't figure out why it should happen when all you are doing is showing objects to somebody (most of which appear to have no importance) or because you happened to drop an object in a location that the program doesn't particularly like. I assume that you must be showing things to somebody who shouldn't really see them, or you are leaving behind an object of vital importance that shouldn't be left behind, but I'll be jiggered if I can work out the significance of these actions. (Perhaps this is the reason why I haven't managed to solve the mystery yet.) It really would be nice to get some sort of clue as to what you are doing wrong - just the merest smidgeon would help.

However, despite the frustrations, and the numerous reloads of saved positions, I think I'll stick with this game for a little while yet. There is something about it which keeps you plugging away for just one more go. It is probably because you continually feel that you are on the verge of uncovering the one clue which will make all the rest fall neatly into place and bring the mystery to a swift and tidy end. There must be something positive about that kind of addictive quality, don't you think? If you are interested in investigative type adventures, then you could do worse than give Maupiti Island a whirl, but only if you're not suffering from high blood pressure or other forms of stress which may lower your frustration tolerance levels.

Product:.....Maupiti Island
 Written by:.... Sylvian, D. Sablons and
 A. Bescond
 Publisher:..... Lankhor Software
 Price:..... £25.99
 System:..... This product runs on all
 ST/STE models with a
 minimum 512k RAM

From the Hotline

Hints, tips and news from the COMPO Hotline

GEM Fonts in 'That's Write'

For everyday work, resident printer fonts are all you need; especially if your printer includes nice proportional and italic fonts. But when you need a wider choice of sizes and styles the only solution is to load fonts from disk and drive the printer in graphics mode. *That's Write* (and *Write ON*) use GEM fonts, which are the nearest thing to a font standard on the ST, so there is a huge choice available both commercially and in the Public Domain. It's also worth mentioning that these fonts print out far more quickly from *That's Write* than under GDOS.

Special Requirements

GEM fonts have to conform to certain standards before they will work fully with *That's Write*. First of all, ASCII characters 4 to 32 must be defined, and the space character (32) must have some width. Characters 4 to 25 are used for footnote and endnote numbering, which enables true superscript or subscript numbers to be used without the necessity for a separate small-sized font. Characters 27 and 31 are used in hyphenation; while 28 is used (in screen fonts only) as the page number symbol - the actual page number is substituted at print time. If these characters are defined, but left blank, the font will work, but there will be blanks where the footnote numbers should be.

In practice, what this means is that a GEM font not especially designed for *That's Write* will need some editing before it is fully compatible. Unfortunately, most fonts advertised as *That's Write* fonts by PD libraries or by companies such as Gate Seven have not had this kind of attention (including those on the ST Club's disks FON 42 to 46). For example, Gate Seven convert fonts to GEM format from their wide range of Calamus fonts, charging around £5.00 per font. At that price, it is not economic for them to spend time editing the font to the *That's Write* standard; they will do such work on request, but will charge £20.00 an hour.

GEM fonts converted from other formats often have rather poor screen fonts, because

of the difficulty in scaling high resolution fonts to look good at low resolutions. Some people can live with this, knowing that the print out will look good despite the ugly on-screen appearance; others will find it very irritating. It is really a matter of personal preference.

Using Fontkit Plus

The solution to both these problems is to get hold of *Fontkit Plus* and do the small amount of conversion work yourself. This has the further advantage that you can convert Calamus fonts to any size you require. The new version 3.4 has a supplement printed using *That's Write*, and includes a helpful article by Jeremy Hughes about these special requirements. He notes some further technical details: for example, GEM fonts used in *That's Write* should be in Intel format (not Motorola); and the line space parameter should be set to zero.

Signum Fonts

The Signum font standard is another one common in the ST world. If your interest is in mathematical, scientific, or foreign language fonts, you may well find what you need in this format. Signum fonts have the same screen resolution as *That's Write* (90 x 108 dpi), which makes life easier. But there are certain difficulties. First, Signum fonts have the space character (32) set to zero. Second, there is the difficulty with footnote characters, mentioned above. Third, because of Signum's German origins, some font converters (such as the one supplied with *That's Write*) are likely to give you transposed characters, in particular the "y" and "z" are swapped around. *Fontkit* will sort out the transpositions automatically; but the other matters will require a little work.

Line Spacing and Justification

Here, the golden rules are to adjust line spacing by adding or deleting blank lines in the

character cells of the screen font; and to keep a close correspondence between the screen and printer fonts. If in doubt, scaling the screen font to a horizontal resolution a little greater than 90 dpi will prevent any character clipping on print out.

Naming Conventions

It is vital to use the standard *That's Write* naming conventions. The screen fonts must be of the form S*.FNT/IT/SML/SIT (see STA 12 for an explanation of the four types). Printer fonts are also grouped in families according to the first letter of their name. Each *That's Write* printer driver will only recognise fonts beginning with a specified letter, and stored in a specified directory. These can be adjusted only by amending the printer driver source file (identified by a .PCS extender - samples obtainable from the Hotline number), and compiling a new .TWP printer driver with THELP.PRG. The standard prefixes are:

- E - 120 x 216 dpi (9-pin)
- F - 240 x 216 dpi (High res. 9-pin)
- O - 180 x 180 dpi (Low res. 24-pin)
- P - 180 x 360 dpi (Med res. 24-pin)
- Q - 360 x 360 dpi (High res. 24-pin)
- L - 300 x 300 dpi (Laser or HP DeskJet)

Sources of GEM Fonts

Gate Seven Computers Ltd. are at 6A Gwendwr Road, London, W14 9BG. Tel: 071 602 5186. GEM fonts are also widely distributed by PD libraries.

The Hotline

The COMPO Hotline is on 0480 891271 3pm to 8pm Monday to Friday; or send a fax on 0480 890787. Finally, if you have tips for other COMPO users, send them to me c/o *ST Applications*.

Richard Lane

The **A to Z** of the ST

Compiled by Mark Baines

H **Half-duplex:** In communications, when messages are sent in both directions but only one direction at a time.

Handle: A fictitious name or monicker of a person, e.g. on a communications system. Also the identifying name given an object in programming source code, such as a windows object.

Handshaking: The initial interchanges made between modems on a communications system, before transmitting data, to establish a common protocol.

Hard copy: A copy on paper, a printout.

Hard Disk - HD, HDD: An aluminium magnetizable storage disk. See Disk and Floppy.

Hardware: Any electrical, mechanical or structural part of a computer system.

Hard wired: Bypassing a communications link or electrical components by means of cable.

Hash: The symbol '#' meaning 'number' in the U.S.. Also to perform arithmetic operations with numbers that have no numerical significance.

HD6301: The ST keyboard processor also responsible for the mouse and joysticks and containing a real-time clock.

Head: One or more electromagnets or transducers used to read and write data in bit-pattern form on the magnetizable surface of a disk or tape.

Head crash: When a head meets the surface of a hard disk resulting in irreparable damage of that surface and loss of data.

Header block: Data placed at beginning of a block of data to identify or define it for storage or transmission, e.g. start of a metafile.

Header file: File with .H extender containing definitions of functions, types and macros needed for the compilation of C programs.

Help menu: A GEM program menu containing guidance on program use.

Hertz - Hz: SI unit of frequency equal to one cycle per second.

Hexadecimal - Hex: Base 16 number system frequently used to represent binary numbers.

Hidden line: In three-dimensional object display, a line that could not be seen when viewing the 'real' object and so should not appear in the display.

Hide: To make an object, such as the mouse pointer, invisible.

Hierarchy: An organization of items on different levels in which the upper items have a precedence or control over the lower levels. The ST filing system is hierarchical with its root directory and sub-directories.

High density - HD: A relative term applied to a disk's capacity. High density 3 $\frac{1}{2}$ " floppies have a capacity of 1.4Mb, twice the ST's norm.

High level language: A programming language that does not reflect the structure of a particular computer or processor and thus can be used to write programs for different computers.

High memory - HIMEM: The upper addresses of the available RAM.

High resolution: A relative term used to denote the amount of pixels or dots on a screen. On the ST it refers to the mono monitor resolution of 640 x 400 pixels.

Highlight: To emphasize text or other object,

such as with reverse video or bold type.

History file: Data received during a communications link is saved to be read at leisure later.

Home: Top left corner of a screen display.

Horizontal tab - HT: ASCII character 9 moving the printing position or cursor a preset distance to the right along the line.

Host computer/machine: The controlling main computer in a communications system.

Housekeeping: Disk storage management operations, such as copying, deleting, archiving files, etc.

Hyphenation: Placing a hyphen (-) where a word has been split at the end of a line.

I **CON:** Graphic symbol representing a function, file or hardware. In GEM, icons can be mouse clicked to initiate an action.

ID: *IDentification*. Group of characters that uniquely identifies something, such as a computer network user.

IKBD: *Intelligent KeyBoard*. The ST's keyboard, mouse and joystick controlling hardware. See ACIA and HD6301.

Image: A visually interpretable representation as displayed or printed. Also a file containing the exact duplication of a part of memory.

.IMG file: Bit-image graphics file with .IMG extender primarily associated with GEM operating system.

Immunizer: Program to 'immune' disks from virus attack by placing a safe boot sector on the disk where a virus would otherwise exist.

Impact printer: Printer that strikes a pin or type font against ribbons onto paper.

Import: To load text or images created elsewhere into another application (e.g. DTP) for processing.

In-house: Done on the users' premises and by own staff.

Include file: External file, such as C header files, for inclusion in program source code upon compilation.

Increment: To add, usually 1, to a number.

Indent: To set inside from the left, and sometimes right, margins the beginning of one or more lines.

Index: List of items and their locations maintained for access and manipulation purposes, i.e. of records in a database file. Also a value used to identify a location in an array.

Infix notation: Usual way of expressing mathematical relationships where the operators are placed between the operands (2*2=) rather than separately, as in Polish Notation (22+) for instance.

Information: An element of knowledge. Computers only process and output data which, when examined and analysed by humans and given meaning, provides information.

Information System: Interactive network system providing users with access to data, such as Compuserve.

Information Technology - IT: The field of creating systems and devices for use in the dissemination of data and information.

Initialize: Establishing prescribed starting con-

ditions before executing a program usually from within the program itself.

Ink-jet printer: Printer that forms dot matrix characters by applying ejected droplets of ink to paper. Reasonably quick, quiet, versatile, with good quality results.

Inline code: Assembly language code within high-level language source code.

Input: That which is, or intended to be, received; or the movement of data to memory from a storage or input device.

Input device: Device used to convert data from some other form into bit patterns that can be written to the computer, e.g. mouse, scanner.

Input/Output - I/O, IO: Transferring data between the CPU and its memory and an external device or semiconductor, termed the input/output device.

Input routine: Program routine that handles input into the computer's memory.

Inquiry functions: Set of GEMDOS VDI functions providing the data to enable programmers to write programs for any GEM environment.

Insert key: Application defined key usually for switching between Insert and Overwrite mode or inserting a space character.

Insert mode: Program mode enabling inserting of characters between others rather than overwriting them.

Install: Setting up a program, data or device ready for use.

Instruction: Program element specifying an operation to be performed on or with data. In high-level languages the term 'statement' may be preferred.

Instruction set: A processor's set of instructions defining all the operations it can perform.

Integrated Circuit - IC: Minute electronic circuit on which the components are produced on a single substrate (Chip) by a process involving masking, etching and diffusion.

Integrity: Term applied to data when considering its accuracy, validity or freedom from corruption.

Intelligent: Also smart. Devices which can control and modify themselves using built-in instructions. Unintelligent devices are termed 'dumb'.

Interactive: Term applied to software holding a 'dialogue' with a user, responding appropriately to the user's input.

Interface: The boundary between connected devices with different characteristics, such as the printer parallel interface port. Such a device may be human, the interface being the operating system and front end.

Interlace sync: In a screen display, a method of enhancing the resolution by introducing a delay in beginning alternate vertical scans in order to displace the scan to double the number of vertical dots. In practice, the total frame frequency is halved causing flickering of the image on normal screens.

Interleave: Determines in which order a disk's sectors are written so as to cause minimal delay between reading data from consecutive sectors.

Intermediate language: Language, other than machine code, produced by a compiler as a step in compiling a high-level language to machine code.

Interpreter: Program that translates and executes high-level language source code one instruction at a time. See Compiler.

