

ST APPLICATIONS

Price: £1.50

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

Issue No. 14 February 1992

THIS MONTH

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- ❖ Score Perfect
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- ❖ M.ROS Utilities

ARTICLES

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- ❖ ST Internals
- ❖ Going on Line
- ❖ Rainbow TOS

REGULARS

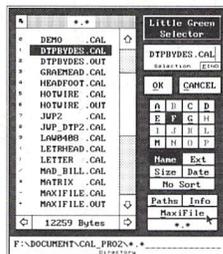
- ❖ News
- ❖ Jeremiah's Journal
- ❖ CAD Column
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- ❖ Desktop Discussions
- ❖ Forum
- ❖ A-Z of the ST

CAD SUPER TEST

Joe Connor puts five CAD packages to the test, using twelve points of reference for the comparison. The price range is very wide - but does the range in performance reflect this? Draw your own conclusions...

MAXIFILE III

Following on from last month's review of "the ultimate ST shell", Hotwire III, Michael Baxter looks at its other half Maxifile III, "the File Management SuperTool", and compares the combination of these two with NeoDesk.



	TOTAL	ENTERED	ENTERED	ENTERED
A	357,376	317,449	39,936	88 12
B	0	0	0	0 0
C	5,639,160	4,699,136	940,024	83 17
D	7,728,120	5,534,728	2,193,392	71 29
E	7,728,120	4,271,184	3,457,936	55 45
F	7,259,872	5,183,416	2,156,456	69 31
G	4,164,680	2,869,584	1,295,096	49 51
H	0	0	0	0 0
I	0	0	0	0 0
J	0	0	0	0 0
K	0	0	0	0 0
L	0	0	0	0 0
M	580,736	285,696	215,040	57 43
N	0	0	0	0 0
O	0	0	0	0 0
P	0	0	0	0 0
GRAND TOTAL:	33,417,216	22,281,216	11,136,000	66 34

Britt Johnstone puts Score Perfect to the test to see if it lives up to its name. It is a musical recording and notation programme that has

SCORE

an unusual profile. How well does it compare with the more famous notation packages.

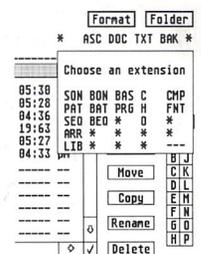
PERFECT

A preview of Redacteur3

the English version of the powerful French word processor is given on page 7

UIS III v3.3

The Universal Item Selector has recently undergone a few changes and is now available in its version 3.3 guise. Kevin Busby outlines the new features (including a pop-up menu with 24 extra file extensions), lists its impressive keyboard shortcuts, and looks at the alternatives.



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

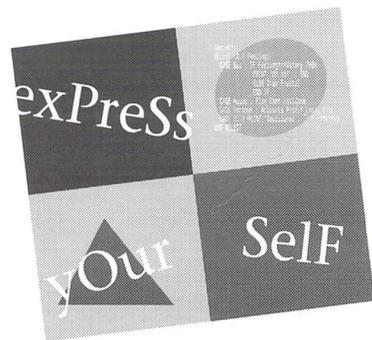
We are pleased to announce the release of version 1.2 of ProFlight, our immensely popular Tornado flight simulator, loved by reviewers and users alike.

This new version of simulator includes improved graphics, the ability to save your cockpit set-up, a pause key, the view angle and 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 well received by reviewers

So take C and language talking



ready widely used been well by its users and alike.

the hassle out of learn the everybody's about.

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

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:

- Extremely fast backup of any number of drive partitions and directory paths
- Easy-to-use GEM interface with online help
- Incremental backups by date/time or using the archive bit (TOS 1.4 upwards)
- Lots of information and features - disk statistics, disk usage estimation, backup to different floppy types or to other partitions, automatic drive switching, flexible full or partial restoration
- Incredibly fast data compression algorithm
- File encryption included
- Even backup Spectre partitions

Priority Order Form

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- HiSoft C Interpreter @ £59.95
- 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
- Diamond Back @ £39.95

Name:

Address:

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- Visa/TrustCard etc.

Card No:

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 STA14, 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.

The March issue of ST Applications goes to print on Friday 31st January.

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.

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.

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.

Expansion At All Formats

Those *All Formats* people have been busy throughout 1991 and you can rest assured that this year will be no different. More regional venues are to be added this year with several fairs being held at each venue. For advance tickets and stall bookings contact John & Christian Riding on (0225) 868100.

The 1992 Computer Show Line Up:

11th January:- All Formats Fair, The National Motorcycle Museum, Birmingham

12th January:- All Formats Fair, The University Sports Centre, Leeds

8th January:- All Formats Fair,

The Royal Horticultural Halls, London

19th January:- All Formats Fair, The Brunel Centre, Templemeads, Bristol

26th January:- All Formats Fair, The City Hall, Candleriggs, Glasgow

14th - 16th February:- The 5th International 16-Bit Computer Show, Wembley Exhibition Halls, London. Contact Westminster Exhibitions on (081) 5493444.

28th - 31st May:- The Spring Computer Shopper Show, Olympia, London. Contact Blenheim PEL on (081) 8684466.

Calamus Support From Kuma

Kuma have recently released 'A Practical Guide to Calamus Desktop Publishing on the Atari ST'. It is written by Terry Freedman (who regularly writes for ST Format and Educational Computing & Technology) and claims that you can be printing your first page within 20 minutes of opening the software package. It begins by explaining what Desktop Publishing is and then gives a brief overview of Calamus and how to get

started with it. It proceeds through the stages of producing different types of documents, introducing new concepts only as they are needed. Educationalists will be glad to know that this book covers all the skills needed to pass the CIT and RSA CLAIT examinations. A Practical Guide to Calamus Desktop Publishing on the Atari ST is available now from your local bookshop, ISBN 07457 01590.

Upgrades

Multidesk

Codehead Software have just released *MultiDesk Deluxe*. It is a major upgrade of their accessory loader program MultiDesk. This version allows you load and unload accessories from within a program. In addition you can have non-resident accessories (using the extension MDX) which unload as soon as you exit them, thus freeing memory back to the system. Even accessories which need to reserve memory for their own workspace can be loaded from within programs that try to grab all available memory. Upgrades are available to current owners of MultiDesk. UK availability has not yet been announced. Contact System Solutions, Windsor Business Centre, Vansittart Estate, Windsor, Berks, SL4 1SE; Tel:(0753) 832212; Fax:(0753) 830344.

Timeworks Publisher 2

The long awaited upgrade to *Timeworks DTP* has finally arrived. The

new release is fully compatible with v1.12. It claims to feature the same ease of use as the original but with many added features. It allows import of more graphic types (TIFF, IFF, PCX and EPS) and can import text in more formats (Protext, Le Rédacteur, ST Word and Word Perfect 5). More printers are supported including the Canon BubbleJet and HP DeskJet. Five new typefaces have been added as well as a completely new manual. The new features include frame grouping, text wraparound, text autoflow, faster printing, better page management, new text styles, autosave and the ability to save your preferred set up as default. The program continues to run on a 512K machine but needs a double-sided drive.

Timeworks Publisher 2 costs £110 or £44.57 as an upgrade from v1.12 (£32.82 to Softline members).

Exciting News For Graphic Artists

SKWare One have just announced v2.2 of *SEURAT*, an advanced art program. An early version of this program appeared on a START disk some years ago. Since then it has advanced into one of the most fully featured art packages available.

It is the first package known to support colour IMG files. These have existed on other machines for some years but the ST has been limited to black and white only. *SEURAT* can load and save Degas (compressed and uncompressed), Tiny, NEO, IFF, IMG (colour or mono), MacPaint and .MAC formats. A picture can easily be loaded in one format and saved in another. All ST models are supported and this includes the 4096 colour palette of the STE, Mega STE and TT. Up to eight screens are available (subject to memory) and this even applies when using IMG files.

You can print out any screen from within *SEURAT* using the built-in HP DeskJet/LaserJet and Epson 9-pin printer drivers. Differing resolutions of between 75dpi and 300dpi are possible on the HP printers. The package includes an im-

proved GDOS printing program and the choice of landscape or portrait printout on the HP printers.

SEURAT features over 350 commands including a number of innovative firsts. The product is under continued development and low cost upgrades are available to registered users. *SEURAT* comes on two double sided disks and needs at least 1 Megabyte of RAM. Also included is a 36,000-word disk-based manual.

Another new product from SKWare One is *Colourscan*. It is a software package for use with any 32 greyscale scanner. *Colourscan* takes the monochrome IMG file produced by the scanner and converts it into a 16 colour picture which can be saved in any of the popular graphic formats supported by *SEURAT*.

SEURAT costs \$39.95 and *Colourscan* is \$49.95, but you can purchase both products together for \$79.95. There is a shipping charge to the UK but I have no figures for this. Payment can be accepted by credit card. Contact SKWare One, PO Box 277, Bunker Hill, Illinois 62014, USA.

Fontkit Plus 3.41

Fontkit Plus has recently been upgraded to version 3.41. This can now generate Protext-style width tables that can be incorporated directly into Protext printer drivers. It also includes an updated version of Fontprint (1.6), which should work on TT computers, and which can also print justified proportional text on 9-pin printers (as well as 24-pin printers) if your wordprocessor is capable of justifying proportional text.

Protext drivers are provided for two of the downloadable fonts supplied with *Fontkit Plus* and *Fontswitch*, and these can be modified to work with other fonts. Existing *Fontkit Plus 3.4* users can upgrade for £1.25 by returning disk 1 of their set of master disks. *Fontswitch 3.2* users can receive *Fontprint 1.6* for £1.25 by returning their original master disk.

Genealogy Programs Updated

The genealogy program, "*It's All Relative*", has been upgraded to v1.06. The new release has the ability to combine multiple databases, prints out massive charts, accesses maps from throughout the world from the main program, uses auto caps for names and places, has an improved family group sheet, can merge and link two family lines at their intersection and checks for missing information. The companion program *BookMaker* has also been updated

and includes a title page template as well as the ability to have multiple families in the same book, all with different ID numbers. The author also offers various low cost products designed to complement the above. *It's All Relative* costs \$25.00 and *BookMaker* costs \$10.00. Prices include postage worldwide. For details of these and other products available, contact Randall Kopchak, 2233 Keeven Lane, Florissant, MO 63031, USA.

Atari News

The release of the *ST Book* is imminent on both sides of the Atlantic. Both it and the *STylus* have already passed the stringent FCC tests. The *ST Book* is a true portable machine with up to 10 hours of battery life. The operating system is TOS v2.05 and it runs in mono using a built in LCD display. You can have either 1 or 4 Megabytes of memory and a 40MB hard drive is built in as standard. No details of price are yet available but expect it to be around £1500. The *ST Book* should be in the shops shortly after the New Year.

The *STylus* (previously known as the *ST Pad*) should start shipping in The States about now but will take a little longer to reach the UK market. It has no keyboard but comes with a special stylus attached and has built in handwriting recognition software. The *STylus* comes with various memory configurations of up to 4 Megabytes but has no hard drive. Instead it has plug in cards which store data in a similar manner to floppy disks. Once again, no price is available but expect it to be around £1000.

The *CDAR-505*, Atari's CD ROM add on for the *ST*, is said to be ready for release in The States 'soon'. I've heard that before, so don't hold your breath! It will require a special adaptor and work has already started on the first titles for it. Expect to see it in the UK some time in the second half of this year.

The *Mega STE* should finally be available in the UK as you read this. It features a dual speed of 16Mhz and 8Mhz, the latter being retained for compatibility with existing software. Like its big brother the *TT*, it has a built in Apple Talk LAN interface (so that you can connect to networked systems) and industry standard VME and ACSI ports in addition to all usual ports found on a standard *STE*. A 68881 co-processor can be fitted if required. The *Mega STE* comes with 1, 2 or 4 Megabytes of memory, a built in TV modulator and a 48MB built-in hard drive (an optional extra on the 1 Meg model).

As reported in issue 9 of *ST Applications*, the new-style *Lynx* is now on

sale. There are a total of 41 titles currently available from Atari and all are compatible with the new model. Ten titles are under development by third party developers, some of which will be available as you read this. A number of others are pencilled in for release early this year.

Atari UK have already booked extensive stand space at next month's 16-Bit Computer Show at the Wembley Exhibition Centre. The entire Atari range will be on show and new products are likely to be announced. The event runs from 14th to 16th February.

Sales of the *ST* and the *Lynx* are expected to have topped 700,000 units and 200,000 units respectively in the UK alone from launch to the end of 1991. The Portfolio is thought to have sold over 300,000 units worldwide. The big surprise is that high street chain Index reported that the *VCS 2600* games console was one of their best sellers in the run up to Christmas and Atari expect to have sold close on 200,000 units in 1991! Finally, Atari UK have confirmed the price of the new *SC1435* (see *ST Applications* issue 13) at £259.99.

TOS 2.06 Available For All STs

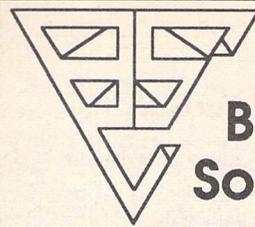
Despite my comments in *ST Applications* issue 12 that *TOS v2* may not be made available for pre-*STE* machines, it is already available for all *ST* models in Germany. Atari Germany have chosen not to distribute the upgrade and have instead made it available through Artifex. They are advertising it in *ST Computer* magazine and claim it is the official upgrade comprising of a *TOS* extension card and original *TOS 2.06* ROMs. Although the ROMs are German and of no use in the UK, this shows that such an upgrade is possible. Many thanks to Herbert M Sauro for providing this information.