Interrupt: To stop the execution of a program and transfer control to another one while retaining the values necessary to resume execution. Interrupts may be internal as a result of processing or external from a peripheral device. See *Exception*.

Inverse video: Where the background and foreground colours on a screen are interchanged.

Italic: A style of text characterized (among other attributes) by slanting to the right.

Iteration: A loop or repetition of a sequence of instructions in order to perform an operation.

STICKS AND STONES

Need a bigger hard disk? You are not alone, as Günter Minnerup struggles to fit a quart into a pint pot. When things get really desperate, however, there is always something to make you feel better - like blaming Atari who, Günter argues, could make a contribution to releasing some of our megabytes.

I should have known: the van mentioned at the end of last month's column did not bring my TT, but the neighbour's new tumble dryer. Another false alarm; I really must stop standing at the window all the time... I was going to share with you my first impressions of Atari's 68030 baby today, but circumstances beyond my control force me to make do with more mundane matters once again.

And what could be more mundane than hard disk organisation? You know what they say about hard drives: they're wonderful, they're fast, they take care of all your programs and data, never need a floppy again except for backup purposes, and so on. But did they ever tell you about the shrinking hard disk problem?

Mine behaves like a cotton shirt in boiling water. When I bought all of 85 megabytes, I thought it would last me until optical laser disks had come down to my income bracket. But then along came Spectre GCR with those expansive Mac applications, and the DOS emulators, and suddenly there was only half a hard disk left for the ST in its native state. Out comes the jotting pad, and the calculations start. This is something I do rather a lot of the time, perhaps obsessively, but when you are into desktop publishing anything less than a few hundred megabytes of mass storage is a bit like the pint glass and the quart. Hard disks don't save time any more than a computer does: any gains are more than offset by the losses due to the interminable worry caused by the damn machines.

Bitter experience has taught me that regular backup to floppies is indeed a good idea, and this is enormously simplified by keeping data in a separate partition, as programs rarely need incremental backups (except for configuration files, of course, and things like spellchecking dictionaries). 16Mb is not very much at all for data if you own a scanner, so the data tend to encroach on the MS-DOS partition anyway. The real headache, however, is presented by the 16Mb for programs. Now in an ideal world, you'd simply settle on the best application for each purpose and 16Mb should just about be enough for one wordprocessor, one database, one art package and one DTP program, to take my

particular requirements. (I never, ever, use spreadsheets knowingly. In other words, even when I do use them, it is definitely not knowingly!)

But I don't need to tell you that the world of Atari is far from an ideal one. ST software seems to take a particular delight in excelling at one task and being fairly inadequate at many others. The same, of course, could also be said of Mac and PC software, but to a much lesser extent. Presumably this is because of the different nature of the Mac/PC and Atari markets: the more professional environment of the former puts the market leaders in sharp competition with each other, forcing each to quickly catch up with the others until there is little to separate them. Most Mac people I know settle for either PageMaker or QuarkXPress early on and rarely find it necessary to swap between them. The more amateurish ethos of the Atari scene can generate real strokes of genius, but very one-sided genius all the same. To do a proper job, you need to combine various such strokes of genius to combine into something approaching the rounded professional products on the Mac and PC.

Take Calamus, for example, which has always been a stroke of genius in my book, the first DTP package on any platform to offer true WYSIWYG. But the quality of its fonts and the accuracy of its typographical control left something to be desired, and there was no PostScript compatibility. For jobs requiring high-standard typography and the import of encapsulated PostScript files generated on a Mac, for example, I therefore run Fleet Street Publisher alongside Calamus. And now there is the marvellous Didot Professional, straddling both the Postscript and Calamus worlds.

Same with word processors. I have a long-running love affair with Protex, the best thing since sliced bread for high-speed, high-volume text crunching. The spellchecker and search-and-replace are just wonderful, unrivalled in my opinion by anything on any computer. But it has no graphics support and is not really WYSIWYG, so for the odd letter or leaflet I am always looking for something in the "document processor" genre. I have tried Signum, Script, WordUp, That's Write, Wordflair, and keep coming

back to one or the other. The point is, there's always one of them clamouring for hard disk space alongside Protex, complete with their own spellchecking dictionaries and fonts.

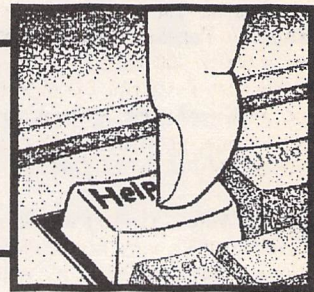
Graphics, of course, is a total madhouse on the ST, with countless different file formats, user interfaces and capabilities. I regularly use three different paint (TouchUp, MegaPaint Professional, Retouche) and at least two different drawing packages (Outline Art, Didot) - as soon as I drop only one, I instantly regret it because of some incompatible file formats, lack of printing ability (GDOS is a highly unwelcome guest in my ST's RAM), or an urgently needed feature. When running under Mac emulation, Illustrator and Superpaint somehow seem to cover all eventualities between them.

It is the fonts, however, that take the biscuit: no fewer than seven different font formats jostle for space on various partitions of my hard disk (they would never fit into just one) - Calamus, GDOS (in several varieties for screen and printer), new-style UltraScript (for FSMGDOS and Fleet Street Publisher), old-style UltraScript (for UltraScript itself!), Signum (for Script), MegaPaint vector fonts, and Didot Professional (converted from PostScript or Calamus to the .DFN format). Plus, of course, the various utilities needed to convert from one font format to another, some of which (such as the excellent PCG Fontverter) create their own intermediate formats...

Variety may be the spice of life, and sometimes the anarchy of the ST scene even has something engagingly refreshing about it, encouraging innovation and experiment. Confusion and duplication, however, will only serve to alienate those who depend on their computers for a living, and force others to fork out on otherwise unnecessary hard disk megabytes. Perhaps it is time that Atari enforced stricter rules for developers, or actively encouraged the adoption of certain standards. What, for example, is Sunnyvale's preferred outline font technology for the future? FSMGDOS or Calamus? And what about vector graphics? Is it to be GEM3 or CVG, or even something altogether different? And how do any such preferences fit in with the highly-desirable PostScript compatibility?

I think we should be told.

FORUM



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.

You can now post messages for inclusion in the Forum via the CIX bulletin board on 081-390-1244. All messages posted onto our **stapplications** conference on CIX are considered to be for publication. Private mail can be sent to us with **mail to paglo**, but do not expect an instant reply! Messages reprinted in the magazine Forum pages are identified by the CIX **stapplications** conference message number after the author's name.

CIX is a commercial system with a £15 joining fee and on-line charges of between £2 and £3.10 per hour. For more details see the introduction to CIX in issue 3 of ST Applications.

Key:

The following codes are used for each Forum entry:

J Pringle - Forum 29: Author who first raised the subject, and in which issue. In this case 29 refers to the Forum pages in Issue 29 of The ST Club Newsletter.

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

PageStream 2.1

Andrew Wright - STA11
Wendy Durham - Forum STA12

I I read Andrew Wright's review of PageStream V2.1 in issue 11 with interest - particularly since I'd had my own copy for a few weeks and was eager to see how my experience of using it matched his. The review certainly mentions all the features of the program, but nowhere could I find any hint of a suggestion that anything worked less than perfectly. Since I'd found that all certainly isn't well, I thought I'd like the opportunity to put forward another point of view to anyone who is thinking about buying PageStream.

Incidentally, my hardware is a 1MB 1040 with second drive. Print out via a Panasonic 9-pin, or laser with postscript driver.

It would seem to me that although certain things have certainly improved, others have got worse. Here's a list of problems I have found so far (in no particular order):

1. Big font sizes have a tendency to make PageStream bomb out (even though they have loaded successfully), they don't always display on screen at large magnifications, they don't always print out (inconsistently so - some letters of a word print, others don't: a possible cure is to save the file, quit PageStream, reload, and print the file without any changes to it). Sometimes the screen display is strangely corrupted.
2. General slowness of screen redraws - at times it's painful to watch.
3. Inverted commas in Times and Triumvirate don't appear on screen, yet imported documents containing them will include them on printout aligned on top of the adjacent letter(s).
4. Outlined fonts don't always print out - sometimes they print on my 9-pin but not on the laser.
5. Sometimes I get an alert message along the lines of "Running out of memory - create temporary file" - but nowhere in the manual does it refer to this or say what to do.
6. When rotating an image with graphics and text, the text doesn't always align. A friend

of mine who knows a lot more about maths than I do, suggests that it looks like a trigonometric error - cosines and sines reversed in the rotation routines?

7. When printing out in different densities on the 9-pin (to print a draft more quickly, for example), then the graphics print OK, but the fonts are distorted - but only usually with the larger sizes.

Certainly some of this - in particular the font problems - is to do with lack of memory, and perhaps I should have at least 2MB of memory and a hard disk. That would be very nice - but I haven't, and in any case, it does say in the QuickStart Manual that 1MB of memory and one disk drive are required.

I put the above points to SoftLogic, who replied, "The problem you're having with big font sizes is a problem with Compugraphic fonts. Compugraphic is currently working on the problem. For now, use non-Compugraphic fonts or smaller point sizes... Running the program from floppies - you will have to switch disks quite often for the font files... The other problems we are aware of and are working on."

I don't know about anyone else, but I don't find this a very satisfactory answer! What's the point of making capital (in the advertising) of using Compugraphic fonts if the larger point sizes don't work? Nor is it very satisfactory to release the program *knowing* the list of faults above.

PageStream is an excellent (and comparatively cheap) program - at least potentially, but for the moment, I've found it very frustrating and annoying to work with, with problems that really do significantly affect its use.

Andrew Harvey

● If you think that the known bugs in version 2.1 are a problem you should have seen the list of problems with version 1.52 and experienced the seven month wait before Soft Logic replied to our letters! Not that this is any sort of excuse: the erratic instability of the Compugraphic fonts is unforgivable and needs to be fixed immediately if PageStream is to have any sort of future. These defects didn't come to light as the review was being prepared and still only crop up irregularly;

usually when more than one Compugraphic font is being used in the same document.

Another problem to crop up after some long term testing concerns the Postscript printer driver. A PageStream document containing just a 600 x 400 pixel IMG file generates a manageable Postscript file of 90K; the same document containing a Degas version of the same image generates a Postscript file of over 300K!

I In issue 11, Andrew Wright gives PageStream 2 a very favourable review and suggests that it is "easily the equal to PageMaker 4". In fact, PageStream 1.8 lacks a number of features that would be seen as essential in professional packages on other platforms, and so far as I can tell from the reviews, they are still not available in PageStream 2. I feel that people should be aware of these limitations before they part with hard-earned cash.

1. First, the programme does not allow you to pre-tag text in your word processor: styles have to be attached manually to each piece of text after it has been imported. This is very tedious with long documents. Pre-tagging is a standard feature in DOS and Mac packages.

2. This problem is made more serious by the lack of a proper text editor. You can't re-export your text without losing the styles, so you are forced to edit directly on the page layout. The slowness of the programme can make this an agonising affair.

3. Turning to the layout features, PageStream offers no direct control of inter-paragraph spacing: an amazing omission in a DTP programme with professional pretensions. Nowadays, most WP programmes offer more control than this. Also missing are inter paragraph rules, automatic bullets, column balancing, widow and orphan control and many other features available in packages such as PageMaker.

4. Some of the printer drivers on PageStream 1.8 are very slow. Soft-Logic are claiming that they have been improved, but I would want to see them in action before buying the programme for serious work. It is also worth being aware that there is still no user support in the UK.

5. Soft-Logic seem to have got their priorities wrong. PageStream offers all kinds of fancy bells and whistles, but it lacks a number of vital productivity features. It is fair to say that the programme will do pretty much anything you can do with PageMaker, but in most cases it will take you much longer to do it.

6. At least PageStream is competitively priced. When you compare the cost of packages such as MegaPaint II Professional, Didot line-Art, and the forthcoming version of Calamus with the street price of better-featured DOS packages, it's hard to avoid the conclusion that DTP on the Atari offers "Price Without The Power".

Geoff Caplan

I I have just started using my upgraded Pagestream 2.1, and I have to say that I have been very pleased (and not a little surprised) with the quality of the package. I've been doing 'DTP' for several years now, having started with Publishing Partner, and moved up slowly through Pagestream 1.82 to the current version.

The quality of the Compugraphic fonts is good. Much, much better than the awful fonts which Publishing Partner and PageStream 1.82 pretended were Times and Helvetica. The Times is (at 12 points) completely indistinguishable from the built-in Times in my DeskJet 500.

Also much to my surprise the tiling and enlargement work fine, as do text and graphic rotations.

But the main point of my letter is to say that PageStream 2.1 really can use IBM format Postscript type 1 fonts. I've tried, and it works. Now, all the reviews (including your own) say that type 1 fonts 'can be downloaded from public domain libraries', or 'hundreds of fonts are available in the public domain'. Oh yeah? Where are they? None of the PD libraries I've contacted have any at all - ST or PC. Can you tell me where to get PostScript fonts, please?

By the way - Pagestream can use hinted type 1 fonts on a non-PostScript printer like a DeskJet. But they are printed and shown on screen without hints, since the hinting is a PostScript process.

The other comment I have to make is that a 2 floppy setup is only just able to cope, and a hard disk is practically essential. I have to do without the spell-check and limit the range of fonts I use. A hard disk is also vital because of the size of document that can be produced if you use a lot of graphics: 300k is easy. You can't fit many of those on a floppy! My first computer was a ZX81 with 1024 bytes of memory and tape storage - and now 1Mbyte isn't enough RAM and 40Mbyte hard disks are small!

Bob Almond

● Some PageStream compatible type 1 fonts are due in the PD library soon; details in a future PD Update.

Fans

Gavin Cape - Forum STA8
Dave Burridge - Forum STA10
John Higham - Forum STA10
Roger Woods - Forum STA11

I Further to my letter in STA 8 I have taken advice from Paul Rossiter and fitted my own fan. For someone with a little knowledge of electronic things, fitting the fan is a real breeze.

I obtained a brushless 12v DC axial 40mm (actual size 40 by 40 by 20mm) fan from Maplin (part no: YZ41U) at £12.95. I disassembled my Mega ST1 and located the vacant fan housing just behind the transfor-

mer/power supply unit. The fan simply drops into the housing and may be secured by two 3mm bolts - the fit is as good as the standard fan on other Megs. Two wires lead from the back of the fan - one red (+ve) and the other blue (-ve).

I located a power source with the help of a 12v label already on the transformer circuit board and touched the red wire to this with the other wire touching an earth - the fan whirred, blowing a steady stream of air out of the housing. (DO BE CAREFUL OF MAINS VOLTAGE WIRES - they are much thicker!) This sounded rather loud so I eventually opted for soldering the red wire to a 5v source, again labelled and the black wire to earth. After taping the wires out of the way and reassembling the casing I now had a whisper-quiet cooling fan installed into my Mega ST1.

At last I have peace of mind and my discs in the internal drive stay at an ambient temperature.

Gavin Cape

FSP3 Fonts

A J Badger - Forum STA10

Q Could anyone clarify whether PostScript fonts can be used with FSP3 and, if so, how does one install them?

Paul Jackson

● Only Ultrascript outline fonts and GEM bit-mapped fonts may be used with FSP3 - unless you have a Postscript printer, in which case you can install bit-mapped screen fonts for Postscript fonts that are available in your printer.

DeskJet Matters

Keith Baines - Forum STA1
Andrew Barclay - Forum STA3
David Alwyn Jones - Forum STA5
HHPaterson - Forum STA5
Will Mowatt - Forum STA6
John GFrazier - Forum STA6
David J Lindsay - Forum STA7
Paul Bates, John Wilkinson, N Linett, J Logan
and Jeremy Hughes - Forum STA11
Mathew Carey - Forum STA12
Dave Henniker - Forum STA12

Q As a recent buyer of a Hewlett Packard DeskJet 500 printer, I obtained a PD disk of drivers. Unfortunately, none of them was capable of producing graphics output. As I do a lot of drawing using Timeworks DTP, I would like to be able to experiment with various drivers that might suit.

The problem is that I am still quite confused about Atari printer drivers.

What confuses me is the relation of the top table (printer characteristics) to the bottom table (the translation table), and how they are related. I know they have to be in a particular order, but why?

Would it be at all possible to run a series of articles in ST Applications on printer drivers?

J C Ingate

● On the ST, it is critical that you recognise that printer drivers are specific to both the software and the printer that you are using. There is, sadly, no such thing as an Atari printer driver. Everyone who expects such things to be available is sincerely forgiven their ignorance: it's just that the people who design computers and write software do not have the same level of common sense as the average person on the street!

The driver that you describe is one for 1st Word Plus; what you need is a GDOS driver for Timeworks Publisher. Contact GST and they will be able to supply you with a suitable printer driver. Working Title Software (Calligrapher) will also supply a free GDOS driver for the DeskJet.

I With the possible exception of the DeskJet 500, it should be possible to drive any DeskJet using a suitably well written HP LaserJet driver.

As far as multiple copies of a document is concerned, this is not possible without sending multiple copies of the document (at least for GDOS type drivers which use graphics mode). The printer does not have enough internal memory to hold a copy of a complete page. The DeskJet should simply ignore any request to print multiple copies.

There may be some problems with some drivers for owners of DeskJet 500's as these seem not to always accept some commands when used in a format which is accepted perfectly by other HP devices.

Tony Brown

GST Software Products

ST or Mac

Martin Walsh - STA8

Paul Bates - Forum STA10

M Reed - Forum STA10

Salvatore Marigliano - Fourn STA10

John Malinson - Forum STA10

I I'm a little reluctant to enter a debate on the virtues of individual machines. I can remember such debates going on in the days of the eight bits, and I recognise that magazines devoted to one type of computer do not necessarily reflect objective opinion: the readership will have already spent a substantial sum on their computer, and are unlikely to want to do so again for several years. Nevertheless I will plunge in so that ST owners can be aware of the upgrade alternatives.

I have owned an ST for over four years and the Mac Emulator Spectre GCR for just over a year. I bought the latter as I had been impressed by the Macs I'd used at University and sought compatibility. I have experience of all Macs, bar the Mac II series which are anyway considerably more expensive and

more powerful than the top of the ST range. I am perhaps in a more unbiased position than anyone else who has used both machines extensively.

The ST has been a remarkably good value all round machine. It has allowed many people to experiment in areas previously unavailable and it has fulfilled a useful role for small business and home users for word processing and database functions. For programmers the ST has offered a wonderful variety with all of the traditional languages plus the powerful modern Basics. The music niche has been dominated by the ST as it has the unusual inclusion of MIDI ports as standard.

Entertainment software has boosted sales of low end STs but consoles and the Amiga are gaining an ever growing market share. The ST is less remarkable for performance in individual areas than for its wide range, but seems overpriced now.

The Mac has concentrated on quality of design of both hardware and software. Until recently the price has not seemed competitive with anything else, especially if hardware performance statistics are compared. As anyone who has ever laid hands on a Mac will explain the Mac's power lies not in its hardware, as with most other computers, but in the Operating System and application software which manages to be powerful yet easy to use. Part of the operating system is on ROM and is hard to alter - as in the ST - but a sizable part is on disk and can be readily updated. Unlike Atari, Apple are keen to continue development and support their user base providing them with greatly increased performance for a very modest sum. The Mac System is fast, relatively bug-free, and more powerful and more consistent than TOS, however many performance-enhancing ST utilities are used. For example, here are some of the wonders of the recently replaced Mac System 6:

- * bit-mapped fonts usable in any application for screen or printing.
- * text and graphics can be transferred between applications without file format problems by using the clipboard and the scrapbook.
- * versatile program switching as standard using Multi Finder, memory allowing.
- * ability to drag programs and folders onto the Finder, the Macs desktop: broadly comparable to Neodesk 3, better than it in many ways, worse in a few.
- * a control panel Desk Accessory which provides for plug-in expansion programs to control such things as monitors, mouse, sound options, clocks, virus checkers and whatever else.
- * with Adobe Type Manager 2.0 you are able to use fast outline Postscript fonts for screen display in any application that uses bit-map fonts.

This list is by no means comprehensive, it is just a taste. The new System 7 makes some of the above obsolete as new and better ideas are implemented. System 6 is way ahead of the ST, System 7 is further ahead again. The

main drawback is the need to use a large hard drive and a lot of memory, but once this is available a user has access to more power than any ST System. The TT may come close, but it is overpriced, lacks a software base to take advantage of its features and lacks the consistency of the Mac Operating System. Colour Macs are expensive in comparison, but the LC still is competitive with all STs/TT.

My current system is a 1040-STFM with TOS 1.2, 85MB Hard Drive and external floppy. A reasonably powerful ST set-up but definitely lacking in memory for Mac applications. For anyone considering Spectre, it performs very well and Gadgets provide good support limited by the slowness of transatlantic communication. Compatibility could be little better; virtually anything that runs on a Mac Plus will work, barring most games, music applications and a few disk utilities. It is astonishing that I have a Mac program that will defragment my Spectre partitions yet lack an ST utility capable of doing the same for my Gem Partition! Spectre is fast, only marginally so for general running, but the Hard Drive has to be seen to be believed; it makes my ST access/write times resemble a floppy and outperforms real low-end Macs.

Spectre is not without its drawbacks - my current system is more expensive than the equivalent Mac and lacks good printer control; I'm not sure how to control a Stylewriter and can't access a Mac Postscript laserwriter directly. Upgrade options are limited to 4Mb memory, low for a Mac especially with System 7 (the LC can handle 10MB), no HD floppies and - unusually - no word yet from Gadgets on System 7 compatibility.

Ian Fogg

● Atari may not be wonderful at offering TOS upgrades, but you will find a massive improvement in ST hard disk speeds if you upgrade to TOS 1.4.

I The only comparisons which count are the sales figures and Apple comfortably wins. It has many more customers and those customers spend much more money on business software.

Apple will always be able to undercut Atari on price/performance as long as they sell more computers. With less revenue ST software will always be inferior.

It is possible to substitute a stream of good ideas for money, but sadly Atari are a follower not a leader. That said, there are some good people in Atari, and I hope a Guru makes it up through the ranks... soon.

N P Johnstone
Working Title

I It really is pointless arguing about the relative merits of the Atari ST, the Macintosh and PCs. The simple fact is that the ST is a home computer - it is firmly placed in this league by the marketing and support (or lack of it) from Atari. There simply isn't

enough money sloshing around to make it worthwhile for developers of hardware or software to produce (and support) anything really major for it. That's why there are no SQL databases, no Word Perfect 5.1, no 4GLs and so on. However, this does mean that there is work for enthusiasts to do and enjoy - so let's just get on with it.

Les Kneeling

OOP

Gary V Rawlins - Forum STA8

I suggest that you give Free Software Foundation's C++ compiler a try. I am a little surprised that FSF's C and C++ compilers are not used more than they are. It seems that people are not aware of how good a compiler GNU C is. It is true that there is very little documentation or support from FSF and the compilers can be hard to install. You must have at least 2MB of RAM and a hard-disk to make any use of it. Together with GNU C, excellent ANSI-compatible and VDI/AES libraries are included and also several utilities such as Make. GNU C is an optimizing compiler and it makes fast and compact code. The startup code also supports the ARGV/xArg standard.

Stig Vidar Hovland

- GNU C and C++ are available on ST Club PD disks: LAN.109 to LAN.112

OPUS 2.2

I am now able to access the charting functions within OPUS and look forward to experimenting with it further. I thought that my experiences may be helpful to others trying to use the programme:

ASSIGNER.PRГ

This programme does not recognise all possible variants of the ASSIGN.SYS text file. Indeed, it will not work with an ASSIGN.SYS created by the INSTALL.PRГ that comes with GDOS itself!

The problem seems to be that ASSIGNER.PRГ expects leading zeroes on the lines which head up the screen fonts so that it will give an error message if the lines look like this:

```
1p SCREEN.SYS
....
2p SCREEN.SYS
....
3p SCREEN.SYS
```

but works happily if the lines are rewritten with leading zeroes like this:

```
01p SCREEN.SYS
....
02p SCREEN.SYS
....
03p SCREEN.SYS
```

There is another curiosity, which I have not investigated fully, which is what ASSIGNER.PRГ actually does. I ran one test in

which I had a different set of fonts under each driver line in ASSIGN.SYS and discovered that ASSIGNER.PRГ only looked at the medium resolution, high resolution and printer driver fonts.

As the programme requires the META.SYS driver, does it also need the corresponding Meta fonts? The manual suggests not.