For further details contact Artifex Computer GmbH, Holbeinstraße 60, D-6000 Frankfurt/Main 70, Germany, Tel:(069) 6312456.

Insolvent Signa Deceased?

The 'out of order' message that greets anyone phoning Signa Publishing Systems Ltd. would seem to substantiate rumours that Signa are on the verge of going out of business. Reportedly, Mike Dale left Signa some time ago to take up other employment and it seems that the company has been more or less insolvent for some time.

We have been assured that many Signa products, in particular Calamus and Calamus SL, will be taken up by a new publisher. In the meantime Signa dealers Atari Business Centre in Nottingham (0602-810009) are offering a help-line service for users of most Signa products. Linotron printing services for Calamus users are available from CY Services (0602-605377) and Sumner Type (071-703-4189).



Cambridge
Business
Software

ATARI ST SOFTWARE

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Small Business Accounts Cash	£69.95
Small Business Accounts Extra	£99.00
Cashbook Controller	£39.95
Final Accounts	£24.95
Cashbook Combo Pack	£59.95
System 3 (Inv/Stock)	£39.95
Home Accounts 2	PHONE
Sage Cash Trader	£79.95
Wages ST	£89.00
Personal Accounts Plus	£26.90
Personal Finance Manager Plus	£34.95

DATABASES

Adimens Plus	£99.00
Data Manager Professional	£29.95
Superbase Personal 2 (v3.02)	£69.95
Super Base Professional (v3.02)	£175.00
Digit DGBase	£79.95
Prodata	£59.95

DESKTOP PUBLISHING

Timeworks DTP	£69.95
Calligrapher Junior	£69.00
Pagestream v2	PHONE
Fleet Street Publisher v3	£159.00
Calamus	£250.00
O-Line Art	£159.95

COMPUTER AIDED DESIGN

PC Board Designer	£135.00
BeckerCAD	£99.00
Megapaint II	£79.95
Megapaint II Professional	£199.00
GFA Draft Plus v3.13	£79.95
CAD 3D v1.0	£18.95
CAD 3D v2 (Cyber Studio)	£39.95
Cyber Control	£32.95
Cyber Paint V2	£39.95
Cyber Sculpt	£59.95
Cyber Texture	£39.95
Architectural Design Disc	£17.00
Easy Draw 2	£39.95
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MUSIC

NEW C-LAB Creator v3.1	£269.00
NEW C-LAB Notator v3.1	£429.00
Creator/Notator Upgrade	£239.00
C-LAB Notator Alpha	£179.95
C-LAB Aura	£89.00
C-LAB Midia	£59.95
C-LAB v.3 upgrade	£37.95
Cubeat	£239.00
Cubase	£459.00
Sequencer 1	£79.95

LANGUAGES & COMPILERS

Mark Williams C v3	£89.00
Mark Williams C Source Debug	£42.00
Prospero C	£75.00
Prospero Fortran	£75.00
Prospero Pascal	£75.00
Prospero Toolkit	£55.95
Hisoft Lattice C v5	£115.00
Hisoft High Speed Pascal	£89.95
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Hisoft Devpac v2.22	£45.00
Hisoft Devpac TT	£119.00
Hisoft Power Basic	£39.95
Hisoft Basic	£59.95
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FTL Toolkit	£49.95
GFA Basic Interpreter v3.6	£45.00
GFA Basic Compiler v3.6	£24.95
Nevada Cobol (with C/PM)	£42.00
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K-Spread 4	£89.00
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Logitex v1.2	£79.95
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LDW Power Spreadsheet	£99.00
Digicalc	£29.95

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Protect v4.2	£69.95
Wordperfect v4.1	£179.95
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Wordfair	£65.00

MISCELLANEOUS

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PC Speed	£99.00
SLM 804 Replacement Drum	£169.95
SLM 804 Toner Cartridge	£39.95
SLM 804 Epson Emulator	£24.90
Neodesk v3 (UK)	£29.95
Deluxe Paint	£59.95
Hyperpaint v2	£29.95
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Progate 440Mb	£1589.00
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News In Brief

TV Modulators Still Available

It is still possible to obtain a TV modulator for use with STs lacking a built in one. They are available at a cost of £67 from WTS Electronics Ltd, Studio Master House, Chaul End Lane, Luton, Beds, LU4 8EZ; Tel:(0582) 491949.

The Great Cover Up!

Jenart Design, manufacturers of dust covers for numerous makes of computers, electronic keyboards, organs, amplifiers etc; are now supporting the Atari ST range of computers. All their dust covers are manufactured in grey nylon as opposed to PVC, are sewn throughout and tailored to fit each system. They come with a two year no quibble guarantee and

prices start from £6.74. They are willing to design a dust cover for any item not listed in their brochure at no extra charge. Contact Jenart Design 'The Great Cover Up', Pathfields Industrial Estate, South Molton, Devon, EX36 3LH, Tel:(0769) 574127; Fax(0769) 574487.

PageAssistant

New from Spar Systems is *PageAssistant*. It provides on line help and tutorials for PageStream v2.1. It uses a step by step approach to teach you how to get the best from PageStream and each topic includes a reference to the appropriate pages in the manual which detail the feature. *PageAssistant* is menu based and runs from within PageStream. It comes with a 52 page manual and costs \$49.95. For more details contact Spar Systems, 381 Autumn Avenue, Brooklyn, New York 11208, USA, Tel:(718) 235 3169.

New Amiga Pushes Up ST Sales!

The recently launched Amiga A500 Plus is causing major head-

aches which are well known to ST users! It is incompatible with a multitude of software packages which will run on the old A500. The A500 Plus boasts 1 Megabyte of memory and the new ECS (Enhanced Chip Set). It is seen as a major improvement over the older machines in much the same way as the STE was over the STFM. However, Commodore failed to learn from Atari's mistake and released the machine early to help meet expected Christmas demand. This, combined with improved dealer support from Atari, resulted in the Amiga being rejected by many dealers who preferred to stock the now reliable STE in its place. As a result of this, the ST is expected to have had one of its best Christmases to date.

New Printers

Citizen are to release a 24-pin printer at £269 (ex VAT) which will have a colour option available at an extra £38. The *Citizen 224* has three built-in letter quality fonts, a draft font and a host of features. It is an entry level machine and no release date was

available when we went to press.

Star Micronics have cut prices on two printers and released a competitor to Canon's Bubblejet. The LC24-10 comes down to £249 and the Laser 4 takes a staggering drop to £999. The new addition to the 'family' is the SJ-48. It appears to be modelled on the ever popular Canon BJ-10e with a number of improvements. It can emulate the Epson LQ, IBM Proprinter and NEC Pinwriter and has a 28k buffer built in as standard. This is sufficient to hold around 9 or 10 pages of text, thus freeing your computer to do other tasks while the printer continues churning out the pages. As with the Citizen 224, no release date was available.

More New Hard Drives

Hunter Business Systems have recently launched a range of low cost hard drives for the Atari ST. They use ICD's software, host adaptor and clock and feature a through port for daisy chaining. Prices range from £399 for the 70 Mb model to £849 for the 210 Mb drive. For further details 'phone (0382) 581035.

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 *Rédacteur 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 *Redacter 3*. An evaluation disk containing a demo version of *Redacter 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)

Save £30.00

Redacteur 3

for just £89
(RRP £119)

If you place your order before 31/1/92
ST Club, 2 Broadway, Nottingham,
NG1 1PS Tel: 0602-410241

Redacteur 3

English version 3.15

Preview by David Smith

The French word processor Le Redacteur3 is now available in an English version (v3.15) from the ST Club. Fully featured, powerful and very fast, it works on a modular basis and requires at least 1MB of RAM. The modules may be run independently from the desktop or called from within Redacteur3 (no accent from now on!) using the in-built toggler. If RAM capacity permits, they may be configured to be memory-resident alongside the word processor.

Redacteur3 uses monospaced screen fonts (up to nineteen of them) for purposes of speed, but supports the use of proportional GEM fonts in its graphic mode printout. Multiple rulers may be defined: line length, justification, character size, leading, inter-para spacing, tabs, fonts, text styles. Headers and footers are defined in the Chapter Heading paragraph style. There is a text analysis option, which also works for *blocks* of text. The programme is fully configurable - just about every

working preference may be defined as the default for when Redacteur3 is run. There are two print modes: printer mode, which uses your printer's inbuilt fonts, and graphic mode which uses installed GEM fonts (without the need to install GDOS) and which also prints out images embedded in the text - see Graph Print section.

The Search & Replace function is extremely powerful and flexible, allowing for a search not only of simple text strings but also of fonts, text styles and layout codes such as carriage returns. The macro facility, too, is flexible: it inserts pre-defined text strings into the text and also allows proper 'action macros' to be set up, recording key sequences used for moving around the text, deletion, insertion, block operations, etc. There is a French and English dictionary, a 'conjugate verb' feature, and a module for creating mathematical formulae (see below). There is also a Mail Merge feature using the AZthèque database (see right).

Sigma

Sigma is an extremely powerful editor/creator of mathematical formulae, worthy of an independent existence in a stand-alone package. It may be accessed from within Redacteur3 using the programme toggler, or, if memory permits, it may be configured to run as a co-resident application.

There are sets of fonts and symbols available either from pop-up menus or from alternative keyboard strokes using Shift, Alt, Control or combinations thereof. Once the formulae have been defined, they may be saved to disk either as IMF or IMG files for inclusion in a Redacteur3 document, or as IMG/Degas files for use in a DTP package. Anyone who regularly needs such formulae in his/her work would find this module an absolute god-send.

$$\frac{1}{\theta} \int_{-\infty}^{\infty} |x_k(t, \theta)|^2 dt = \int_{-\infty}^{\infty} S_{\text{index}}(v, \theta) dv$$

$$S_{\text{index}}(v, \theta) = \frac{|X_k(v, \theta)|^2}{\theta}$$

$$\int_1^2 2x^2 dx = [4x^3]_1^2 = 28$$

$$ax^2 + bx + c = 0 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$X_k(v, \theta)$ has a Fourier transform $X_k(v, \theta)$

$$X_k(v, \theta) = \int_{-\infty}^{\infty} x_k(t, \theta) e^{-2\pi jvt} dt = \int_{k\theta}^{(k+1)\theta} x(t) e^{-2\pi jvt} dt$$

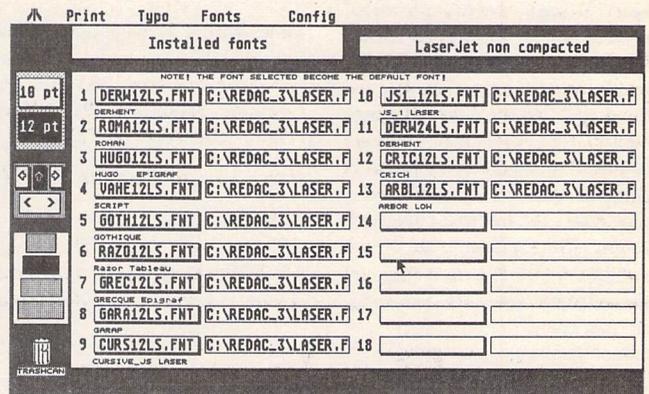
Graph Print

The ordinary printer mode is adequate for using the printer's proportional fonts in left justified text, but in order to get a true *full* justification, with proper alignment of tabs, etc., the graphic printout module "Graph Print" is used.

This module uses GEM fonts: either 10-point (with 20-point equivalents) or 12-point (with 24-point equivalents). A selection of fonts is provided with the package, but users may install any GEM font they wish. Pictures imported into the original Redacteur3 file are printed. Though the speed of printout is somewhat slower than when

using inbuilt printer fonts, the flexibility is far greater. Text attributes such as thickness of bold, angle of *slant*, and depth of underline, are all configurable. The spacing of words and characters may be altered to suit the kind of font you are using. Up to eighteen fonts may be installed, and these and the monospaced screen fonts can be made to 'match'.

Although it may seem limiting only to be able to use either 10pt or 12pt fonts, a little cheating can overcome this: a 14pt font could be installed, for example, so long as it is given a different name and ID from any other, and so long as it has enough negative line offset to make it theoretically a 12pt font... The whole of the 650-page manual was printed out using Graph Print.



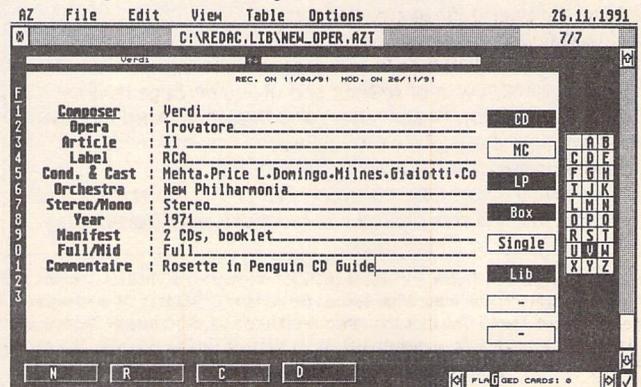
AZthèque

AZthèque is a database programme designed for address lists, but configurable to cope with any kind of data. Each record has fourteen fields: one 'Button' field (for titles, etc.) and thirteen text/number/date fields of 520 characters. Each of these may be divided into thirteen sub-fields of forty characters. The latest version now uses GEM-like menus.

Indexing is carried out on the first field of each record, but temporary sorts may be made on any other field. If any permanent change is required, then the Export

to a new AZT file will cope with this. Records may be 'flagged', either manually or as a result of a 'search'. This effectively gives the user another 'field': flag all recordings with a special commendation, for example. The Search (and Replace) option has two filters, as has the Mail Merge option from within Redacteur3 when data from an AZthèque file is being used. Data may also be imported from other database formats.

There are two main ways to view the records on screen: tabular, which shows one record at a time with all of the fields; and 'formular', which shows the first (indexed) field plus any other chosen field in a continuous list of records.



Maxifile III

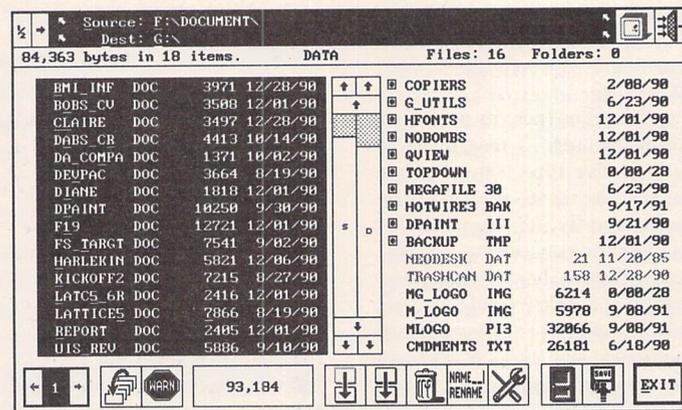
Last month Michael Baxter took a look at Hotwire III, "The Ultimate ST Shell", designed to be one half of a powerful desktop replacement. The other half, Maxifile III, "The File Management SuperTool", comes under close scrutiny on the following pages.

"Oh no, not another file utility!" I hear you cry. True, such programs are not uncommon on the ST - the much debated inflexibility and general inadequacies of the antiquated GEM Desktop have spawned countless derivatives and, as a result, the public domain is packed with disk/file editors and innumerable floppy formatters: commercial alternatives also abound, including the mother of them all, NeoDesk III. When all's said and done, though, there's only so much you can actually do to a file or a disk. In terms of functionality there is little that hasn't been thought of and implemented already, so any aspiring package hoping to cut any ice whatsoever in a crowded marketplace must at the very least improve on usability, if only to avoid being a sorry rehash of already existing software.

In true Codehead fashion, however, Maxifile III sets out to improve in both these areas, managing to cram in more features than any other current file utility on the ST, whilst sporting a feature-packed and flexible GEM front end. Add to this its connections with Hotwire III and its UIS III aspirations, and you end up with a package which it would be unwise to ignore...

Package Contents

The first thing to strike you about the Maxifile III package is that it contains two soft-back manuals. Fortunately, this is not a result of double vision: for once, a software house has taken the trouble to document the changes and additions to its original software on paper - a vast improvement on the more favoured (and cheaper) colossal disk-based "readme" files. The Maxifile III addendum is actually larger than the original manual, which goes to show how much has been added to Maxifile since its original low-key release a



The main Maxifile III dialog in split screen mode, showing both source and destination directories. Swapping between them can be done with a single mouse or key click.

few years back. Newcomers to the package are advised to refer the original manual until they get the feel of the program, then move onto the second to discover its enhanced features. Both texts are very well written and quite witty in places. What really stands out though, is Codehead's thought for the novice user - they don't just tell you what a function does, but they tell you how it does it and why it could be useful - a welcome change from the incomprehensible technobabble which often adorns publications such as this. The only black mark goes to the missing index (on two counts), although the table of contents is relatively comprehensive.

Installing Software

Maxifile III is subject to the now obligatory Codehead commercial software registration procedure. A small installation program creates a personalised working

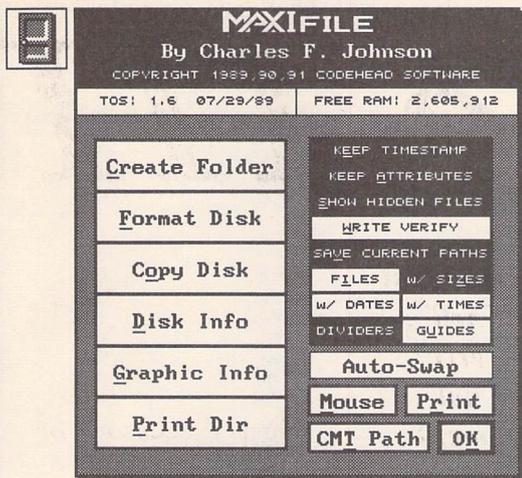
version of Maxifile after first taking your name and address, allowing you to make as many copies for your own use as you like. It's not a fool-proof pirate deterrent system by any means, but Codehead will refuse to upgrade your master disk if you enter a duff address. Once registered, the main 118KB program file can be copied onto your boot disk. It can be run as a desk accessory or as a stand-alone GEM application, simply by changing the file extension to ACC or PRG. Maxifile III is now compatible with every ST model, from an ageing TOS 1.0 520ST right the way through to a TT030 armed with TOS 3.0. It makes use of your machine's facilities and available Ram - TT owners are especially well catered for, with support for all new screen modes and TT FastRam. Also, if you really have to, Maxifile will run in low resolution, albeit with a scrolling dialog box since it can't all fit on the screen at once.

Desk Accessory or Desktop?

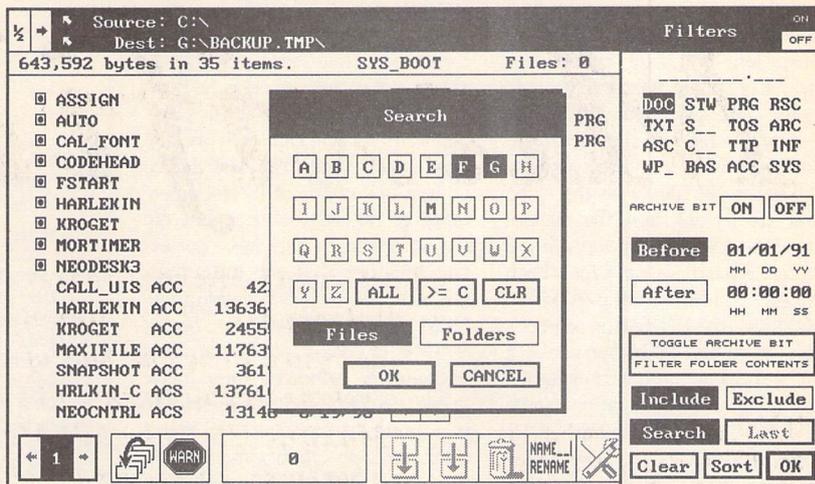
Maxifile is both: to all intents and purposes Maxifile is a desktop inside a desk accessory - well, almost. It can perform every disk and file operation that the GEM desktop is able to - which in itself is no great achievement - but in the same areas it can almost match mighty Neodesk feature for feature, and do a whole lot more besides. Strange as it may seem, with so many state-of-the-art features, Maxifile lacks one of the most basic of them all - it cannot directly run programs. Codehead justify this by pointing out that launching a GEM-based application from a desk accessory is a very haphazard business which can lead to some spectacular system crashes. Ok, but what about when Maxifile is running as a stand-alone program? Surely no such problems should exist? Well, to preserve its compatibility - or is it a marketing ploy? - Codehead have decided to leave the program execution side to its partner, Hotwire III, pointing out that running all ST applications 100% successfully is not as straightforward as you might expect - more on this Hotwire connection later. So, that's what Maxifile can't do - now let's concentrate on what it can do...

File Functions

As you would expect from any utility of this type, Maxifile sports a full range of copy/move/rename/delete operations. They all work, and they make intelligent use of available memory where appropriate, so that about wraps that side of things up. Where Maxifile really scores is in its novel extensions to its file management functions. For example, many operations can be performed in bulk - take the rename function: you can select several files at once, and



The "More.." door opens to reveal even more disk and file functions.



Filter/Search: This is one of Maxifile III's most powerful functions. This example will find all First Word DOC files created before 1991 on drives F and G and tag them for archiving/deletion later on.

Maxifile will prompt you for the new name of each filename in turn, with the option of skipping any selected file. The overwrite file warning dialog box displays both conflicting files' time/date stamps and size which makes differentiating between the latest version of a file so easy. It's little things like this that are so obviously helpful that make Maxifile stand out from the crowd. It doesn't end there, either. You can attach comments of up to 174 characters each to any file or folder, which makes future identification of obscure files ridiculously easy. Lost a file? Maxifile's file and folder search facility - in combination with the filter menu - can match templates on any selected drive. File finders have been done before, but never as slick as this.

Disk Functions

As with the file functions, Maxifile III sports all the usual facilities: formatting, copying, and disk information. But again, it's the extensions to these facilities that really make the difference. Take the disk formatter for example - these have been done to death in the public domain, but the chances are that you'll never need a more powerful formatter than the one built into Maxifile. It can format two disks simultaneously, initialise a disk to full MS-DOS specification, including the interleave 1:1 and the more recent 2:1 protocols. It even supports "Interleave 11" format, which significantly speeds up read and write operations - the only problem is that it only works with single-sided disks! The disk

copy function hides its complexity from the user - it determines the source disk type and format for itself and creates an exact image automatically. All you pirates can sit back down, though, since it can't handle heavily protected disks. The disk information function, as well as providing the usual numerical statistics, has a graphic option which visually displays the remaining space on your disks.

Other Bits 'n' Pieces

Right, now this next bit really confuses me. Maxifile has a safe deposit function which guards against deleting files which you may wish to recover later. Now, I don't know about you, but 99.9% of the time when I delete files from a disk, it is to recover the redundant space that they occupy. If I didn't need the space, in all honesty, I would leave them alone for the very reason outlined above. Bearing this in mind, what is the use of a recoverable delete function that doesn't delete files at all? It simply moves them to another folder - called 'safety' - on the same disk. Net result? No space is recovered, no files are deleted, and the file/folder count actually goes up by one! So why bother? Why not just leave the file in its original place? Answers on a postcard to....

Conversely, the filter menu I mentioned earlier really is something special. Hard disk users in particular will find it an invaluable directory maintenance tool. It's hard to appreciate just how useful a powerful filter function is if you've never used one before, but once you have, a system that does

not have one will seem blatantly lightweight. For the uninitiated, a filter system is just that - a filter. It simply screens items that you do not wish to see, and isolates ones that you do. Maxifile's filter system goes further than any other on the ST at the moment. To give you some idea what it is capable of, you could, for example, ask it to find all files on your hard disk starting with the letters MAXI, ending with the extensions ACC, PRG, DOC and ASC which have their archive bits set off and which were created after 7 o'clock on the 5th May 1991. Wow. It doesn't have to be that complex however: you could simply search for all your old First Word Plus document files that have been gathering dust since 1989 or before. Maxifile will tag them all, and allow you to selectively delete or archive them at will.

Not happy with implementing a simple text file viewer just to say it's got one, Codehead have built a viewer into Maxifile which is almost a rival for their own all-singing, all-dancing incarnation, Lookit by Doug Harrison. Assuming the memory is available at the time, Maxifile will load the entire file, as opposed to the NeoDesk and GEM method of paging text from disk to screen. The viewer then behaves like an editor without the edit functions, if you see what I mean. You can search for text strings - with case matching if required - set tab lengths, jump to the top, middle or end of the file with a single keypress, and toggle half height text. The scrolling is very fast in either direction, even in half height mode. What's more,

you can access most of these functions entirely with the mouse!

User Interface

Despite its desktop ambitions, all of Maxifile's operations take place in one fixed size dialog box. There's not a GEM window in sight - this results in a simplistic appearance, but don't be deceived - if ever an interface belied a program's power, then this is it. The main dialog has two display configurations, a single directory display which can show 48 filenames per page, and a new split screen mode which shows both source and destination directories at the same time. It is this mode that most users will favour - each directory operates in a similar manner to the file selector. Scrolling up and down each directory is effortless, with very fast "auto-repeat" mouse button scrolling. You can also scroll both directories simultaneously. Keyboard addicts will welcome the hot-key shortcuts: Maxifile is one of the few GEM applications that can be driven entirely from the keyboard. Unfortunately, Maxifile III is the only program I have yet come across that is incompatible with the otherwise excellent replacement dialog manager, FormDoIt 1.0a by Dan Wilga (ironically of NeoDesk fame). None of Maxifile's keyboard shortcuts work, and some mouse operations are affected, which is a shame.

Maxifile doesn't support rubber-banding in the sense that you draw a box with the mouse around files you wish to select for a given operation, although holding down

the left button and passing over a file will select it. By way of a compensation, Maxifile can select groups of similar files with a single mouse click: holding down the shift key will select all files with the same extension; the alternate key will select all files with the same first six letters, and the control key will select every item in the folder regardless of type. Both mouse buttons are utilised within Maxifile - the left button selects a file, while the right button selects a file and opens the file information box. Even this combination can be switched around to suit your requirements.

Maxifile also has plenty of user defined options - each one of the eleven available warning messages can be turned on or off at will - if you don't want to be told that your entire hard disk partition is about to be wiped, then you won't be! All the usual file sorting options are present, including "no sort", which displays the order that files were originally placed on the disk. Despite this, Maxifile has no way of actually re-ordering a directory as NeoDesk can. Up to twenty preset pathnames can be permanently stored, which makes flicking between frequently used directories a snap.

All this adds up to a powerful and very usable interface, which is a complete departure from normal desktop surroundings. The keyboard shortcuts take some learning; because there are so many of them they are often obscure, but perseverance is rewarded with a very fast and efficient operating environment.