FONTWID.PRГ

GDOS has to be installed to run this and the programme looks in the GDOS folder designated by the ASSIGN.SYS file. The programme looks in the folder for the printer driver and printer fonts but does not seem to refer to the ASSIGN.SYS file to choose which ones to look at.

For OPUS to run and allow access to the charting functions, the ASSIGN.SYS and OPUS.WID files must correspond, which I presume means they must refer to the same set of fonts (I cannot prove this as I cannot make sense of the OPUS.WID file that is created), so that the GDOS folder must only have the printer driver and fonts referred to in your ASSIGN.SYS file before you run FONTWID.PRГ.

But problems don't stop there. FONTWID.PRГ seems to ignore different point sizes of the same font. Again, I cannot make any sense of the individual font files, but no doubt owners of Fontkit could have a look to see if there is a header or some distinguishing mark missing in the different font files.

The files I have been looking at are the basic Atari set:

```
ATSS10LB ATSS12LB ATSS18LB ATSS24LB
ATTP10LB
ATTR10LB ATTR12LB ATTR18LB ATTR24LB
```

Put all these in the GDOS folder and FONTWID.PRГ only "sees" 3 and writes a 3-font OPUS.WID file accordingly! If your ASSIGN.SYS file refers to them all, you cannot access charts within OPUS. As I have a comparatively slow system, based on 2 floppy drives, I have not experimented to find out which point size FONTWID.PRГ prefers.

Huw Williams

SLM804 laser repair

My laser printer recently developed the fault that printouts were faint and with vertical bands of white space. After some scratching of head, I found that the problem was in the drive to the toner hopper.

When the top of the printer is lowered, the two rubber belts are brought into contact with the pulleys on the hopper by two jockey wheels, and it seemed that the belts were insufficiently tensioned by this arrangement to reliably drive the hopper mechanism. Here's how I went about the repair.

Gain access to the printer's interior by pulling off the indicator panel - it's easier to pull one end off at a time *gently* (of course the printer must be turned off, there are dangerous voltages at loose inside!). Then unplug

the panel (the plug and socket are keyed) and remove the two screws. Hinge down the rear panel and pull the cover of the printer off whilst pushing down the two lugs revealed at the rear.

You can check the fault diagnosis by plugging the indicator panel back and trying a trial print - with due regard to the safety advice contained in the previous paragraph. Use a torch to peer at the pulleys on the hopper as you turn the printer on - both should revolve smoothly as the printer runs through its initialization routines, and again throughout the print process. Anything else causes the problem outlined. For those who like to know how things work, the inner pulley drives a spindle through a gear train. This spindle carries vanes and sits at the bottom of the hopper. Toner is fed by the vanes to a magnetised steel roller which in turn is rotated by the outer pulley.

The toner sticks out from this roller in the fashion remembered in schoolboy experiments with iron filings and magnets, and the drum attracts toner from this "brush" by virtue of its electrostatic charge.

There are three ways round the problem. Use the printer's opening mechanism to open it whilst leaving the drum assembly in the lower case and remove the bands (the slightly thicker, larger one goes back on the inner pulleys) and clean them and the pulley surfaces with something like isopropyl alcohol. This worked fine for a short time, but I had to take recourse to answer number 2, which was to remove around half an inch from the bands using a sharp blade and then use superglue to stick the ends (and not the fingers) together to make a smaller band. The best way to cut is on a slant so as to produce a large gluing area. And the final, and probably the best long term solution is to replace the bands with new ones. That is if you can get spare parts.

Derryck Croker

ST Applications

Q When I got my ST there was a magazine (of sorts) bundled with it, along with a "cut out and send away for a free copy of ST World" thingy. Don't you think that if the ST Club were to do a deal with Atari and get them to put a "free" copy of STA with every Family Curriculum Pack, or the option of getting an evaluation copy at a reduced rate, then STA would get a large increase in subscribers?

Colin Campbell

Micro-Mola BBS (Fnet 1010)

- Yes. We've tried...

Q How about doing a survey on all the major hardware suppliers such as Third Coast Technologies, Power, Evesham, Silica, System Solutions, etc? Including opinions from users of their services?

Graham Galbraith (Fnet 1031)

● A good idea, but it is very difficult to be fair in such surveys. On the other hand, we are always happy to publicise unresolved cases of bad service or products and to pass on customers praise of good service.

Wish List

- SR Elston - Forum STA9
- Wayne Jenner - Forum STA9
- Sureth Anath - Forum STA9
- Derryck Croker - Forum STA11
- BL Greengrow - Forum STA11
- Graham Steel - Forum STA11
- Bruce Davies - Forum STA11
- Colin A Kerr - Forum STA11

I I would like to follow up on Bruce Davis' thoughts on a more simplistic approach toward readers.

I am sure there are a lot of young (and old?) folk out there who would respond more to the Forum and show their abilities if they could fully understand more of the articles written by our more knowledgeable contributors.

Some of the technical and advice articles are understandable and excellent. I say some, because, although well meaning, others should be fundamentally more basic to cater for the lesser mortals of the computer world.

Articles of a technical nature would be more enjoyable if the 'because', 'why' and 'wherefores' were included. Less use of acronyms would be a great help. Personally, I feel the use of jargon without explanation, is a form of linguistic ego by groups and professions to baffle the intelligent.

I would not like to see the magazine regress into an ABC for beginners. Perhaps it would be better to have a section for beginners, with a few more of the 'whys' and 'wherefores'?

Jos Milton

I In response to Bruce Davies' letter in the STA11 Forum section, I would like to correct one point. Programmers' Forum is not aimed at the advanced computer buff. The column is for all programmers, beginners and experienced alike. The 'level' of the discussion in the column is largely determined by the nature of the correspondence I get - if most people ask advanced questions, the column naturally has a technical bias. I am very keen to get input from all parts of the programming community - letters from beginners struggling to get off the ground with ST programming are just as welcome as letters from experts. So, beginners should not be shy about writing in with their questions. The more you write, the more coverage of 'beginners' topics you will get. Simple really. If Bruce would care to drop me a line describing some of the things he wants to know about, then perhaps we can give him some help in crossing his 'magic' barrier of understanding!

Jon Ellis

STOS

Q When I run STOS from the hard drive I cannot exit without a re-boot. Typing SYSTEM results in a bus error message and STOS is not exited. Can anyone offer a solution or explanation?

John Megson

Swapped FATS

- Philip Shaw - Forum STA9
- David Silverman - Forum STA11

I This fault can still happen even on disks which have different serial numbers. Atari deny that it can happen, but we have had reports of this problem with Mega ST's and TT's. The only safe thing is to force a re-read of the disk before writing any data back to it.

Technical Information

(GDOS)

- Paul Chamberlain - Forum STA3
- Leslie Dewhurst - Forum STA3
- Iain Laskey - Forum STA6 & 9
- Alan R Cooper - Forum STA10
- Dr DM Weber - Forum STA10
- Marcus Bointon - Forum STA11
- Keith Baines - Forum STA12

I I would like to add my comments to the ST Applications debate concerning the availability of GDOS documentation. Everyday at work I use Compaq PCs and a Postscript printer. I would like to continue to use an Atari computer at home for "serious" type applications, possibly upgrading to a TT. However the lack of GDOS printer drivers for many industry standard printers, or at least the lack of publicity concerning their availability, plus the failure of Atari to provide the information to allow users to write their own drivers, is steadily pushing me in the direction of upgrading to a 386 PC instead.

Appropriate printer drivers are plentiful for PC software. Windows 3.0 may be sluggish but the idea of using the same printer drivers with every application is almost irresistible. Atari must wake up and soon. (FSM GDOS is way overdue - it should have been issued a couple of years ago). Atari cannot survive on goodwill indefinitely. People like Jeremy Hughes are keeping Atari alive for "serious" users (not that I object to games) but where are the Atari-led initiatives for really competing with the PC/DOS/Windows world? What happened to "Power without the price"?

David Gray

● The book 'Programmers' Guide to GEM', recommended by Keith Baines in this topic last month, is currently out of print.

TeX

- David Harvey - Forum STA7
- Ian Abbott - Forum STA10
- Peter Cameron - Forum STA10

I When you run INITEX to create the machine-readable format files, the program stores the amount of free memory found within the format files. This means, if you run INITEX on a 'bare' ST, then attempt to run TeX from a machine with a ramdisk, there will not be enough memory, resulting in the error message:

!NOT ENOUGH MEMORY

If you run INITEX with the ramdisk in place (250K should be enough), subsequent runs of TeX itself will have sufficient memory.

I only discovered this when I changed the size of my ramdisk - I have always used one, so didn't encounter the problem when setting up TeX. So, apologies on my part! I did let ST Applications know, but the cryptic message which finally appeared in FORUM may end up confusing the issue: in fact, TeX needs as much memory to run in as INITEX had available.

To run TeX without a shell, double-click on the TeX program icon, then enter

```
-sa:/tex/texsetup.lpg
```

in the parameter dialog box, followed by OK. After some disk activity, TeX should respond with a '**' prompt. At this point you may either enter the input path/filename, in which case TeX proceeds to read and process the file, or type /relax, after which TeX is in interactive mode. Type /input <filename> to read in a named file, /bye to terminate the TeX session.

David Harvey

TOS 1.6 and 1.4 Bugs

- Peter T Wilson - Forum STA5
- Martin Walsh - Forum STA8
- Andrew Watson - Forum STA12
- Chris Richardson - Forum STA12
- Henry Moring - Forum STA12

I A bug in the desktop 'Show' function that no-one else seems to have mentioned is this. When a file is being displayed, pressing the space-bar advances the display by one page (screen). The left mouse button is also supposed to do this, but it scrolls the display by two more lines (so you miss them).

John Watkins



DESKTOP DISCUSSIONS

Coping with Compression

Part I

It's a sad truth that file compression, the act of taking a piece of data and finding a more efficient way to represent it so that it takes up less space, seems like black magic to many ST owners. And because they don't understand it, many shy away from using compressors altogether. That's a pity because the use of utilities such as Arc, Zoo, and LHarc can bring benefits to a wide range of users.

To try and remove some of the mysticism surrounding compression I'm devoting two whole columns to this topic. This month I'll explain how some of the common compression techniques work. After an interlude next month for the end of year review, I'll return to the theme in the February issue with a comprehensive review of the file compressors available on the ST along with a look at some of their uses.

All the techniques featured in this article use lossless compression - that is, all information compressed can be reconstructed upon decompression. Lossy compression, where some of the data is discarded, achieves staggering compression rates but is little used except for high quality picture files where some loss in clarity is acceptable.

To help you grasp the fundamentals of the compression algorithms that follow, I'll show them in operation on that literary masterpiece of a phrase, 'the cat sat on the mat'. This piece of text is twenty two characters long and requires 176 bits of storage when represented as ASCII.

The simplest compression method is called run-length encoding. This works by replacing sequences of the same character by a single instance of the character together with a count of the number of times it is to be repeated. For example, the ASCII

string AAAABBBAAAA would be encoded as 4A3B4A.

While run-length encoding is very simple and very fast, it needs long sequences of like digits to produce any real savings in space and these are generally only found in picture files. Run-length encoding would not be able to compress our example phrase.

One way to compress our example is to take advantage of the fact that there are only ten characters used in the text. Thus four bits could be used instead of eight to represent each character (i.e. setting 'a' to 0000, 'c' to 0001, 'e' to 0010, and so on) which would immediately cut our storage requirements to 88 bits. This is called fixed length encoding.

We can do even better than that by noticing that certain letters occur with greater frequency than others. In our example there are five occurrences of the blank character and the letter t, three of a, two each of e and h, and one for each of the other characters. We can use this fact to assign the more common characters shorter binary codes than the others. This technique for compression is called variable length encoding and a common way to generate it is Huffman

encoding which creates a binary tree structure like the one shown in figure 1.

This tree is formed by first creating one-node trees for each of the characters to be encoded, with each tree given a weighting corresponding to the frequency with which its character appears in the data. The algorithm then combines the two trees with the lowest weights, repeating this until all trees have been merged into one. The encoding for each character is the path from the root node to it. Characters with a high frequency will have been merged into the encoding tree late and so will have a shorter path to the root and thus a shorter code.

Huffman encoding achieves a high level of compression (our example string would be represented using just 68 bits) but has a considerable extra overhead in run time compared to run-length or fixed length encoding for the compression process. However, the complementary decompression process is fast.

Good as Huffman encoding is, its big problem is that the encoding tree has to be included in the compressed file for the data to be uncompressed again. A variation called Dynamic Huffman en-

coding removes this problem although it is quite a bit more complex to implement.

The most popular compression technique is the Lempel-Ziv-Welch algorithm. The principle behind LZW is that by expanding the character set, commonly occurring strings can be represented using just one character. LZW works by setting up a large string table with the first 256 elements set corresponding to the ASCII characters. Starting with a null string, the data to be compressed is then read in, one character at a time, and appended to the string. If the new string is already in the table the next character is read in. Once the string does not match anything in the table it is added to the table and the last character retained to start the next input string. This continues until the data has been completely read in. The string table is then complete and can be used to encode the data.

The really clever part of LZW concerns how the strings are stored in the string table. Each new string is actually an old string plus one new character. Hence instead of having to store the entire string for each entry, the string is represented as the other string's code plus the new character. For example suppose that the character 257 represented the string 'sag', the input string also contained 'sag' and the next character was 'e'. In this case the next unallocated element in the table would be set to contain the value 257+(e).

This method of storing means that the symbol table can be reconstructed from scratch during decompression and so does not need to be stored in the compressed file. Unfortunately LZW is slower than Huffman for compression because when a new string is read in the entire initialised part of the code array must be checked to see if the string is already present.

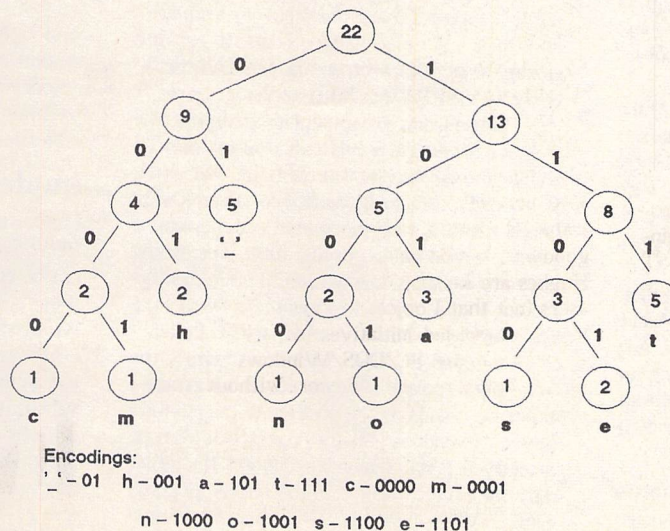


Figure 1

William Hern

Programmers' Forum

On this month's menu in ST Applications' regular programming column, a feast for lovers of low-level programming: hacking up the mouse handler.

Rodent replacements

This month's column is devoted to just one issue raised by one letter. This concentration may seem extravagant, but Paul Simpson of Loughborough has come up with a fascinating question:

I own a graphics tablet which I would like to use at times in place of the mouse. Can you explain how I could patch into GEM so that the mouse pointer is controlled by my own routine, i.e. an RS232-based tablet handler? I intend to write a desk accessory to switch between the mouse and the tablet.

For those who have not come across graphics tablets, they look rather like an A4 drawing board with a plain plastic surface. Attached to the tablet is a pointing device: often a stylus or a puck (mouse-like object with no roller ball). The tablet senses the position of the pointing device, and reports the position through a serial interface. Often the pointing device has one or more buttons to serve as selection indicators.

The answer to the question is 'yes', but the topic is rather involved. The solution requires a detailed discussion of the interrupt structure of both the BIOS and VDI. Most of the hard work will have to be done by assembler routines, although the controlling desk accessory can be in C.

The overriding difficulty of this problem is to find a way to hack into the mouse handling code cleanly, without making any assumptions about TOS versions or using undocumented variables or ROM routines. Analysing the problem, there are two major components to be written:

1) Code to take over the role of the VDI mouse routine, taking the mouse position from our code, not from the keyboard processor (the difficult bit).

2) An RS232 handler to take in packets of information from the tablet and to turn them into pointer co-ordinates and button states (the easy bit). We do not have details of the output from the tablet, so an exact listing cannot be presented. However, we can come up with a model routine which could be tweaked as required.

Theoretical background

The VDI does have a vector into which one can hook to alter the mouse movement. This is done using the little-known `vex_motv()` function (go on, look it up). A routine hooked into this vector is called with suggested mouse x and y co-ordinates in d0 and d1. The routine is allowed to modify these numbers before passing them on to the VDI routine which updates internal GEM variables and draws the mouse. Some mouse accelerator programs use this vector to perform their functions. In this case, we will totally ignore the input co-ordinates, and pick up co-ordinates from a private storage area. This area will be fed asynchronously by the RS232 packet handler.

This solution is incomplete though - the `vex_motv` routine is only called when the VDI thinks the mouse has moved, i.e. when the keyboard tells it so. If we simply had an RS232 handler and a `vex_motv` routine, the mouse pointer would indeed position itself according to the tablet data, but we would have to waggle the mouse around to get the VDI to take notice of the new data provided by the tablet.

We need the RS232 routine to cause the `vex_motv` routine to be called when the tablet reports a change in the position of the pointing device. It cannot call the `vex_motv` routine directly as it is in the wrong context: the tablet data may have arrived in the middle of some crucial VDI operation. We must find some way of making the VDI call the `vex_motv` routine when it wants to.

One way of doing this is to splice into the XBIOS system for handling the intelligent keyboard chip. This is the piece of hardware that actually supports the mouse. The 6301 IKBD processor communicates with the 68000 via an internal serial interface, the 6850 ACIA. Information is passed in the form of 'packets': blocks of three or more bytes, each containing a header byte that specifies what the rest of the packet means. There are different packets for mouse movement, key presses, joystick movement and so forth.

When a byte is received from the 6301 by the keyboard ACIA, an MFP interrupt is generated. The interrupt handler collects together the bytes that make up the packet, decides what type of packet it is and calls an appropriate packet handling routine. Fortunately for us, the list of packet handlers is accessible in a legal fashion, using the XBIOS call `Kbdvbase` (XBIOS function 34). This returns a pointer to a table of routine addresses, thus:

dc.l	<code>midi_vec</code>	Midi packet handler
dc.l	<code>kbd_err</code>	Keyboard ACIA error handler
dc.l	<code>midi_err</code>	MIDI ACIA errorhandler
dc.l	<code>status_vec</code>	Keyboard status packet handler
dc.l	<code>mouse_vec</code>	Mouse packet handler
dc.l	<code>clock_vec</code>	Clock packet handler
dc.l	<code>joystick_vec</code>	Joystick packet handler
dc.l	<code>midisys</code>	Low level MIDI interrupt handler
dc.l	<code>kbdsys</code>	Low level IKBD handler.

Now, the routines addressed by these vectors are called in a BIOS interrupt context, so providing that we make sure all the registers are preserved, there should be no problem in using them from the RS232 interrupt handler. If the RS232 handler sets up the mouse position in a private area, accessible to our `vex_motv` handler, and then feeds a fake 6301 mouse packet to the system `mouse_vec` routine, the VDI will be tricked into thinking the mouse has been moved, and will do its own processing, including the call to our `vex_motv` routine *in the right context!*

As an extra bonus, if we actually divert the `mouse_vec` pointer to address our routine, we can simply ignore all real mouse packets, while still feeding our own fake ones to the system routine. This will have the effect of rendering the mouse dead, and so prevent its packets interfering with those caused by tablet activity.

Implementation

I haven't got a graphics tablet (or indeed, even the room to put one next to my ST), so I have not been able to actually write the accessory that Paul described. What I have done though is to write a RS232 handler which parses packets from a hypothetical tablet. This is presented in Listing 4, of which more later. As a substitute for RS232 mouse control, I have written a small timer-driven routine which provides mouse movement information. This routine is included with the code in Listings 1 and 2. This means everyone can play with the code, not just those with graphics tablets.

Listings 1 and 2 contain source for a desk

accessory which allows a timer-driven interrupt to control the mouse for periods of 20s. During this time, the pointer is bounced around the screen, beginning where the user left it. When the time is up, mouse control is returned to the normal routines, and the VDI picks the mouse up from where the bouncing code left it. Note that while the pointer is bouncing, it will cause menus to drop down and menu options to be highlighted exactly as if you were moving the mouse yourself. An ideal toy for when writer's block stops your word processing!

To produce this incredibly useful accessory, type in Listings 1 and 2 and link with the accessory startup code and the GEM library. The listings were written for Lattice C v5, but should be readily adaptable for other compilers, as long as you check the conventions for calling assembly language functions from C. For Lattice C v5 users, an appropriate linker control file is given in Listing 3.

Listing 1:

The desk accessory shell

There is nothing special about most of the C code. The main entry point simply calls an initialisation function and then falls into an endless loop, waiting for the user to wake the program up by selecting the entry on the desk menu. The initialisation function does all the usual GEM start-up stuff, arranges for the resource data to be fixed up (resource file embedded for compactness), makes sure the new mouse driver is turned off, and installs two VDI vector handlers and the mouse_vec handler (in supervisor mode).

Do not confuse the vex_motv call, which is vital to the operation of the whole program, with the vex_timv call which is simply a convenient source of a timer interrupt to drive the test code. I could have used a VBI routine or borrowed a MFP timer, but this would have required more code. The vex_timv call should be deleted when the RS232 handler is installed.

When the user activates the desk accessory, a dialogue box is displayed (Figure 1). This allows the user to select the source for mouse movement. Selecting 'Mouse' allows normal operation, 'Autopilot' activates the test code to bounce the mouse around. Any change to the mouse movement takes place when the dialogue box is exited.

Listing 2 :

The vector handlers

Listing 2 contains the routines at the heart of the program: the vex_motv handler and the mouse_vec handler; along with installation code, test code and resource data. For those of you not familiar with Lattice C v5, the compiler requires that all assembly language symbols that are to be visible to C code must be prefixed with an underscore. Also, all C symbols appear to assembly language routines already prefixed with a leading underscore. Hence the profusion of underscores.

Taking the routines in order of appearance, rsc_init fixes up the embedded resource data using the normal AES function rsrc_obfix. The install_hooks function

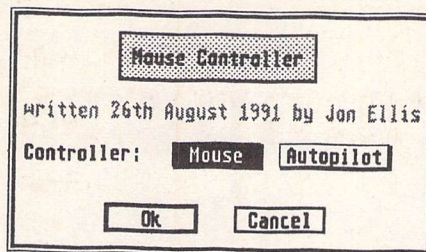


Figure 1

The dialogue box displayed by the desk accessory. Select 'Autopilot' and then 'OK' to set the mouse pointer bouncing!

actually splices the mouse_vec handler in, saving the old handler's address. After last month's homily on the subject of XBRA, full XBRA headers are included for all vectors that have been redirected.

The new mouse code has been written such that it only operates when a flag, 'active_flag' is set TRUE. When 'active_flag' is FALSE, all routines pass on calls to the old system routines, thereby restoring normal operation. The green_light function ensures that the test routine's countdown timer is set up, then allows it to run by setting 'active_flag'.

The first of the new handlers, move_mouse, is very simple. When active, it reads the mouse position from the internal variables and passes it to the VDI. The reading is done in one instruction to prevent possible interrupt problems. When inactive, the routine just keeps a record of the normal movement of the mouse so that the pointer starts moving from the right place.

The next routine is the replacement for the mouse_vec handler. When it is active, all packets are thrown away by returning to the caller without doing anything. These packets will all be genuine IKBD-generated packets. When inactive, the routine jumps on to the system handler.

The last routine is the timer interrupt handler which is driven by the VDI 50Hz interrupt. The salient features are a decrementing counter which is used to switch the system off when it reaches 0; simple code to bounce the pointer around; and the call to the old mouse_vec handler to tickle the VDI into life. The code should handle any screen size, as the dimensions are filled in from the open workstation call.

The contents of the fake packet passed to the system are largely irrelevant. However, the first byte does encode the button status: if you change the \$F8 to \$FA, then the mouse will travel with the left button down. If you want to change the button status, it must be done here by altering the packet header. By the time control reaches the vex_motv handler, the VDI has already processed the buttons.

It might be suggested that we have no need of the vex_motv routine; we could simply pass a packet with real usable mouse movement data. However, in order to do this, we would need to know the details of how the mouse movement is scaled to the screen. It seems cleaner to manipulate the real co-

ordinates that application programs know about.