Hotwire Connection

As I mentioned earlier, Hotwire and Maxifile form a powerful desktop replacement partnership. Neither package on its own could fit the description of a complete desktop. Hotwire has no disk or file functions whatsoever, and Maxifile is unable to directly execute programs or handle installed applications. Combine the two together, however, and you have an exceptionally powerful desktop which is more than capable of giving complacent old Neodesk 3 a very good run for its money. The two merge to form a seamless interface - simply click on the Maxifile icon on Hotwire's main menu and Maxifile instantly appears. Using the program in this fashion fixes the missing execute facility - simply double-clicking on an executable file closes Maxifile, and passes the pathname to

Hotwire which in turn runs the program. You can also load documents into their installed applications in the same manner. So how does Neodesk stand up to this combination? As you can see from the comparison table, Neodesk lacks quite a few of Maxifile/Hotwire's more advanced features, but on the other hand it does have one or two facilities that the latter has not, not least of which its multiple GEM windows and macros. Some WIMP devotees could not live without the windows they have grown up with, and this approach is admittedly more akin to standard desktop environments. On the other hand, Maxifile and Hotwire's deliberately window-less environment may well appeal to power users and the anti-mouse brigade, since every single function is accessible from the keyboard. Nevertheless, there can be no decisive winner, since each individual user will have different requirements and preferences - but there's nothing wrong with a bit of healthy competition. The choice, as they say, is yours.

UIS III Basher?

The Universal Item Selector v3 is the king of replacement file selectors. It provides 99% of the disk and file functions most everyday users are going to need inside an application, and until now, its supremacy has been largely unchallenged. Included on the Maxifile master disk is an adapted version of the "Little Green File Selector", Charles F. Johnson's Shareware replacement item selector. Assuming Maxifile is installed, clicking on its call-up button whilst using LGS brings up - surprisingly enough - the main Maxifile dialog box. In simple terms, this means that Maxifile is available inside any application that uses the file selector, including those that don't have a GEM menu bar. This brings it into direct competition with UIS III.

Obviously, in terms of features Maxifile 3 wins hands down - it can do everything UIS III can, plus a whole lot more. The trade-off, however is memory - to use Maxifile and LGS in this fashion requires approximately 160k of user Ram. UIS III on the other hand manages to cram all of its features into an incredibly compact 29k. It's up to each individual user to decide whether Maxifile's more advanced specification is worth the sacrifice in memory, as opposed to UIS's efficient and adequate facilities.

Desktop Duel

NeoDesk 3 vs Maxifile/Hotwire III

	NeoDesk III	Hot/Max III
Price	£39.95	£59.90
Minimum Ram	512k	512k
Recommended Ram	1Mb+	1Mb+
Program Specifications		
Max Files on Desktop/Menu	28	52
Max Installed Applications	15	52
Multiple GEM Directory Windows	Yes	N/A
Environmental Variables	Yes	Yes
Available inside GEM Program	No	Yes
File Templates	Yes	Yes
File Filtering	No	Yes
File Search	Yes	Yes
Work Ledger	No	Yes
Full Keyboard Shortcuts	Yes	Yes
Default Pathnames	No	20
Duplicate Path	Yes	Yes
Auto Select All	Yes	Yes
Auto Select Some	No	Yes
Autorun Application	Yes	Yes
Multiple Desktops/Menus	Yes	Yes
Work Files	No	Yes
File Clipboard	Yes	No
Macros/Batch Interpreter	Yes	No
File Operations		
Copy, Move, Delete, Rename	Yes	Yes
Recoverable Delete	Yes	Yes
Batch Rename	No	Yes
Touch. Lock, Hide	Yes	Yes
Archive/Unarchive	No	Yes
Create/Rename Folder	Yes	Yes
Re-order Files	Yes	No
Fastload Option	Yes	Yes
TT FastRam Option	No	Yes
Disk Copy		
Just Files	Yes	Yes
Copy with Format	Yes	Yes
Straight/Intelligent Copy	Yes	Yes
Disk Information		
Text Information	Yes	Yes
Graphic Information	No	Yes
Extended Volume Names	Yes	No
Edit Volume Names	Yes	Yes
Disk Formatter		
Max Sectors/Tracks	10/82	10/82
Twister Format	Yes	Yes
MS-DOS Format	Yes	Yes
Backward Formatting	Yes	Yes
Interleave 11 Format	No	Yes
Zero Disk	No	Yes
Format A and B simultaneously	No	Yes
File Viewer		
View Text Files	Yes	Yes
View Degas Files	Yes	No
Scroll Up/Down	Yes	Yes
Jump to Beginning/Middle/End	No	Yes
Find String	No	Yes
Set Tab Spacing	No	Yes
Half-height Text	No	Yes
Alternative File Viewer	Yes	No
Printer Support		
Print File	Yes	Yes
Print Directory to Printer	Yes	Yes
Print Directory to Disk	No	Yes
Edit Printer Control codes	No	Yes
Spool Files to Printer	Yes	No
Miscellaneous		
Attach Comment to File	No	Yes
Multiple Alarms	No	Yes
Password Protection	No	Yes
Corner Clock	Yes	Yes
Write Verify On/Off	No	Yes
Blitter Control	Yes	Yes
Set Colours	Yes	No
Edit Desktop Pattern	Yes	Yes
Desktop Picture	Yes	N/A
NeoDesk III specification assumes that the NeoControl Panel and NeoQueue Printer Accessory are resident.		

Summary

Points For:

- ✓ Extensions to every desktop function, plus a whole lot more
- ✓ Seamless interface with Hotwire and the Little Green File selector
- ✓ Runs as a desk accessory or as a GEM application
- ✓ Full keyboard shortcuts
- ✓ Good disk formatter with true MS-DOS formatting
- ✓ Powerful filter/search function
- ✓ Doubles as an enhanced file selector via LGS
- ✓ Bulk operations
- ✓ 20 preset pathnames
- ✓ Fully TT compatible, making use of new screen modes and TT FastRam

Points Against:

- ✗ Can't directly run programs.
- ✗ Safe deposit feature is a waste of time and space.

Conclusion

It's not so much what Maxifile does, it's the way that it does it that makes it so impressive. On its own it can perform every routine file and disk operation that you are ever likely to need, and it does it in style through a very thoughtful and intuitive user interface. As to whether it's worth the asking price, I would have to say yes, on the basis that it is unlikely that any other package is likely to appear which will outperform it to any significant degree. Running Maxifile with Hotwire, and ultimately, Multidesk Deluxe, puts a different complexion on things - sorry NeoDesk, but you're no longer the most feature-packed replacement desktop for the ST, although you are considerably cheaper than the Codehead combination. But as I said earlier, personal preference plays a big part in each user's verdict - in time honoured tradition, you pay your money, and you take your choice...

Product: Maxifile
 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, 79-page manual,
 plus 84-page addendum.
 System: Any Atari ST/STE/Mega STE/TT
 System, Mono and Colour

File Name: FS_INIT3.S_	<input type="button" value="Read/Write"/>	<input type="button" value="Read Only"/>		
New Name? FS_INIT3.S_	<input type="button" value="Normal"/>	<input type="button" value="Hidden"/>	<input type="button" value="System"/>	
Size: 33,265 bytes	Archive Bit <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	<input type="button" value="Flags"/>		
Last Modified: Sunday, October 28, 1991 7:16:04 pm	<input type="button" value="Open"/>	<input type="button" value="View"/>	<input type="button" value="Print"/>	<input type="button" value="Ext"/>
	<input type="button" value="Prev"/>	<input type="button" value="Next"/>	<input type="button" value="OK"/>	<input type="button" value="CANCEL"/>

Initialisation module for Flying Start boot software.
 v0.9b - Almost complete, corner clock does not work on
 STE's, and parameter passing to FS_EXEC3.C not included.
UNDO=CANCEL ALT + F:FLAGS O:OPEN V:VIEW P:PRINT E:EXT R:PREV N:NEXT

File Information: Allows a 172-character description to be tagged on to any file

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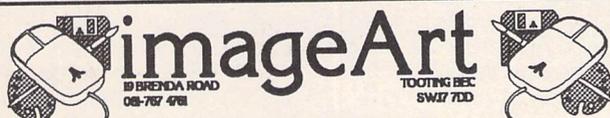
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UIS v3.3

Reviewed by Kevin Busby

Past Whinges...

I was highly impressed by the old version of UIS and soon became very annoyed with programs which foisted their own version of the ideal file selector on me; none of them ever matched the ease-of-use and versatility of UIS. Inevitably, however, I could find a few faults. Firstly, only four clickable file extenders could be stored in the program. This meant that after storing say, .TXT, .DOC, .ASC and .BAK as file extenders for use within a word-processing program, users would still have to type in other extenders as the need arose in other applications (C-Lab's Creator alone makes use of .SON, .BON, .ARR, .BRR, .PAT, .BAT, .SEQ, .BEQ, .MID and .BID!). The only solution to this problem was to keep various copies of UIS, each with its own set of file extenders.

Another possible area for criticism was that no keyboard shortcuts were provided, other than for recalling preset pathnames.

...And Solutions?

Version 3.3 of UIS (I don't know what happened to version 3.2!) solves both these whinges - at least partially.

A pop-up menu containing 24 extra extensions is now available within UIS, in addition to the existing four settable extensions; this should surely be enough for almost any ST user, and I no longer have to boot more than one copy of the program just to have a different set of file extenders. However, I do feel that a better means of accessing these additional extensions could have been devised. In order to get to them, you need to left-click on the left-most (non-settable) file-extension while holding down the right mouse button. What on earth compelled the writers to devise this method? It would

The last version of Universal Item Selector (v.3.1) was reviewed by both Michael Baxter and Nicky Wilson in the December 1990 issue of ST Applications, and so this review will be limited to the new features offered in the latest incarnation, version 3.3. However, for those of you who have not previously heard of Universal Item Selector (UIS), I will mention its main features.

As may be easily guessed, the main function of UIS is to replace the standard Atari file selector. For those of us with the old version of the ST file selector (earlier than TOS 1.4) this in itself means no more bugs when entering long pathnames, the provision of clickable drive buttons (as opposed to having to clumsily edit the pathname) and various options as to what information is displayed. Not only this, but UIS can also be used to move, copy, rename and delete files and folders, display directory and memory information, change file attributes, create folders, format disks, and more. If you want to know how much more, dig out that back issue!

surely have been far more sensible to allow the menu to be accessed by simply right-clicking on the left-most file extension. Better still, a little box marked "menu" could have been included, such that left-clicking on it called up the menu.

Beware of holding down the left mouse button when selecting an alternative file extension; contrary to standard practice in ST programs, selection is made as soon as the button is clicked rather than when it is released. The consequence of this is that if you do hold the left button down, you'll find yourself having selected an extension and already clicking on the part of UIS over which the menu had been displayed - possibly the "OK" button. If you now release the button without having moved the pointer away to a safe position you may thus find yourself having, say, OKed the saving of a file which you didn't want to save,

possibly overwriting the original. In practice, it is very unlikely that such a disaster would occur, but it is something the new user should be aware of.

The other small grumble to which I alluded earlier - the lack of keyboard shortcuts - is also answered in UIS v.3.3. A summary of these shortcuts is shown in Box 1 of this review. As you can see, it's quite a long list for a mere "item selector"! Praise is due to the creators of UIS for providing users with such a comprehensive range of shortcuts, although personally I'm not convinced that some of the shortcuts which they have come up with are in practice very short at all!

To be blunt, the method of selecting files by arrow keys and so on is slow and awkward compared to the existing method of using the mouse. I feel it would have been far more sensible to be able to select files and folders by pressing, say [Control]-[4] for the

fourth file or folder down the list, or maybe even to use a sequence of keys such as [1] <digits> [Enter]. Such a method would almost certainly make multiple item-selections and perhaps other shortcuts more tricky to implement, but since most of the time the Item Selector is used simply to Select Items, I feel this where a quick and intuitive method of shortcut is most needed. Certain functions are now easily selectable by using keys whereas the simple selection of items is still far quicker by reaching for the mouse; this is surely the wrong way around.

Unfortunately for completists the alternative file extenders cannot be accessed by keypresses (to be fair, I find it hard to imagine how this could have been sensibly achieved) and the [Control]-[Undo] shortcut for the "Cancel" button does not for some reason have any effect in the middle of storing a path. These niggles aside, the shortcuts are there if you want them.

Some People Are Never Satisfied...

According to the leaflet provided with the update, the shortcut [Control]-[N] will call UIS3's "multiple file attribute change" dialogue (this is the part of UIS which allows files to be hidden, touched, set to read-only status etc.). Unfortunately, the designers of UIS3 seem to have forgotten that Atari keyboards vary throughout the world, and while [Control]-[N] will undoubtedly work for US users of the ST, those of us in the UK actually have to press [Control]-[1]. This is nowhere near as convenient as [Control]-[N], since whereas the [N] key is almost adjacent to the [Control] key, [1] is over the other end of the keyboard, turning this "shortcut" into a two-handed operation.

Another possible annoyance to UK users is that the writers of

UIS3 have still not got around to providing us with the option to have the dates of files displayed in the UK/European format of day-month-year. Dates are still in the illogical American month-day-year format. (This has been fixed on the most recent version, v3.32. Return the disk and 50p for an update from v3.3 - Ed.)

On the subject of options, I find it slightly annoying that the cursor for the Selection and Directory (pathname) lines blinks in the new version of UIS, with no option to turn the blinking off. I know that I am not the only computer user who hates flashing or blinking

cursors; there may well even be a scientific name for this phobia by now.

Other Stuff

This new update also includes a number of other features, too numerous to cover in any great detail.

Briefly, UIS has increased compatibility, can link with DC Show, can take better advantage of large-screen monitors and supports Atari's Cookie Jar protocol. (I don't know what this is, but presumably it works with UK-style biscuit barrels as well?)