In order to convert the accessory to the tablet handler, simply remove the timer code and drop in an appropriately modified RS232 handler.

The RS232 handler

As an example of the sort of code that is required, Listing 4 is a handler for a hypothetical graphics tablet which has a resolution of 5000 units in each dimension. This tablet sends only two sorts of packet: a pointer position packet, and a button event packet. Their make-up are given in Listing 4. The code has not been tested, but it looks like a good starting point. The routine is designed to be installed into the MFP RS232 character received interrupt. See the Programmers' Forum from STA6 for an example of MFP interrupt programming.

Final note

Throughout, it has been assumed that the program containing these routines is a desk accessory, and therefore never terminates. This is only true if the user does not change the screen resolution. If you think that the screen resolution might be changed: read last month's Programmers' Forum for a discussion of this thorny issue! If you want to use any of this code in an application, then you must ensure that all vectors are correctly replaced before the application terminates. This applies to both normal termination and error conditions. If the clean up is not done properly, the system will die horribly in a cloud of processor exceptions. You have been warned!

Next month

There were more goodies in Paul's letter, so they will be appearing on and off over the next few columns. Those of you not particularly interested in low-level topics should find next month a little more balanced, I hope.

Keep the letters coming in: 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. E-mail addresses are useful too.

Please send a disk 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.

Finally, as this is the last ST Applications of 1991, I wish you all a happy and peaceful Christmas. Programmers' Forum will be back as usual next month, starting its second year!

Jon Ellis
 Programmers' Forum
 29 Ashridge Drive
 Bricket Wood
 St Albans
 Hertfordshire
 AL2 3SR

Listing 1

```

/*****
**
**          Automatic mouse
**          =====
** (C) Jon Ellis, 1991 All commercial rights reserved
**
** Accessory illustrating how to usurp control of the mouse
** pointer without using any illegal locations or ROM
** routines. This could be modified to take input from the
** RS232 port, but in this case a timer-powered daemon
** supplies the information stream.
**-----
** Filename: AUTOMOUS.C      Version: 1.00 Date: 26/08/91
** Compiler: Lattice C v5.06 Options: -cafku
*****/

#include <aes.h>
#include <osbind.h>
#include <portab.h>
#include <vdi.h>

/*
** Resource object symbols...
*/

#define MOUSE      4
#define AUTO       5
#define OK         6
#define CANCEL    7

/*
** Global variables...
*/

short ap id;          /* AES application ID */
short menu id;       /* Our menu entry ID */
short handle;        /* The VDI handle */
OBJECT *box;         /* Pointer to dialogue box tree */
short sx, sy, sw, sh; /* Position and size of box */
short active flag;   /* Semaphore for timer daemon */
short max x pixel;   /* Size of the screen */
short max y pixel;
int (* old mover)(); /* Old mouse movement vector */
int (* old timer)(); /* Old VDI timer vector */
short work out[57];  /* Arrays for v opnvwk */
short work in[11] = {1,1,1,1,1,1,1,1,1,2};

/*
** Symbols to be collected from the assembly
** language module...
*/

extern int move mouse();
extern int test mouse();
extern long install hooks(void);
extern void green light(void);
extern OBJECT *rsc init(void);

/*
** Internal function prototypes...
*/

int main(void);
void do dialogue(void);
void initialise(void);

/*
** Begin here with normal desk accessory
** initialisation and installation.
*/

int main(void)
{
    short pipe[8], dummy;

    initialise();
    while(TRUE)
    {
        evtnt mesag(pipe);
        if (pipe[0] == AC_OPEN && pipe[4] == menu id)
        {
            handle = graf handle(&dummy, &dummy, &dummy, &dummy);
            v opnvwk(work in, &handle, work out);
            do dialogue();
            v clsvwk(handle);
        }
    }
    return(0);
}

/*
** Function to initialise the parts of the
** program concerned with the GEM interface,
** and also to oversee the splicing in of the
** system hooks.
**
** Usage: void initialise(void);

```

```

*/
void initialise(void)
{
    short dummy;

    ap id = appl init();
    menu id = menu register(ap id, " Automatic Mouse");
    box = rsc init();
    form center(box, &sx, &sy, &sw, &sh);

    active flag = FALSE;
    handle = graf handle(&dummy, &dummy, &dummy, &dummy);
    v opnvwk(work in, &handle, work out);
    max x pixel = work out[0];
    max y pixel = work out[1];
    vex motv(handle, move mouse, &old mover);

    /*
    ** This simply inserts a test routine to show off the
    ** mouse movement routine. In the case of a graphics
    ** tablet, one would install an RS232 handler instead.
    */
    vex timv(handle, test mouse, &old timer, &dummy);

    v clsvwk(handle);
    Supexec(install hooks);
}

/*
** Function to handle the display of the program's
** dialogue box. The data for the resource file is
** in the assembler module, and it should be fixed
** up before use. There are no arguments and no
** returns.
**
** Usage: void do dialogue(void);
*/

void do dialogue(void)
{
    int exit obj;

    (box+MOUSE)->ob state &= ~SELECTED;
    (box+AUTO)->ob state &= ~SELECTED;
    (box+(active flag == FALSE ? MOUSE : AUTO))->ob state |= SELECTED;
    form dial(FMD_START, 0, 0, 0, 0, sx, sy, sw, sh);
    objc draw(box, ROOT, MAX_DEPTH, sx, sy, sw, sh);
    exit obj = form do(box, 0) & 0x7FFF;
    (box+exit obj)->ob state &= ~SELECTED;
    form dial(FMD_FINISH, 0, 0, 0, 0, sx, sy, sw, sh);
    if (exit obj == OK && ((box+AUTO)->ob state & SELECTED))
        green light();
}

```

Listing 2

```

*****
**
**          Automatic mouse
**          =====
** (C) Jon Ellis, 1991 All commercial rights reserved
**
** Program to illustrate how to usurp control of the mouse
** pointer without using any illegal locations or ROM
** routines. This module contains the real guts of the
** program and also the resource data, produced by
** John Eason's RSCTOASM program.
**-----
** Filename: NEWMOUSE.ASM      Version: 1.00 Date: 26/08/91
** Assembler: asm v5.06      Options:
*****/

CSECT TEXT,0

**
** Exported symbols...
**
XDEF rsc init, install hooks
XDEF move mouse, test mouse
XDEF green light

**
** Imported symbols...
**
XREF rsrc obfex
XREF old mover, old timer, active flag
XREF max x pixel, max y pixel

**
** Internal symbols...
**
XBIO equ 14
Kbdvbase equ 34

```



```

**
** Function to initialise the resource tree for
** use. The code is modified from the example
** contained within J K Eason's RSCTOASM package.
** The function returns a pointer to the first tree.
**
** Usage:  tree1 = rsc init();
**
**         OBJECT *tree1, *rsc init(void);
**
rsc init movem.l  d2/a2,-(sp)      Save these as we will need them.
        lea      tree,a2          Address the start of the objects.
        clr.l   d2                Ensure junk removed.
        move.w  rsc obs,d2        Fetch the number of objects-1.
1$      move.l  d2,-(sp)          Object index.
        move.l  a2,-(sp)          Tree address.
        jsr    rsrc obfix        Fix up the object.
        addq.l  #8,sp
        dbra   d2,1$            Repeat for all objects.
        move.l  a2,d0            Return the tree address.
        movem.l (sp)+,d2/a2      Recover the registers.
        rts                    Return: no result.

```

```

**
** Function to install the low level routines. This
** MUST be called in supervisor mode. There are
** no arguments, and the function returns 0L.
**
** Usage:  result = install hooks();
**
**         long result, install hooks(void);
**
install hooks:

```

```

        move.w  #Kbdvbase,-(sp)   Get the vector block.
        trap   #XBIOS
        addq.l  #2,sp
        move.l  d0,a0
        move.l  16(a0),tickle     Save the old handler address.
        move.l  #deadzone,16(a0) Write in our routine's address.
        move.l  old mover,d0      Make proper XBRA prefixes.
        move.l  d0, move mouse-4
        move.l  old timer,d0
        move.l  d0, test mouse-4
        move.w  max x pixel,max x Adjust for screen dimensions.
        move.w  max y pixel,max y
        clr.l  d0
        rts

```

=====

```

** Function to start up the test routine for
** the new mouse handler. This is done simply
** by restoring the countdown variable and
** releasing the semaphore. No arguments or
** return values.

```

```

** Usage:  void green light(void);
**

```

```

green light:
        move.w  #1000,ticker      This is 20s @ 50Hz
        st     active flag       Release the test routine.
        rts

```

```

**
** Function to move the mouse pointer according to the
** information placed into the local variables mx and
** my. This could be fed in by an interrupt handler,
** perhaps receiving data from the RS232 port. The routine
** receives a proposed x and y position in d0.w and d1.w
** but simply overwrites these with our own x and y before
** handing off to the system handler.

```

```

        dc.l   'XBRA'
        dc.l   'AMOU'
        dc.l   0

```

```

move mouse:
        tst.w  active flag       Are we active ?
        beq.s  track            No, just track AES mouse movement.
        move.l  mx,d0            Fetch the x and y in one go.
        move.w  d0,d1            Transfer the y value.
        swap   d0                Put the x value in the right place.
old move rts                    Jump on to existing handler.
track   move.w  d0,mx            Keep track of mouse position.
        move.w  d1,my
        bra.s  old move         Hand off.

```

```

**
** Function to prevent real mouse movements from
** disturbing those generated by the external source.

```

```

** As written, the routine simply throws away the
** packets. However, the button states could be
** extracted and used if required.
**

```

```

        dc.l   'XBRA'
        dc.l   'AMOU'
tickle dc.l   0

```

```

deadzone tst.w  active flag       Is our external source active ?
        bne.s  go end           Yes, throw away packet by returning.
        move.l  tickle,-(sp)     No, do a jump to the system handler.
go end   rts

```

```

** Variables for the core routines.
**

```

```

mx      dc.w   0                Current mouse position.
my      dc.w   0

```

```

;
; Fake mouse packet. The first byte is a header
; byte of $F8 ORed with the button status, bit 0
; is right button, bit 1 is left. The bits are set
; if the button is down. The second two bytes are
; the incremental movement in the x and y directions;
; values are irrelevant now as we overwrite them later.
;

```

```

fake    dc.b   $F8,1,1

```

=====

```

**
** Simple test routine to show how an interrupt handler
** can cause the mouse to be moved. This would be replaced
** by a RS232 handler if a graphics tablet were to serve as
** the mouse replacement. In this case we are using a timer
** interrupt, the VDI user timer (50Hz), to generate mouse
** movement data. To provide something interesting to look at,
** the routine bounces the mouse pointer around the screen.

```

```

        dc.l   'XBRA'
        dc.l   'AMOU'
        dc.l   0

```

test mouse:

```

        tst.w  active flag       Is the test routine active ?
        beq.s  old test        No, just jump to old handler.
        sub.w  #1,ticker        Decrease the countdown by one.
        bpl.s  do work          Do the work now if all OK.
        clr.w  active flag      Timed out, turn off routine.
do work movem.l  d0-d7/a0-a6,-(sp) Make sure everything is preserved.
1$      move.w  mx(pc),d0        Fetch the X-coordinate,
        add.w  xinc(pc),d0      add the increment.
        bmi.s  2$              Bounce if off the left edge.
        cmp.w  max x(pc),d0     Off right edge of screen ?
        ble.s  3$              No, value is OK.
2$      neg.w  xinc             Invert X direction.
        bra.s  1$
3$      move.w  my(pc),d1        Fetch the Y-coordinate,
        add.w  yinc(pc),d1      and bump it.
        bmi.s  4$              Off the edge on the screen.
        cmp.w  max y(pc),d1     Still within the other edge ?
        ble.s  5$              Yes, all OK.
4$      neg.w  yinc             Invert the Y-vector.
        bra.s  3$              Have another go.
5$      move.w  d0,mx           Save current position.
        move.w  d1,my

```

```

; This is the key to the routine, the faking of
; a mouse packet arriving from the IKBD. If you want
; to include mouse button data, it must be done
; now, by modifying the IKBD packet header.
;

```

```

        lea   fake,a0           Address our fake IKBD packet.
        move.l tickle,a1        Give the packet to the system
        jsr   (a1)              routine to process.
        movem.l (sp)+,d0-d7/a0-a6 Restore everything.
old test move.l  old timer,-(sp) Finish by jumping to old
        rts                    timer address.