ALTERNATIVES

Hisoft Extended File Selector

Provides drive buttons. In most other respects it is similar to the standard Atari file selector. Supplied free with most HiSoft products, but not public domain.

File Selector Box (Fselect)

Provides drive buttons and 11 preset file extensions. I believe it is circulated free of charge. Definitely worth a look; try a public domain library. There are a number of other file selectors available from PD libraries which you may want to try also.

The Little Green File Selector

Shareware (\$15). The nearest rival for UIS that I have seen, offering many of UIS's features such as presettable path names and file extensions. If lacks UIS's wide range of file handling (move, copy etc.), folder creation, disk formatting and a number of other functions, but allows direct access to Codehead Software's program Maxifile, which does provide these functions.

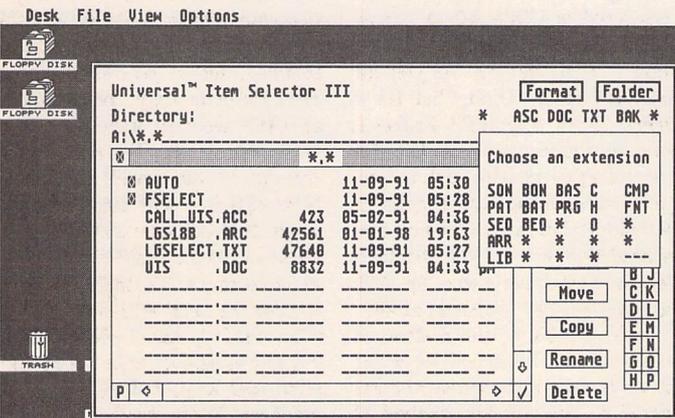


Figure 1: A screenshot of UIS v3.3 with its pop-up menu showing examples of file extensions.

Conclusion

I find UIS3 to be an essential tool for using the ST. I am largely unmoved by the current fad for alternative desktops; perhaps I am missing out on something by sticking to the standard ST desktop, but with UIS3's file manipulating functions only an accessory away, all necessary file operations (short of executing a program) can be speedily carried out. I have made many criticisms of the version 3.3 upgrade to UIS in this review, the largest of which is that I do not believe that the designers of the program have implemented keyboard shortcuts in a very ergonomic manner. Nevertheless I believe that the ability to store 28 settable file extensions is in itself ample justification to praise this upgrade. Universal Item Selector is in my opinion still the best item selector available for the ST; it should be considered an essential purpose for all users whose ST has a version of TOS below 1.4 and is surely a very good buy even for users of TOS 1.4 and above. Existing users of UIS should note the very reasonable (dirt-cheap, almost) upgrade fee and at least give the update a try. Tastes vary, and you may find the additions are just what you've been waiting for.

Product: Universal Item Selector version 3.3
 Machine: All ST's and TT's
 Price: £19.95; upgrade from version 3.0: £3.50
 (£14.95 special offer till 31st Jan. 1992)
 From: The ST Club
 Manifest: (version 3.0) 36-page booklet
 Manifest: (upgrade:) 4-page leaflet

SHORTCUTS OFFERED

BY UIS v3.3

- [up arrow] - scroll the directory window up one line
- [down arrow] - scroll the directory window down one line
- [shift]-[up arrow] - scroll the directory window up one page
- [shift]-[down arrow] - scroll the directory window down one page
- [clr home] - go to the top of the directory window
- [shift]-[clr home] - go to the bottom of the directory window
- [control]-[up arrow] - move the file cursor up the window
- [control]-[down arrow] - move the file cursor down the window
- [control]-[return] - select and open folder under cursor
- [control]-[esc] - move out of current folder
- [control]-[undo] - cancel operation
- [shift]-[control]-[up arrow] - select the group of items under the cursor as it moves.
- [shift]-[control]-[down arrow] - deselect the group of items under the cursor as it moves.
- [alternate]-[drive letter] - change current drive
- [control]-[p] - call UIS's print/show function
- [control]-[=] (not [control]-[N] as intended!) - call "Multiple File Attribute Change" dialogue box
- [control]-[?] - call "Item Information" dialogue
- [control]-[c] - call Copy function
- [control]-[m] - call Move function
- [control]-[r] - call Rename function
- [control]-[x] - call Delete function

WordPerfect 4.1

A White Elephant, Dead but not Buried?

The WordPerfect Corporation seems to believe that its products will sell themselves. They may be right. WordPerfect (the program) is touted as the best-selling word-processor on any machine, with numerous versions including those for the ST and Amiga. The Atari version has been with us for about four years, scarcely marketed and rarely discussed. The program has never been advertised or promoted by WordPerfect UK, and little has been written about it, maybe because it is expensive, or because it has a not entirely unjustified reputation for unreliability and unfriendliness.

Over the last five years I have sampled almost all of the ST's considerable number of word processors; some I've used regularly. When WordPerfect first appeared I bought a copy, partly because it seemed to offer all the features I could ever want, and also because it seemed a good thing to support. If that seems perverse, my logic was that a 'big name' company spending its money to produce something for the ST should be encouraged: the only people who could lend that encouragement would be the end-users, in this case me. If I bought a copy the program had to succeed and the ST stood a better chance of being taken seriously by the world at large. Perhaps logic is not the right word.

People often bewail the fact that the big names from the PC and Mac worlds have ignored the ST. Apart from WordPerfect there has been that rather half-cock effort from Microsoft ('Write') and little else. (This is not to denigrate the many excellent 'smaller names' who provide almost all of the software that we use from day to day.) 'So', I thought, 'WordPerfect today, Microsoft, Lotus and Borland tomorrow.' I will not be blamed that few followed my lead and that it hasn't happened.

As first released the program was almost unusable. It

crashed frequently and unpredictably. Six months and a couple of disk sets later it was a much more stable creature, and I have used it with pleasure (if not delight) ever since. In 1987 there was nothing on the ST to compete with WordPerfect's range of features and power: columns, footnotes, endnotes, paragraph numbering, mail merge, spelling checker, thesaurus, maths, macros, indexing and an unparalleled range of printer drivers. Yet, it seems, few were interested. Were they put off by its price (nearly £200)?, its reputation for unreliability?, its rather clumsy and unimaginative use of GEM?, the fact that it really requires a hard disk drive?, or did very few people actually need such a powerful piece of software? I suspect that all of these applied, and the fact that no-one was trying to sell the program finally ensured its status as a rather glorious white elephant.

Four years have passed. From time to time there have been maintenance upgrades which have removed the remaining bugs and added minor enhancements. The latest of these - dated April 18th 1991 - which prompted these ruminations, actually appeared in late August. It makes the program work on the STe and TT030, though I have tried it on neither, and includes an up-to-date range of printer drivers. WordPerfect have honoured their company policy of maintaining their software but unfortunately it still firmly remains version 4.1.

Electronic bulletin board systems like CIX and Usenet have produced a new version of Chinese whispers: somebody posts a message which quotes someone who spoke to someone who knows someone, etc., etc. About a year ago rumours told of an entirely new version of WordPerfect, possibly emanating from Germany. Repeated enquiries of WordPerfect UK met such an impenetrable wall of 'No comments' that I concluded something was afoot. My spirits rose.

And then... gloom. The current binary gossip is that it is all off. Atari Germany were to have done a deal with WordPerfect Corp. for 10,000 copies of the program to be distributed with TT's and Mega STe's. Under pressure from other software companies this arrangement was dropped and thus died the chance of WordPerfect 5 (or whatever it might have been). Yet another rumour has it that the new version exists but will not be marketed. All this sounds plausible, but not surprisingly I have been quite unsuccessful in getting any confirmation from Atari or WordPerfect.

So it seems that WordPerfect is at the very least in the 'neglected but not forgotten' category, at worst 'dead but not buried'. And where does that leave me, and others of its users? In my case I have no real reason to change from the program with which I initially battled, and eventually came to use with some enjoyment. It still does most of the things I need, but the program would certainly benefit from extensive cosmetic surgery, and there are many new features that I would like to see. I have to admit to day-dreams of buying Spectre and the new and highly praised WordPerfect 2.1 for the Mac, but that's another story.

How does WordPerfect now stand in relation to the ST's other word processors? When released in 1987 it was far ahead of the local competition, even although it was already more or less obsolete in the sense that WordPerfect for the PC was moving up to version 5. That other Atari WP's are only now just about able to match its features shows how far behind the PC standard they have been and, possibly, how undemanding the ST's users are. This should be read as comment rather than criticism. It also

shows that it takes some years to develop a fully-featured program from scratch, especially when sales and revenue are relatively small. Currently there are three programs to put alongside WordPerfect in what one could call the heavyweight division: Protext, Calligrapher and That's Write. I have no intention of discussing them except to say that they are all very different from each other (and from WordPerfect), each has a very wide range of features, all are cheaper than WordPerfect, and all still seem to be maturing. This last point is especially important.

Would I buy a copy now? In spite of its lack of significant development it remains in the front rank of the ST's word processors, but its uncertain future would worry me as a potential purchaser. I don't think that I would spend £185 or so on a program which did not seem to be going anywhere, even if blessed with such a prestigious name. WordPerfect UK are quite open about this: they say that the program is 'revision locked', which is their lingo for 'no major changes anticipated'.

I am sure it is contrary to their corporate strategy, but WordPerfect Corp. should have halved the price of the program and sold it as a 'loss leader' some time ago. They must have written off development costs by now, and a substantial price cut would make it an excellent purchase, could well generate sales, and might revive the program's fortunes. More pipe-dreams? Probably. However, as the saying goes, 'the fat lady hasn't yet sung' and WordPerfect Corp. (or other ST users) might just have a change of heart.

WordPerfect UK are on 0932 850500.

John Mallinson

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Idea Outliner	Yes	Yes	No
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HARNESING THE ATARI POWER

Score Perfect - Is It?

Score Perfect is a musical recording and notation program with an unusual profile. How good is it, and how does it stand up beside the famous sequencers? Britt Johnstone puts it to the test.

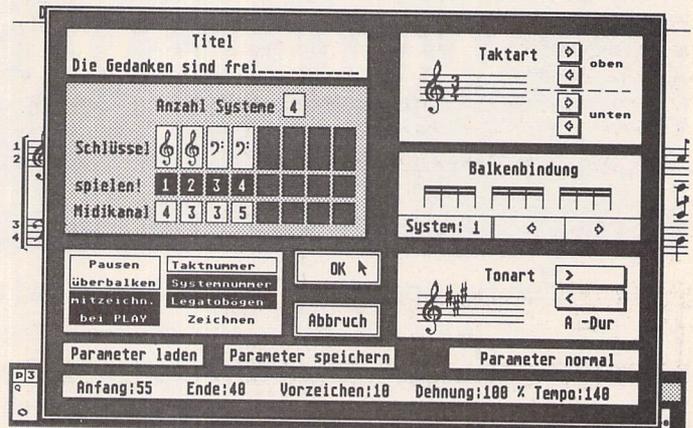
It has long been a dream to make music and have an invisible hand note down at least the better bits for posterity. In the last few years this dream has become reality. Musical instruments can now be persuaded to pass enough information down a MIDI cable for a computer program to reconstruct the musical intentions.

Score Perfect is a fine illustration of the joys and the tribulations which arise when dreams become true. It more than matches the original dream specification, for not only does it permit recording, editing and printout, but it also allows playback at any time. A host of functions aid in improving the musical and printed output. In best GEM manner, it makes it easy to understand every step of the process. As more programs should, it allows ready access to related programs. The ability to read MIDI standard files from sequencers opens the way to the mainstream of electronic music recording. The output can be passed to Signum, Script or Calamus, and these are gateways to the Atari publishing world.

But it is a leprechaun's gift:

in realising a dream, the catch is never far away. 'Just play in the music' only works if you keep precisely to the program's tempo. You enter one, at the most two lines at a time, and cannot hear other parts you entered earlier. This is mostly not the program's fault. It provides many workarounds, such as tempo change on and after input, or setting the smallest interval to be recognised. The already mentioned access to MIDI standard files means that input need only be limited by the abilities of your favorite sequencer. No, in my case, the trouble arises in another limitation: lack of musical understanding and equipment. For many, this program provides a chance to extend these limits, for in music, as in computing, learning is doing, and what counts is the fun you have along the way.

There are more catches in the output side of the program. Here, the playback via MIDI is more than adequate, since Score Perfect is not a performance tool. Indeed, the mechanically exact nature of the output hints at the difficulties inherent in musical notation, and the expectations on a performing musician as he



breathes life into a piece of music. Score Perfect provides the means to space scores, staves and notes on the page.

The bars can be expanded or contracted within sensible limits. The program provides enough support for suitable control, without the need to define the myriad of details. The output is A4 portrait; a change of size is only possible in a graphics editor. Direct printing is of very good quality with a 24-pin printer. Alternatively, the formatted page can be saved on disk as 640x400 compressed tiles for Signum. 15 tiles at 180dpi looks fine for printing, and 360dpi (50 tiles per page) is available for perfectionists.

Where's the catch? Well, if you want to change the spacing between staves, for instance to insert several verses of a song, there is a lot of cutting and pasting to do, since tile boundaries do not necessarily coincide with musical ones. That means format changes, such as landscape printout, are time-consuming. Maybe if I knew more about DTP, and had the right tools....

The editing abilities of Score Perfect are extensive. The set-up screen permits control of over 20 parameters, such as time signature, key, tempo, quaver grouping and all MIDI functions. Another two are used to define how incoming signals are treated. A fourth one pops up when the

music is formatted for printing. Otherwise, the whole editing process is controlled from one screen.