```

```

**
** Variables for the test code.
**

```

```

xinc    dc.w   1                Movement vectors for bouncing
yinc    dc.w   1                pointer test code.

max x   dc.w   639              Dimensions of screen.
max y   dc.w   399

ticker  dc.w   1000             Countdown timer for test code.

```

=====

```

** The resource data section.
**

```

```

XDEF      tree
rsc obs   dc.w      7          Eight objects in RSC
; Object list
tree      dc.w      -1,1,7
          dc.w      20,0,16
          dc.l      $21100
          dc.w      10,1,39,11
          dc.w      2,-1,-1
          dc.w      22,0,0
          dc.l      ted1
          dc.w      10,1,18,2
          dc.w      3,-1,-1
          dc.w      28,0,8
          dc.l      text1
          dc.w      1,4,37,1
          dc.w      4,-1,-1
          dc.w      28,0,0
          dc.l      text2
          dc.w      1,6,11,1
          dc.w      5,-1,-1
          dc.w      26,17
          dc.b      0
          dc.b      0
          dc.l      text3
          dc.w      15,6,8,1
          dc.w      6,-1,-1
          dc.w      26,17
          dc.b      0
          dc.b      0
          dc.l      text4
          dc.w      25,6,10,1
          dc.w      7,-1,-1
          dc.w      26,7
          dc.b      0
          dc.b      0
          dc.l      text5
          dc.w      9,9,8,1
          dc.w      0,-1,-1
          dc.w      26,37
          dc.b      0
          dc.b      0
          dc.l      text6
          dc.w      21,9,8,1

; Tedinfo blocks
null      dc.b      0,0
ted1      dc.l      text7,null,null
          dc.w      3,6,2,$1111
          dc.w      0,65534,19,1

; Text data
text1     dc.b      'written 26th August 1991 by Jon Ellis',0
text2     dc.b      'Controller:',0
text3     dc.b      'Mouse',0
text4     dc.b      'Autopilot',0
text5     dc.b      'Ok',0
text6     dc.b      'Cancel',0
text7     dc.b      ' Mouse Controller ',0

rsrc end dc.l      0          Align properly, and mark end.

      END

```

Listing 3.
Programmers' Forum, December 1991

Lattice C v5 linker control file for
the mouse controlling accessory.

```

from
C:\SYSTEM\CACC.O
E:\AUTOMOUS.O
E:\NEWMOUSE.O

```

```

library
E:\LC.LIB
E:\LCG.LIB

to
C:\AUTOMOUS.ACC

```

** Listing 4.
** Programmers' Forum, December 1991

```

**
** Skeleton code of a possible RS232 packet handler for a hypothetical
** graphics tablet. The code is designed for use with the mouse moving
** routines. Pixel values for the screen are assumed to lie in the range
** 0-max sx/0-max sy, those for the tablet in the range 0-max tx/0-max ty.
** These variables should have been set up before the handler is installed.
** This has not been tested, let alone optimised: for ideas only !
**
** The model tablet only sends two types of packet: pointer position and
** button event. These packets are as follows:
**
** Position: $F0,<x pos high>,<x pos low>,<y pos high>,<y pos low>
** Button:   $F1,<button map>
**

```

```

** where the buttons attached to bits 0 and 1 are used to simulate the mouse
** buttons. Bits in the button map are set when buttons are depressed.
**
**
** Assembler system: MCC ASSEM v12
** Written on 26th August 1991
**

```

```

POS      equ      $F0
BUTTON   equ      $F1

RS232int movem.l   d0-d7/a0-a6,-(sp)  Stack everything.
          lea      mfp par port,a6    Address the MFP register area.
          move.b   46(a2),d0         Fetch the newly arrived character.
          tst.w    packet             In the middle of a packet ?
          bne.s    accum             Yes, add it to what we've got.
          cmp.b    #POS,d0           Start of position packet ?
          beq.s    start pos         Yes, process it.
          cmp.b    #BUTTON,d0        Start of button packet ?
          bne.s    end int           No, ignore character now.
          move.w   d0,packet         This is a button packet.
          move.w   #1,length         Expect 1 more character.
end int   bclr.b   #4,14(a2)        Clear IIS bit and return.
          movem.l  (sp)+,d0-d7/a0-a6
          rte

start pos move.w   d0,packet         Start of a position packet.
          move.w   #4,length         Expect 4 more bytes.
          bra.s    end int           Quit now.

;
; Handle an ongoing packet.
;
accum     move.l   bufptr,a4         Get address of buffer position.
          move.b   d0,(a4)+         Save character.
          move.l   a4,bufptr        Update pointer.
          sub.w    #1,length        Decrement expectation counter.
          bne.s    end int         Leave now if we need more.

;
; The packet is finished - process it.
;
          cmp.w    #POS,packet      What sort of packet ?
          beq.s    write pos        Do mouse position packet.
          move.b   buffer,d0        Must be a button. Fetch data byte.
          and.w    #3,d0            Mask off unused bits.
          or.w     #$F8,d0          Convert to IKBD mouse buttons.
          cmp.b    fake,d0         Any difference from before ?
          beq.s    cleanup         No, we can ignore this.
          move.b   d0,fake         Write into fake IKBD packet.
          bra.s    do VDI          Jump to use the buttons..
write pos move.w   buffer,d0        Mouse position: fetch x coord.
          mulu    max sx,d0        Convert to screen coordinates.
          divu    max tx,d0
          move.w   buffer+2,d1      Repeat for y coordinate.
          mulu    max sy,d1
          divu    max ty,d1
          moveq    #1,d2            Set identity marker.
          cmp.w    mx,d0            x coordinate changed ?
          beq.s    1$              No, skip on.
          clr.w    d2              The mouse has moved.
          move.w   d0,mx            Write in new position.
          cmp.w    my,d1            y coordinate changed ?
          beq.s    2$              No, skip on.
          clr.w    d2              The mouse has moved.
          move.w   d1,my
          tst.w    d2              Did the mouse move ?
          beq.s    cleanup         No, don't bother tickling VDI.

;
; Make the VDI take notice of our data. Depending on how
; the timings work out, you may need to clear the interrupt
; in service bit before calling the mouse vec handler and make
; this code partially reentrant.
;
do VDI   lea      fake,a0           Point to the fake IKBD packet.
          move.l  tickle,a1        Give the IKBD packet to the
          jsr     (a1)             mouse vec system handler.

;
; Tidy up now ready for new packet.
;
cleanup  move.l   #buffer,bufptr   Restore buffer pointer.
          clr.w   packet           No longer processing packet.
          bra.s  end int           Exit now, all done.

**
** Data area.
**
packet  dc.w      0                Packet type, or 0 for none.
length  dc.w      0                Number of bytes left in packet.
buffer  dc.w      8                More than enough buffer space.
bufptr  dc.l      buffer          Pointer to current buffer position.
max sx  dc.w      639             Screen dimensions
max sy  dc.w      399
max tx  dc.w      4999            Tablet dimensions
max ty  dc.w      4999

;
; These are the same variables as in the core code.
;
mx       dc.w      0                Current mouse position.
my       dc.w      0
fake     dc.b      $F8,0,0        IKBD handler.
tickle   dc.l      0              Pointer to system mouse vec code.

      END

```

Traps for the Wary

Part Four:

Cuckoo in the Nest

by John Durst

Last time we looked at how you can waylay a Trap instruction and modify the way it is executed. This is fine for the occasions when you are dealing with an Output routine, where you want to change one or other of the parameters being fed to the ROM.

But suppose you want to do something about Input? Suppose you want to be able to monitor a keystroke? It is no use looking at the parameters passed by the Trap, because the key hasn't been struck yet. What you want is some way of intercepting the routine AFTER the keystroke and before the rest of the program takes charge. You want to look at the result of the ROM input routine immediately it is finished.

It's not all that difficult; it involves planting yet another address on the Stack, which displaces the normal one. A kind of Cuckoo in the nest, in fact.

A Trap Call, as we've seen, is like a subroutine. It has a return address planted on the Stack, to which it will jump when the Trap routine has finished. So, if we save this address and put the address of our routine in its place, it will make a Return to OUR routine, instead. Then we can mess about and send the result back to the original address, when we have finished.

The Demo shown in this, the last of these four articles, is a complete program, which makes use of this idea. It's quite useful, in that it allows you to access all the characters in the Atari font by way of an ALT/X, or ALT/Z activating key. It's a Resident program and will work with First Word and other word processing programs.

The Listing is given below. For good measure I have included a CHK Call as well: here's how it all works.

There are three main Calls in the initialization section. The first prints up a Title line on screen. This isn't a bad idea in a Resident program. If the program is in the AUTO directory, it is displayed while booting is in progress and reminds you that it will be in place. Next, there are two Calls to SETEXC, one to install our Trap routine at the BIOS Trap vector - and also save the original BIOS routine address - and the other to install the new CHK routine.

The new BIOS Trap routine looks for "bconin" Calls, that is calls waiting for a keystroke. When it finds one, it stores the original return address (found at SP+2) and substitutes the address of our monitoring program, so that when the keystroke has been accepted, it comes back to our "Cuckoo in the Nest".

This last program is slightly more complicated than the simple cases we have dealt with so far. It has to check:

(1) was the keystroke "ALT/X", or "ALT/Z"? - if so it sets appropriate flag Bits;

(2) if it was neither of these, was one of the flags set anyhow? - in which case the value of the keystroke has to be modified.

When the program checks the flags, in case (2), it also clears each in turn, so that the flag can only operate for the keystroke immediately following "ALT/X", or "ALT/Z".

The program uses the block of keys, from \$30 = zero to \$7F =

the Delta "", most of which are readily accessible from the keyboard. "ALT/X" adds \$50 to the keycode, which produces characters from \$80 to \$CF. "ALT/Z" adds \$A0 to the original keycode; this gives characters \$D0 to \$FF for the first \$30 keycodes. Beyond that, the added values produce numbers

greater than can be fitted into one Byte, but very conveniently they work MOD 256, starting at 0 again and so give a way of accessing the first \$20 characters in the Atari table.

The "CHK" routine checks and discards keystrokes which lie outside the values \$30 - \$7F.

-- THE LISTING --

* USE "ALTERNATE/X - Z" TO ACCESS EXTENDED CHARACTERS

opt a+,d+ Options for DevPac Assembler

* Initialisation

* first find our own size for a later Ptermres() Call

move.l 4(sp),a0 base page address

move.l #\$100,d6 base page length

add.l \$c(a0),d6 + code length

add.l \$14(a0),d6 + data length

add.l \$1c(a0),d6 + bss length

* print title message

move.l #title,-(sp)

move.w #9,-(sp) C_CONWS

trap #1

addq.l #6,sp

* put new routine address in place of normal Trap 13 vector

move.l #trap13,-(sp) new trap routine

move.w #45,-(sp) BIOS trap vector number

move.w #5,-(sp) SETEXC

trap #13

addq.l #8,sp

move.l d0,savetrap save old vector

* put new address in CHK exception vector

move.l #chk_trap,-(sp) new trap routine

move.w #6,-(sp) CHK exception vector number

move.w #5,-(sp) SETEXC

trap #13

addq.l #8,sp

* get out of here

clr.w -(sp) return code

move.l d6,-(sp) amount to keep

move.w #\$31,-(sp) P_TERMRES

trap #1

* NEW BIOS TRAP ROUTINE

* this tests for a "BCONIN" (keystroke) Call & checks it

Programming

* We shall be in SUPER mode, with S_STACK as follows:

* (0) W. STATUS REG; (2) I. RETURN ADDRESS;

* (6) W. CALL No., followed by parameters

trap13:

```

cmpi.w #2,6(sp)      BCONIN Call?
bne    no_con        no

```

* substitute our routine return address for original program's

```

lea    2(sp),a0      return address from trap

```

```

move.l (a0),retstor  store it

```

```

move.l #ex_trap,(a0) substitute as trap return

```

no_con move.l savetrap,a0 get original trap routine addr.

```

jmp    (a0)          go to it

```

* when the keystroke has been processed,

* it comes back here instead of going direct to display

* our "cuckoo-in-the-nest" routine enters with d0.l=keycode

* so we can see if the key interests us

ex_trap move.l d1,-(sp) save register

```

cmpi.l #002D0000,d0 is it ALT/X character?