The menu allows disk functions, adjustment of size and placement on the screen, block and go-to functions like a WYSIWYG word processor, where bars replace words. The block can include one or more staves of the score. Moving a section to another line, copying, deleting, or inserting bars and emptying a block are simple.

The standard method of editing is with the mouse. Click left adds a note or accidental, click right removes one. The pitch of a note can be changed by clicking on it and sliding up or down while pressing the left button. The length of a note is selected on the Atari keyboard. Input of more than a bar or two can be best done with the MIDI and Atari keyboards in combination.

A further set of musical editing functions allow transposition as well as octave and key changes. Two staves (lines of music) can be merged, to make a piano accompaniment out of 4 choral parts for example, or separated again. The staff order can be changed. Further sets of notation signs cover dynamics, legato, articulation and fingering. The different forms of repeats and different bar signs are available. These areas are fairly complete. The two points I missed most were grace notes, and a



soprano octava clef sign. However, only a few of these signs affect the musical output, an uncharacteristic inconsistency. The DC, DS and coda, and most decoration and stress signs could have been implemented, even if it were accepted that converting MIDI pressure signals to dynamic signs and vice versa takes too much capacity for real-time use.

This problem is a very real one in music programs. It is a major achievement to get the screen to update without affecting the timing of the music. Complex scores and fast tunes lead to

noticeable delays in the flow of music while the screen is being redrawn. Score Perfect's solution is to provide a button to switch off the screen update for critical listening. My solution was to slow down the song, or change the bar size, which was often enough for editing purposes.

The observant reader will have noticed that the concerns till now have been that, to fulfill the dream, the program must do even more. There are a few genuine criticisms. The playback occasionally swallows a note. The protection system forces me to

Score Perfect 1.2 is available in German from:

Soft Arts Frey, Sturm GbR, PO 127762, 1000 Berlin 12 for DM199.

A larger version, Score Perfect Professional, costs DM399.

A demo of Score Perfect is on ST Club disc DEM.65, along with a collection of pieces. It allows recording, editing and printing of your own songs, so that it gives a good indication of the program's capabilities, and whether you could live with the German. It does not permit:

- ✕ change of tempo after entry or bar size
- ✕ editing of files from the Main Score Perfect program
- ✕ production of Signum tiles on disc
- ✕ a few other functions which probably were added to the present edition, like transpose, add note, up/down an octave, the dynamics and articulation signs

The Competition:

Notator and Cubase offer both sequencer and notation. (DM1000)

Tristan DM15 (see ST Applications 1) and EZ track or COSH sequencer (MID.29). Good, cheap, but not compatible.



change disks before loading the first song. The Atari siezes up occasionally, perhaps once per 50 hours use. But these are small worries in comparison with what the program offers. The handbook, victim of many a reviewer's broadside, cannot really be faulted. It is short, clear, accurate and reasonably complete, matching the programmer's training as a music teacher.

Score Perfect has many facets. You can use it to learn difficult parts, to arrange short

songs, to provide both written and aural accompaniments. I often use it instead of a sequencer, since it is easy to see the music. It is a fine tool for anyone leading a small musical group. For others in the wide world of music, its profile may differ, or be less relevant. There are other programs which match and surpass parts of Score Perfect's functionality. But with its ease of use, and the range it covers, Score Perfect could guide many towards making better music.

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From DTP to REPRESS

The grey suits and designer types at this year's Seybold Electronic Publishing Conference in Chicago, the Mecca of the computer publishing world, rubbed their eyes: what was Atari, well-known purveyors of games consoles and home computers, doing here? The sign of the Fuji was a bit of an intruder among the Macs, PCs and Unix workstations, but by its sheer presence at Seybold, Atari and the (mainly German) software houses joining with it under the name Professional Systems Group announced the seriousness of their determination to change that.

The size of that task, however, is enormous. The high-end publishing market is far removed from the world of the dot-matrixed fanzines and parish newsletters in home computer DTP. It is not even about laser printers and company reports in fancy typefaces, adorned by some flashy sales curves and bar charts. Just having a fast computer and some good software is not enough, either: you need the credibility of a brand name associated with tried-and-tested solutions, the ability to offer complete systems capable of meeting the demands of a highly competitive industry.

*In the first of two articles,
Günter Minnerup
examines the possibility of Atari
gaining a foothold
at the high end of the DTP market.
The ST/TT as a 'prepress engine' -
fact or fiction?*

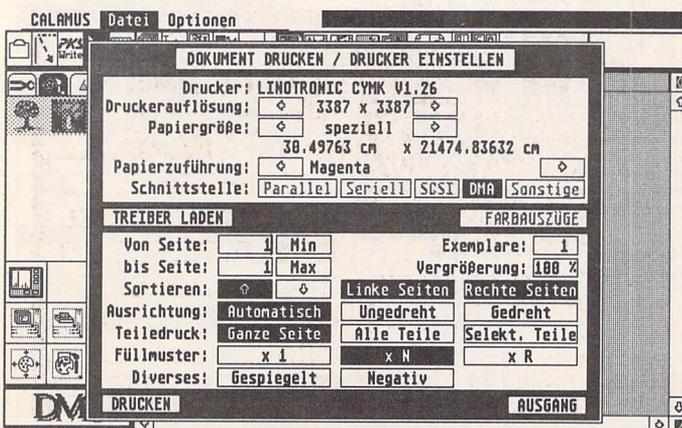
As Seybold showed, Atari have both the computers and the software to take on everything that the PC and Mac can throw at them. But the credibility is harder to acquire than Motorola 68030 chips and clever vectorisation code. On both sides of the Atlantic, Atari are essentially regarded as toytown operators, and while ventures like the Professional Systems Group in the US and the Atari DTP Centres and chains of Calamus and 3K franchise dealers may go some way towards beginning to live down this image, Atari UK do not even appear to have recog-

nised the problem as yet. The demise of Signa Publishing will have done little to bolster the Atari image, and it is to be hoped that relative newcomers like System Solutions and Copycare Graphics Services will have better luck in pushing the Fuji into the prepress market.

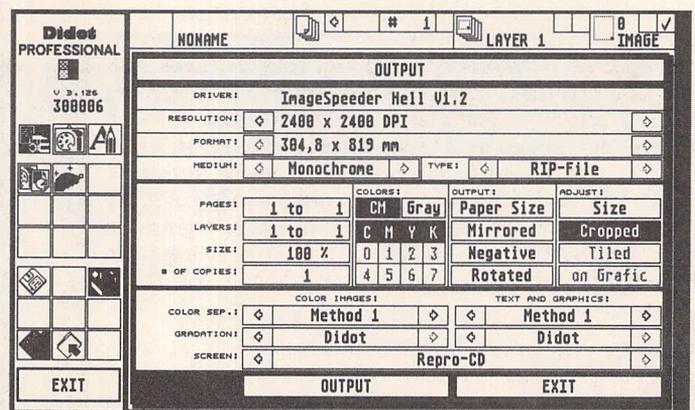
The possibilities are certainly there. Despite the Apple Mac's success, the use of personal computers in the graphic design and printing industries, especially small and medium-sized firms, is still in its infancy with plenty of growth potential. Atari's computers, in particular the TT, are

perfectly capable of doing the job, and programs such as Calamus SL, Didot Professional and Retouche Professional Colour Design can even leave hardened veterans of Quark XPress, Ventura and PhotoShop gasping. In this first instalment of a two-page survey of Atari's prospects in the publishing field, we are going to have a look at the hardware angle, with a review of the principal software packages to follow in the next issue.

To be acceptable to the professionals in the editorial offices, design studios and repro houses, a computer-based prepress system has to be seen to be capable of achieving the same quality that traditional methods - light table, repro camera, typesetter and so on - can deliver. From the hardware side, at least, high-quality typesetting is not a problem: owners of Fleet Street Publisher and Calamus have been able to output industry-standard type on 2540dpi Linotypes for quite a long time. The real bottleneck is graphics, and in particular photographic material. Even today, many computerised design and print houses still prefer to entrust halftones and colour photos to the skills of the traditional crafts, for two reasons:



Preparing output of a single colour separation (Magenta) from Calamus SL to a Linotronic at the staggering resolution of 3387dpi.



The output dialog box of Didot Professional. Combined with the Hell ImageSpeeder box, you have a set-up that leaves any Mac PostScript rival gasping for breath.

First, the sheer mass of data produced by scanning reasonably-sized images at respectable resolutions outstrips all but the very beefiest hardware set-ups. Tens of megabytes for a single photo make most hard disks look silly, and can take a long time to save and load. How can such monster files be taken to a remote site, such as an output bureau, on magnetic media? Atari's decision to fit the first batch of TTs with 720k disks and a mere 48Mb hard drive does little to commend the machine for professional publishing use, nor does the operating system's inability to multi-task and access hard drive capacity as virtual memory.

Second, the reproduction of halftones and process colour is an extremely complex skill in which the trained eye and a sound knowledge of the properties of paper and printing ink are still

superior to computer algorithms. As you probably know, process colour printing works by creating a multi-coloured illusion with only three basic colours: cyan, magenta and yellow, plus added black for depth and contrast. These are superimposed on each other at varying screen patterns and angles, the accuracy of the screens being of utmost importance if unsightly blotches and moirés are to be avoided. The professionals are not terribly impressed by PostScript's ability to get this right, so Atari's reluctance to get involved with this industry-standard page description language may for once not be an obstacle to acceptance, provided that its alternative solutions can be demonstrated to give superior results.

New demands are also made on the graphics display: WYSIWYG (What You See Is What You Get) means full-page

or double-page monitors, and what is known in the industry as "True Color" - 24-bit data capable of handling up to 16.7 million different colours. The standard TT can only deliver 8-bit colour, and the 24-bit add-ons required to compete with the Mac and PC rivals may be under development by third parties, but are not available so far. When they arrive, probably in 1992, I suspect that even the Motorola 68030 will be hard pushed to shift this amount of information at a reasonable speed, so roll on the 68040 TT!

Still on the hardware front, the TT's networking abilities are likely to come under close scrutiny, too. Few commercial operators can afford to equip each workstation with its own scanners, printers and mass storage devices, and no employee will have typographical, design and colour processing skills to equal measure, so the need is for a sharing of human and hardware resources between the many desktops involved. In principle, the TT is well-equipped here, with its AppleTalk-compatible LAN and VME ports, but the practice is less than appealing at the moment with no AppleTalk software on offer yet, and the Ethernet cards offered by BioNet and PAM rather expensive when compared to Mac and PC prices.

Having mentioned peripherals, it is one of the traditional drawbacks of the Atari scene that, while the computer itself may be relatively cheap, peripherals such as hard disks, laser printers and scanners tend to be expensive and often of dubious quality and compatibility with

each other. The move to a full SCSI bus rather than the cut-down ACSD/DMA will help, but as with network cards, the driver software is still largely non-existent.

So yes, it can be done, but it takes a considerable spirit of adventure to prefer the Atari platform with its toytown image, weak dealer infrastructure, poor documentation and customer support and still evolving hardware architecture to the more mature Apple and DOS environments. Unless, of course, there are compensations in other areas. For the smaller business, price may be one such factor: the ability to do without a PostScript RIP (raster image processor) can save considerable amounts, albeit at the price of reduced compatibility with the industry standard. No PostScript can also mean more speed, as the raster image generated within the computer is dumped straight to the output device without any further processing.

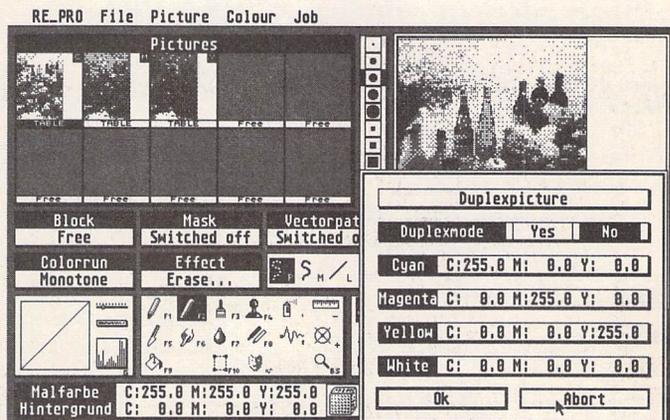
But the bottom line is the software. A couple of really revolutionary products for the ST/TT range could transform its prospects in the marketplace. People will sit up and listen if such programs can be shown to be capable of results which cannot be achieved on Macs or PCs, or to achieve comparable results faster and more comfortably. Once such lift-off is achieved, the peripherals and support infrastructure around the platform will quickly expand and mature. But are Calamus SL and Didot/Retouche Professional such innovative blockbusters? All will be revealed next month.

Colour printing in a nutshell

To reproduce a colour photo, the following principal steps are involved: First, the original print or transparency is scanned using red, green and blue light sources to produce a digital image containing three RGB colour separations. These can be displayed on a monitor, but the RGB method of colour mixing differs significantly from the CMY (Cyan, Magenta, Yellow) method used by printing presses: the former being an "additive" process in which light-emitting sources are combined, the latter a "subtractive" one with layers of ink reflecting and filtering light.

The conversion from RGB to CMY is not a straightforward algorithmic task, but needs to take into account the different physical properties of paper, ink, ambient light and so on. In practice, a fourth colour, black, is normally added to C, M and Y, hence the need for four-colour separations. "Separations" are files or printing plates containing only the areas where one of the basic colours occurs, in whatever percentage strength. Each colour is printed in lines consisting of different-sized dots, arranged at different angles, to trick the human eye into the optical illusion of thousands of different hues and tones. It is obviously important to get the screen angles and frequencies right to avoid problems like the tartan patterns called "moirés", but another troublesome aspect is poor registration - the four colours being printed out of sync, giving the sort of effects familiar from low-end newspaper colour photos. To help avoid these, the colour separations carry "registration marks", although in the end the quality of the result is often determined by mechanical accuracy and human skill at the printing press.

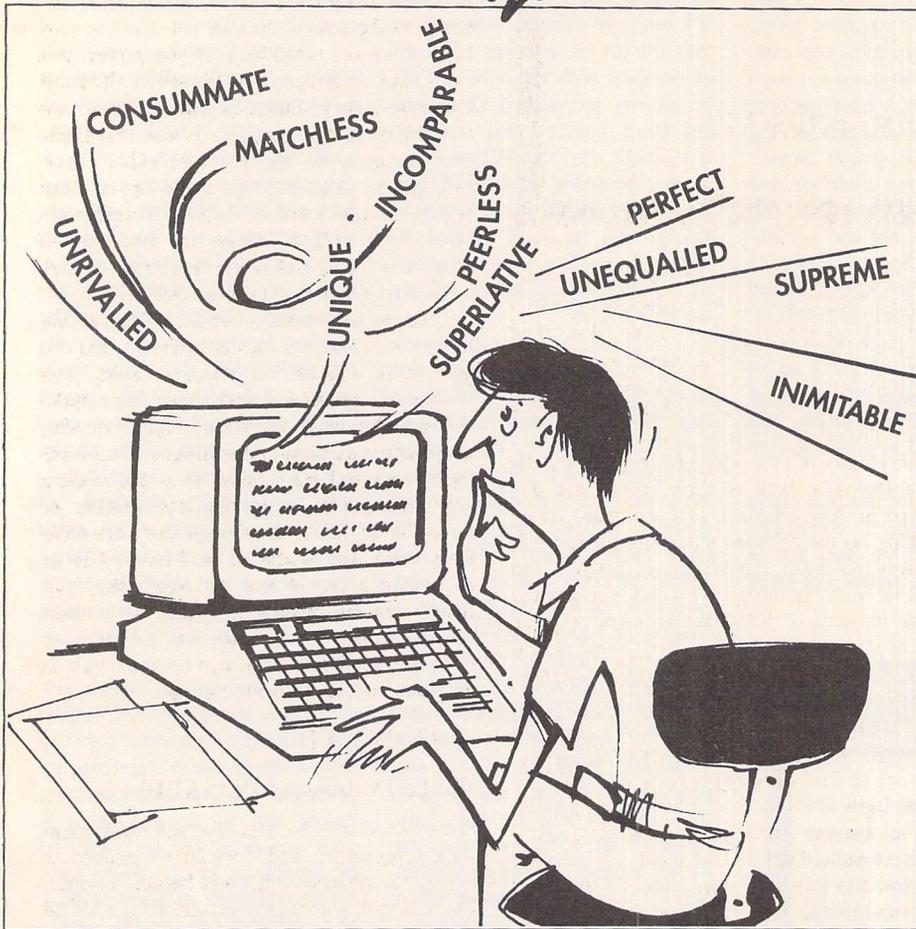
While "process colour" needs to be generated in this way, so-called "spot colour" - areas of solid colour as used in frames, bars, logos and so on, are a simple matter of specifying a particular ink, commonly chosen from standard palettes such as the Pantone range.



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PD Software reviewed by Sandra Vogel

GemLabel

Public Dominator Disc A128

Gemlabel is an all purpose label maker for the ST, and it beats all the others I have seen hands down. Its author produced the programme to solve a label-making problem in his own business - so I was anticipating good things from the outset. A large number of default label sizes are provided: mailing/address, audio cassette, video cassette, floppy disc, index card, and rolodex card. Default label sizes for each of these options are automatically loaded, but if they are not exactly what you want, you can edit the sizes and save your new labels for later use.

Having decided that your label has the required dimensions, you enter the data. You can choose from a variety of text formats and sizes: expanded, condensed, superscript, bold, elite, double strike, italics and centered. Once this is done, you can print as many copies of your label as you like. There is an option to print a test label first, and then your duplication limit is 2,147,483,647 copies - excessively generous! Printing out should not present any problems. A default printer driver is installed, but you are also provided with a nice and easy, setp by step driver creation programme. With the aid of your printer manual, default driver creation should not be problematic.

Because label sizes can be defined and saved, you can in theory have an infinite number of label sizes, though the option menu will only ever offer the set choices outlined above. GemLabel is mono only, and is one programme where a mono monitor rather than an emulator is recommended. You could probably scrape by with an emulator, though.

ST Almanac

Caledonia PDL Disc 132

ST Almanac is a must for all ST owners who have trouble organising their lives. It is an enhanced diary programme and is an ideal aid for people who forget birthdays, anniversaries and to pay their gas bills. It is also useful for storing extended information which is relevant to particular dates.

ST Almanac runs in medium and high res. It works well with a mono emulator. The programme stores data in one of three different kinds of file. There is one file for storing basic information relating to specific dates - birthdays, anniversaries, holidays, etc. The amount of text assigned to any one date using

this file type is limited as it is automatically displayed on the monthly calendar which is constantly shown on screen. Two other date types exist for extended information. The first is a scheduler - you can save detailed information relating to your daily schedule using this mode. The other, almanac mode, lets you save whole chunks of text relating to a specific date. Data stored in both of these modes are displayed in their own box, and are called up by clicking on the relevant date. Enough space is allowed for even the busiest of people. You flick through the three modes and access many other features of ST Almanac using a menu bar at the bottom of the screen. Doing this is easy, and you will quickly get used to the three modes of operation.

What more could you ask for? Well, ST Almanac also comes with its own comprehensive set of data files which place national holidays, historic events and other useful goodies in your system. Although the programme hails from Canada, English and other UK national days and events are catered for. ST Almanac looks good on screen and is easy to use. At last, a diary programme that actually does the business!

VIEWGIF

South West Software Library Disc 1630

Viewgif is a piece of shareware which tries to solve our picture viewing and conversion problems once and for all. The list of formats supported is impressive: Degas, Neochrome and

.FL2 from the ST; .IFF and .LBM from the Amiga and PC; .MAC from the Macintosh; and .GIF and .CP8 greyscale from a range of formats.

The images are not automatically squeezed to fit the screen. Instead, you scroll around them using the scroll bars. If you prefer, you can shrink an image to fit the screen. You can choose to view an image in colour or greyscale regardless of the original format. In either case the menu bar tells you the number of colours in the original picture and the number being currently used for display. Transformations of the original image are displayed as new windows, and you can make transformations till your RAM runs out!

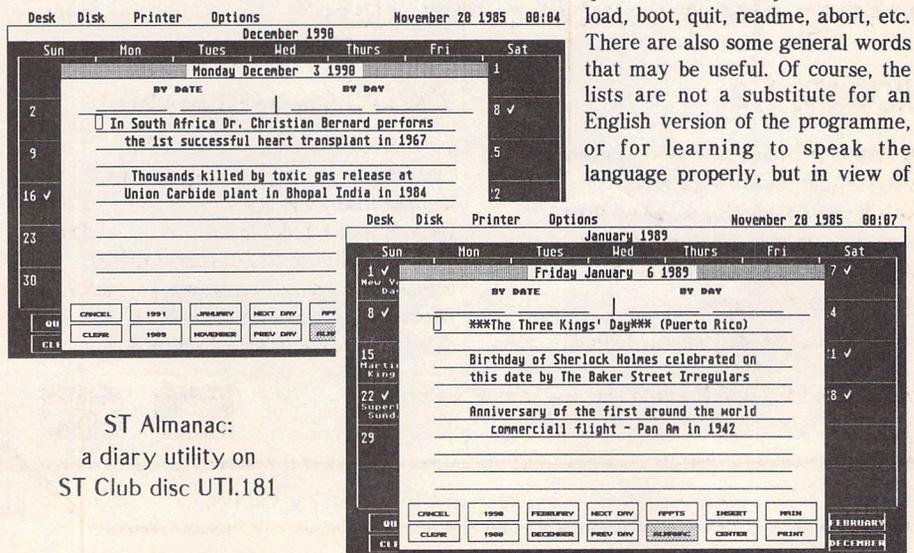
Once you have loaded an image and played with it to your heart's content, you can save it in any of the above formats. The variety of options outlined above must make Viewgif the most versatile graphic viewing and conversion programme around. Data loading/saving and conversion times are reasonably impressive considering the amount of work the ST has to do, though there are occasions when you would be well advised to go and make a cup of tea! It's worth the wait, though, as the quality of output is, in most cases, excellent. If you are into graphics, or need to do some data conversion, this is definitely a programme to look at.

TRANSLAT

Public Dominator Disc A210

Some would say that this does not really count as a programme, and I would be inclined to agree, for reasons which will become obvious. But it is still, potentially, extremely useful. All there is to Translat is four text files. Yes, really. Now we all know that a lot of good PD comes out of Germany, and a fair bit out of Holland. We Brits usually have to wait for some nice, kind person to translate such software before we can use it. That is where Translat comes in very handy.

The text files are no more than translating lists from German to English, English to German, Dutch to English and English to Dutch. Translations for the main computer words are provided, so now you can save, load, boot, quit, readme, abort, etc. There are also some general words that may be useful. Of course, the lists are not a substitute for an English version of the programme, or for learning to speak the language properly, but in view of



ST Almanac:
a diary utility on
ST Club disc UTI.181

the time factor involved in either of the above, Translat is likely to be a great help to eager beavers who can't wait to get their hands on new programmes.

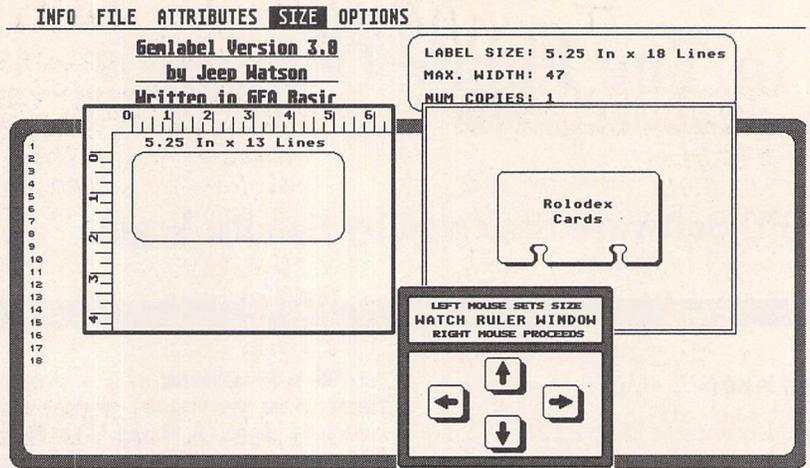
FastBase

Caledonia PDL Disc AU130

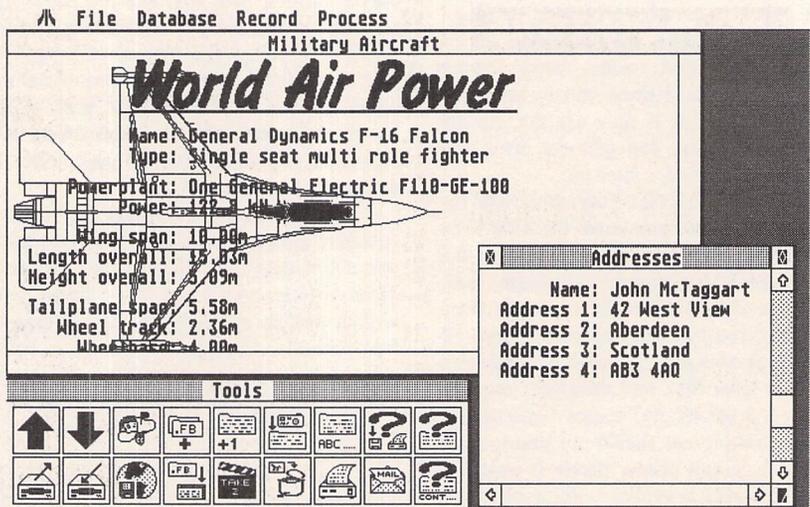
FastBase is a shareware database. On the PD version you can have a maximum of 20 fields per record, 10,000 bytes of data per record, and up to five databases in memory at one time. With the registered version these 'limitations' are removed, and you can have up to 200 fields per record, an unlimited number of bytes per record and up to 22 databases in memory at once. Registered users also get a printed, bound manual, which PD users will have to print out from disc. Sounds like a very good deal for twenty pounds. But how good is the programme itself?

From the first moments of use this programme is really impressive. FastBase runs in any resolution, and with its good-looking combination of drop-down menus and on-screen toolbox you can do almost anything you would ever want to do with a database. The effort the programmer has put into FastBase is clear in his attention to detail. The file selector, for example, something which most programmers decline to fiddle with, has been completely reworked so that not only does it look different, it also incorporates some extra functions. You can erase and rename files and format discs for example.