```

```

bne    try_H         no...

```

```

bset.b #0,ctrl_char yes, so flag ALT/X

```

```

bra    normal

```

try_H cmpi.l #002C0000,d0 is it ALT/Z character?

```

bne    other_k       no...

```

```

bset.b #1,ctrl_char yes, so flag ALT/Z

```

```

bra    normal

```

* if it was NOT ALT/X or ALT_Z, we must check to see if the flag

* has already been set by the previous keystroke

* If it is SET then we shift the keycode up appropriately

* the flag is ALWAYS cleared: it only operates for ONE keystroke

*

* first, try the Low shift flag

other_k move.b #00,d1 constant for Low shift(=\$30+\$50)

```

bclr.b #0,ctrl_char  check & clear
bne    mark_it        the ALT/X flag was set...

```

* try the High shift flag

```

move.b #00,d1        constant for High shift(=$30+$A0)

```

```

bclr.b #1,ctrl_char  check & clear

```

```

beq    normal         no ALT/

```

mark_it

* first check the bounds

```

sub.b  #00,d0        not below numerals

```

```

chk   #04F,d0       not extended (=$30+$4F)

```

```

add.b  d1,d0        if OK, shift keycode appropriately

```

* in the High mode the new code for keys \$60-\$7F

* are greater than \$FF: since a single Byte works MOD(256)

* these values access the codes for \$00-\$1F

```

normal move.l (sp)+,d1  restore register

```

```

move.l retstor,a0    get original trap routine address

```

```

jmp    (a0)          get on with it

```

* NEW CHK EXCEPTION ROUTINE

* the program only comes here if the keycode

* is out of bounds; so we just restore the keycode

* & go straight to the normal routine

```

chk_trap add.b #00,d0  restore the keycode

```

```

lea    normal(pc),a0 change return address

```

```

move.l a0,2(sp)

```

```

rte                                "rte", as we are an exception

```

SECTION DATA

```

title  dc.b 'ALT/X/Z for Extended Characters',00,0A,0

```

SECTION BSS

```

savetrap ds.l 1

```

```

ctrl_char ds.w 1

```

```

retstor ds.l 1

```

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CAD Column

Joe Connor draws up a list of indispensable software and hardware add-ons for the festive season.

Software

CodeKeys V1.3, £29.95, by Codehead Software/System Solutions, reviewed in issue 10. CodeKeys is a flexible macro handler. Key sets can be saved for each application. Needs separate .KEY file for each resolution. CADja includes a .KEY set for CADja running on an SM124/5.

Keys!, £9.95, by Tailored Software/Atari Workshop, reviewed in issue 5. Another powerful macro handler. Keys! macros are resolution independent, ideal if you run a program in more than one resolution.

UIS III, £19.95, by A & D Software/ST Club, reviewed in issue 1. UIS is a replacement file selector providing a range of file utilities all accessible without leaving your application, a real life saver.

Harlekin II, £59.95, by the Mermaid group/HiSoft, reviewed in issue 11. A collection of excellent utilities available from within a single accessory slot. Very effective with CAD software, refer to the CAD Column in issue 11.

XBoot, £29.95, by Tassilo Nitz/System Solutions, reviewed in issue 9. XBoot is a Boot manager. Applications can be configured to your exact needs. Auto programs, accessory programs, .INF and .SYS files can all be controlled. I use XBoot to execute different batch files controlling the resolution modes of my MGE/Eizo A3 screen.

Neodesk 3, £29.95, by Gribnif Software/GST, reviewed in issue 1. An alternative desktop for the ST. Supports all resolutions. CADja includes a Neodesk .NIC file of icons for all CADja file extensions.

Monulator, £19.95, by Moriarty Software, brief review in issue 11 CAD Column. Enables high resolution only CAD software to run on a TV or colour monitor. (Draft Plus runs in medium resolution anyway.)

Turbo ST, £34.95, by SofTrek/HiSoft. **Quick ST** by Branch Always Software (UK distributor: The ST Club, see p. 58). **NVDI** by Bela Computer/System Solutions. These are all software accelerators which replace parts of TOS with faster machine code routines. Every CAD enthusiast can make use of extra speed. They nearly all work perfectly with CAD software in high resolution but nearly all have minor problems with CAD software on A3 screens! If you would like to know which accelerator is best suited to your needs, write to me including full details of your hardware/software, AUTO programs and any accessories you use at:

65 Mill Road, Colchester, Essex, CO4 5LJ.

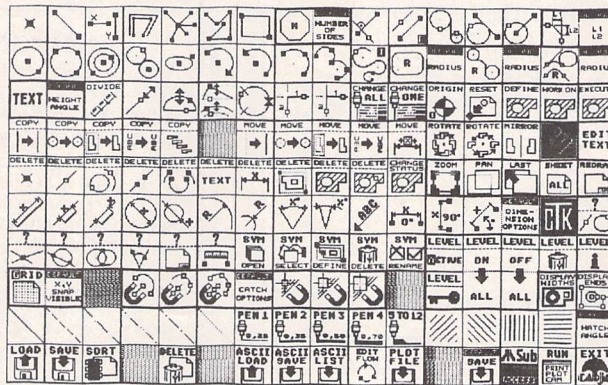
Hardware Add-ons

AdSpeed, £189.95, by ICD/Silica systems, reviewed in issue 5. **Turbo 16 V2** by MARKO CDE/Atari workshop. These 16MHz replacement 68000 CPU processors offer around 40% speed improvement in most applications. Both are very software compatible but neither works with the MGE graphic card.

Reflex Graphic System, from £249 + VAT, by TITAN Designs, reviewed in issue 4. This graphic board plugs into the expansion port on the Mega ST or (using a fitting kit) into the STE. Resolutions up to 1024 x 1024 can be displayed on an A3 monitor. A SM124/5 can display an interlaced display of 1024 x 960. Plugging in an optional 40MHz dot clock provides a non-interlaced resolution of 800 x 400 or (with virtual scrolling) 800 x 1024.

Tracker ball, around £30, by Alpha Data/various suppliers. Features a really useful third button activated by the palm of the hand, generating the often needed click and hold action.

Clash of the Icons

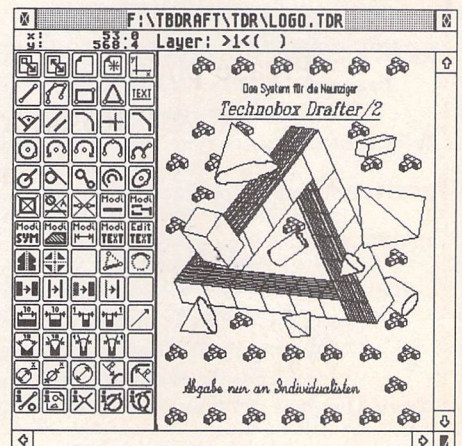


CADja V1.4 is available now for £ 219.95 inc. VAT. The package includes an A5 250-page ring-bound manual and slip case, dongle and 2 disks. A bureau service for .DXF import/export and plotter output is available. Contact Expressworks Ltd. on 0252 726255. Interactive demo versions are available from both Expressworks Ltd. and the ST Club.

Technobox Drafter 2 is also available now for £269.99 inc VAT. The slick packaging includes a wide A5 470-page cloth-bound manual and 3 disks. Contact Silica Systems Ltd. on 081 309 1111 for more details.

Right : Technobox Drafter 2, the successor to Campus CAD, includes some powerful enhancements. Large screen monochrome and colour (>=640 x 400) support, associative dimensioning and autosave.

More next month.



For Sale

1040 STFM £200: SM124 Monitor £50.00: SF314 1M DS Floppy £50.00: Power Drive Slimline 110 Meg Hard Drive £350: Daatascan Professional £50.00: Timeworks £25: Fontkit Plus 3 £10: Harlekin £10: Neodesk 3 £25: That's Write 1.51 £35: Plus many Business Programs. Doug Hamilton 0494 715754. (14).

Software with original packaging. Signum 2 Document Processor £40. That's Write £25. Postage at cost. Edgar Howard. Tel: (Worcester) 0905 830597. (13).

MEGA 2, with AT Speed, Over-scan, TOS 1.4, plus co-processor: £400; Megafile 30 HD £250; SC1224 Colour Monitor £150; SM124 Mono Monitor £60; 3.5" (with Blitz) and 5.25" external drives: £40 each; Gravis Mousestick £35. Also selling many productivity and quality entertainment software titles. All VGC. Chesham 0494-774147. (13).

Personal Finance Manager Plus - £20. Hard Drive Turbo Kit - £10, both unopened and shrink wrapped. Phone Adam on (0895) 445796. Evenings only. (13).

520 STFM, 1 Meg Drive, with 1 Meg Upgrade plus 1 Meg external disk drive and some software for sale, £250 or near offer: call Ian on 081-947-7911 between 6pm and 8pm. (14).

Share Master £40.00, Verminator £8, STOS Games Creator £8, F.O.F.T. £8, Shanghai £5, Galdregon's Domain £8, Football Manager + Exp Hit £8, PC.Ditto £20, Epson RX80 Printer with NLQ card + 64K buffer £80.00 + p + p. All software £1 p+p. If interested contact: John on 0708-630127. (13).

65MB upgraded SM204 for sale,

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£275.00 ono. Phone Steve on 0923 265539. (13).

Prospero C. Boxed £40. ono. Tel: 0695 622491. (14).

Atari STE Upgraded to 1 Meg, Phillips CM8833 Monitor, External Drive, Citizen Swift 24-Pin Printer, Forget-me-clock cartridge. Large quantity of serious and games software; PD Disks, Magazines. May split. £650. Ilkley (0943) 608706. (14).

Eluira, Megatraveller, Curse of the Azure Bonds £12 each, Feudal Lords, Leisure Suit 3 £10 each, Dungeon Master, Chaos Strike Back, Ultima 3, Hillsfar £8 each, Star Command, The President is Missing, Teenage Queen, £5 each, Fontpac Plus £3. All Inc Postage. Paul (0332) 41630. (14).

Reflex Graphics Card for sale. £200. Nearly new. Neodesk 3, Atari Archive £15 each, UIS 3, DC Utils £10

each, Fontkit+3 £12. Multiface £10, Hyperpaint, Hyperdraw £8 each. Paul (0332) 41630 After 6. All include postage. (14).

C-Lab Notator V.3. Perfect condition - used a few times only!! Bargain £340. Contact Chris. Tel: 0926 511085. (15).

Citizen Swift 24-Pin Printer for sale, includes cable, spare ribbons and a disk full of ST printer drivers - £170.00 including P&P. Also playback STFM Stereo Sound Cartridge £15. Phone 0909 771707. (15).

Vortex 40MB Hard Disk, immaculate £250. Lattice C V5 £60, Prospero Pascal £45, Multidesk, Turbo ST £12 each, Hisoft Basic £15, ZZ Soft M/Code £10, Tempus 2 £15, Master Cad £7.50, K-Roget £10, F-19 Stealth Fighter £11, Few adventures, Abacus Books, Ring for details. Halifax 350642, Eves

only. (13).

Aladin Macintosh Emulator (Version 3) including Mac Roms. £95 ono. Tel (0269) 845826. Ask for Nial. (14).

Mega ST (Upgraded to 2.5 Meg) with TOS 1.4, Vortex HD+40 Meg Hard Disk, SM125 Monitor, Lattice C Version 5, That's Write, Neodesk 2, STAC, STOS + Compiler, Degas Elite, VIP Professional, CRL Virus Killer, Games, PD, Magazines £650. Tel Richard (0742) 759763 (13).

Atari 520 STFM, 1MB Ram, 1 MB drive and mouse £150. Original Write-On £25. 081-699-3672. (14).

Atari 30MB Megafile, Boxed, as new £280. Vortex AT Once PC/AT Emulator £80, Lattice C V.5, boxed as new £70, Superbase Personal, boxed as new £20, Learning C on the ST (Wiker) £8. ST World, ST User, ST Format magazines - any offers? Telephone D. Pickford 061 338 5797 (Manchester area). (14).

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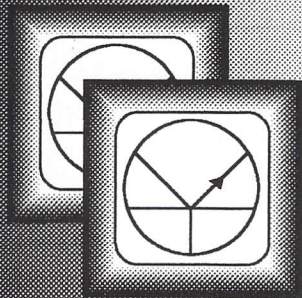
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