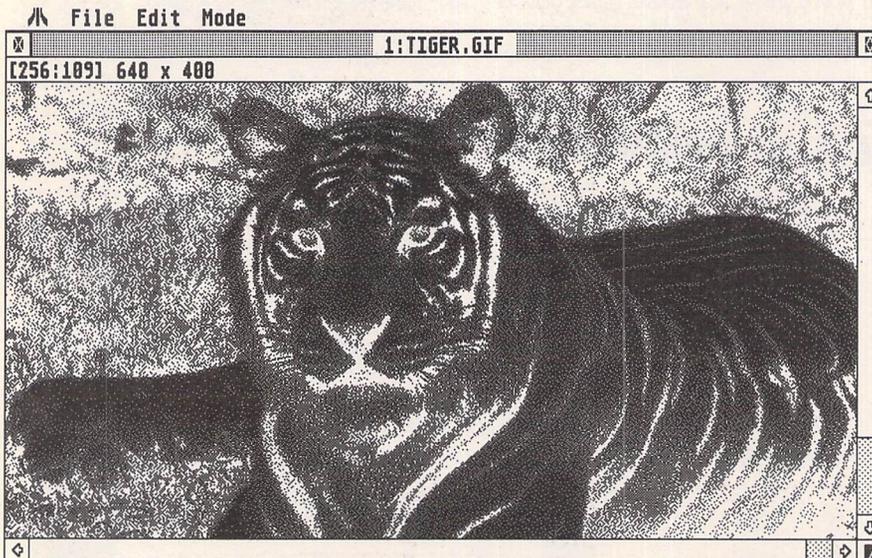
Furthermore, FastBase is fast, smooth, easy to use, and contains a range of functions a commercial programme would be proud of. It supports four field types and can do calculations based on field contents. An impressive array of formulae is provided. The on-screen display of records may be formatted to your taste. The number, range, and power of features supported by FastBase is too great to cover in such a short review. Suffice it to say that commercial databases should watch their backs!



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FastBase: a shareware database that offers much more than simple address lists. Available on ST Club disc UTI.182



A GIF format picture file being shown to screen by VIEWGIF. Available on ST Club disc GRA.143

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\$ Internals

Emulators

This article covers the alternative personalities of the ST: it can behave like lots of other machines, given half a chance - some more successfully than others.

When the ST was launched way back in 1985 it was dubbed the 'Jackintosh' after Atari's president Jack Tramiel and the (very similarly specified) Apple Macintosh. The ST was the 'power without the price' machine. When first launched, the 1040 was the first 1MB computer selling for under £1000 (£999 to be exact).

With the ST not exactly setting the micro world alight in the States, and Atari UK's marketing pushing the games aspect rather than the serious side, most of the business applications and support come from Germany. Owing to this lack of support in the UK most of us need software that cannot be obtained for the ST and would really like to be able to run it without the desk space (and expense) needed for another machine. The answer is to persuade the ST to think it's something else, either by software or hardware.

Simply Software

Just by running a program the ST can emulate lots of other machines, some very well some poorly. This on its own is not the whole story, however - different screen resolutions, disc formats and keyboard layouts add to the fun.

Target	Success	Speed
BBC micro	fair	fair
ZX81	good	excellent
CP/M 2.2	good	fair
IBM XT	v. good	poor
Atari XL	good	good

Using a mainly hardware solution enables the problems of speed to be mostly overcome, but other differences remain; these are surmounted by various methods including using the original machine's video circuitry (QL emulator).

Hardware emulators

Target	Success	Speed
QL	good	excellent
IBM AT	v. good	good
Mac	v. good	excellent

Different machines to emulate fall into two main groups: those using the same or similar processor (QL and Mac) and those that use an entirely different processing architecture (BBC, CP/M or IBM PC). Firstly, we shall cover the ones using different processors.

BBC

The BBC was a very successful 8-bit micro which used the 6502 processor (the first semi-RISC CPU). The software emulator available on the ST will run BBC Basic but has problems with machine code. As a result it is not really a serious proposition.

CP/M

In the old days of micros the most popular operating system was CP/M. MS-DOS is really very similar to CP/M. Most machines running CP/M used 8080 or Z80 processors - the Amstrad 6128 and PCW still run CP/M using Z80 processors. The emulator for CP/M is in the Public Domain and gives an equivalent 2MHz CP/M 2.2 machine which works very well. Unfortunately, most programs are not really worth running.

IBM

The first IBM PC (1982) used an Intel 8088 running at 4.77MHz. The software emulator for the ST is called PC-Ditto and is an excellent example of programming which can run most PC software very successfully. The drawback is its speed - about one third that of a standard PC! This is not too surprising, as each instruction of PC code has to be interpreted into 68000 code. Although very slow, this program can be very useful as a "get you out of trouble" option when you simply must run IBM code.

Hardware Emulation

Sinclair QL

Sir Clive Sinclair has had many brilliant ideas (remember the first scientific calculator, the black watch and pocket TV?) - a pity his mechanics couldn't match his ideas. The QL

Part 10:

This is the last in Paul Rossiter's series about the hardware elements of the ST range of computers. Let the ST Club know if you enjoyed them (or not) - it's your feedback that counts!

(Quantum Leap) was a good example of this, a brilliant design sadly let down by its abysmal keyboard and dismal data paks instead of proper disc drives. At around £150 the QL emulator seems very expensive (a good second hand QL can be obtained for about £50) but it does replace the ST's video circuitry with the original's and the end result is faster than the QL with a better keyboard and - most importantly - orthodox disc drives. As the QL uses the 68008, which is a slightly cut down 68000, there is no problem in running QL code, and remember that the QL's operating system allowed true multi-tasking. Also, QL Super Basic was way ahead of its time.

Apple Macintosh

Everybody knows about the Mac and it has a market impression of speed and flexibility. The truth is somewhat different. The base Mac is far slower and much less usable than the ST. Yes, the big Macs are super, but just look at their prices!

The Americans took the Mac to heart owing mainly to their much higher disposable income, and as a result there is some astounding software available even though it is usually very expensive. ST owners needn't despair: plugging in a Spectre for around £320 (including ROMS) gives them both an ST and a Mac.

Spectre GCR

The ST has always attracted interest by comparison with the Mac. Both have a 68000 with a monochrome high-resolution bit-mapped screen and 3.5 inch discs. The first emulators were the 'Magic Sac' from the States and 'Aladin' from Germany. Whilst these functioned quite well they fell down in not being able to read Mac discs directly and also in not being able to keep up with Apple's ROM developments quickly enough.

Using the original 64K ROMS from Apple and plugged into the ST's cartridge slot, the emulators worked fine once the programs had been transferred - the idiosyncratic Apple dual speed drives being a then insurmountable problem. Also, Apple then upgraded their ROMS to 128K versions, and newer software refused to run without these ROMS thus rendering the early emulators virtually obsolete. Aladin disappeared after version 3.0, leaving the field clear for Spectre. Dave Small of "Gadgets by Small" has a brain the size of two planets. (Why didn't Atari sub-contract the design of the TT to him?) Spectre uses the 128K ROMS and by incredible electronic trickery enables the ST disc drive to actually read and write directly to Apple discs. The end result is that compared to a basic Mac Classic the ST runs about 20% faster and with a 30% larger screen area. The large Macs with 24-bit colour seem esoteric compared to the ST, but then compare one with a TT running Spectre: this will outperform all Macs apart from the new Quadras which have the benefit of a 68040 and an enormous price tag. If the

much rumoured 68040-based TT appears then just see the difference! (A 68040 at 33MHz can run at 23MIPS! - the base ST only manages around 1 MIP.) The question of "why bother?" still applies. Recently I had to run Aldus Page Maker 4 on a Mac SE and it was painful: it took forever to load from hard disc, forever to perform even simple operations and the screen output was terrible. With Apples prices falling in their race for market share the price of an ST with Spectre GCR does look expensive, but in reality the Classic is a terrible machine not really suitable for serious work.

IBM PC

As mentioned above the sluggishness of the original PC-Ditto was a major problem. The designers at Avant Garde developed PC-Ditto 2, which was once again brilliantly conceived but ended up a disaster which killed the company. It was enormous in size, difficult to fit, impossible to keep working for long, and very expensive. Then the Germans cracked it. Two companies, Vortex and Compo, produced small and efficient IBM PC XT emulators that were fast and affordable. Since then both companies have progressed and can now offer 16MHz 80286 designs with 80386 designs waiting in the wings for imminent release.

The line up is thus:

		Typical price
IBM XT	PC Speed 8MHz	£100
IBM AT	AT Once	£150
	AT Once 16	£250
	AT Speed	£160
	AT Speed C16	£240
	AT Once 386SX	£???
	Supercharger	£460

The prices of these emulators vary widely depending on speed and processor. AT Speed even comes bundled with a copy of the DR-DOS 5 operating system, thus eliminating the temptation to pirate MSDOS from work!

All of these boards hold genuine processors or Japanese processors (V30) which improve on the Intel design whilst maintaining code compatibility.

Don't be misled by claims that the 386sx is faster than the 286. In fact, running normal code the 286 can be 20% faster on typical applications than the 386sx. The 386 is only needed for protected modes in Windows, etc., the requirements of which outstrip the basic ST anyway.

There is not a lot to choose between the two boards but my preference is for the Compo boards owing to:

- 1 CMOS CPU - runs cool
- 2 FPU socket (on C16)
- 3 Good support in English!
- 4 DR DOS 5 supplied (AT only)
- 5 Faster screen updating

All of these emulators have drawbacks: they have to be soldered in and they cannot handle high resolution screen mode such as

VGA in colour.

There is one other solution which has been around for years: Condor's Supercharger. This unit plugs into the DMA port of any ST without opening it up and holds the PC circuitry and even its own memory. The new ones even have expansion slots for such things as networks or VGA display adapters. Before you get too excited, look at the price (rrp £460). It would seem much easier to buy a cheap PC for around the same price, assuming the desk space is available.

Installation

All of the hardware emulators with the exception of the Spectre and the Supercharger require soldering in to some degree. Even in the ST-E most plug-in emulators need heavy power leads running in to prevent any glitches.

All of the manufacturers tell customers how easy it is to fit their products. Take this with a proverbial pinch of salt. If at all unsure of your skills do not try and install one yourself. The warranty on the ST will disappear, the emulator may be damaged, the ST may be damaged and your sanity may be damaged. Get a professional to fit it for you. A typical charge for this should be around £15 - £25, well worth it for peace of mind and someone to shout at if it fails!

Full Circle

It is perhaps ironic that whilst we all know of the ST's good points, not many other computer owners do. The Amiga can emulate an ST to a certain extent, but the most exciting development is the up and coming PC GEM Emulator. This program supposedly enables ST software to run on a PC, the faster the better. I suppose in the long run (2-3 years), when the ST is buried, we shall still be able to run our old favourites on our 80586 machines, but will software have advanced so much by then that we won't bother?

The only hope for Atari is that with PC's becoming over-complex because of their architecture restrictions, UNIX workstations will increase their market share. As is well known, the TT can easily run UNIX. If pitched at the right price (i.e. a lot less than at present), with a 68040 and a large monitor, Atari could capture a large proportion of the low-end UNIX market. Time is running out, though. Atari is still a large corporation but can its management evolve fast enough to save them?

Companies	Typical Suppliers
Compo 0480 891819	
Vortex 081 309 1111	Silica Shop
Spectre 0753 832212	Atari Workshop
Condor 0734 810066	

The

A to Z

of the ST

Compiled by Mark Baines

Jack: A recessed electrical connector in which a plug can be inserted.

Joystick: An operator control device for moving display elements on a screen.

Jump: Also branch. To stop executing one sequence of instructions and commence another.

Justify: In print preparation, to format the copy so that lines are of equal length with left and right margins vertically aligned.

Kernal: That part of an operating system or segmented program that must always be present in memory whenever another part is loaded.

Kern: Part of a character that overhangs another to aid even spacing.

Kerning: Adjusting the spacing between pairs of characters in print to create a more pleasing effect.

Key: In databases, a field that uniquely identifies a record and is used to locate it, e.g. account number. In data encryption, a reference necessary to encode the data and reconstruct it again. Also, an element of a keyboard, a switch which causes the transmission of a code to the computer. Also, to enter data from a keyboard into a computer.

Keyboard: Part of computer consisting of keys.

Keyword: Predefined word in a programming language, such as 'FOR'.

Kermit: A data transfer protocol designed for micros and mainframes.

Kilo - k: 1000 in decimal notation.

Kilo - K: In relation to computers, 1024 or 2¹⁰.

Kilobits: 1024 bits or 128 bytes.

Label: Characters that identify a sequence of instructions in some language's source code and may be entered with its first instruction as the entry point. Also, self-adhesive paper with identifying information to attach to disks, etc.

Landscape: A document that is wider than it is tall.

Language: A computer, source or programming language is an artificial one designed for use by humans in instructing machines. Their structure and syntax prevents ambiguous constructions. A language may be high-level or low-level.

Large Scale Integration - LSI: Semiconductors with between 100 and 1000 logic gates formed on a single silicon chip.

Laser: Device that produces a single frequency light beam with parallel waves.

Laser printer: Printer using a laser beam to write dot matrix characters onto a selenium coated drum, electrostatically charging the surface which is then coated with ink and resin powder which adheres to the charged areas. Paper is rolled across the drum and heated melting the resin and fixing the ink to the paper. Good quality, fast, quiet, versatile but expensive.

Latency: In disks, the time taken for the required sector to rotate under the disk head after the read command has been received.

Launch: Synonymous with Run.

Layout: The arrangement of text and images on a page.

LCD: *Liquid Crystal Display*. Display using polarizing screens, liquid crystal layer and tiny

transparent metal conductor layers requiring very low voltages.

Lead or **L**eading: Rhymes with said. Traditionally, metal strips used to space lines of text in print. In DTP it has come to mean the distance between the baselines of two lines of text.

Leader: Row of characters, usually dots, used to guide the reader's eye across the page, as in a Contents page.

Leaf: In a tree structure, an owner with no members. In printing, a single sheet with one page on each side.

Leased line: Telephone line that is permanently connected for continual data transmission.

Least Significant Bit - **LSB**: In a bit group, the bit at the farthest right position and transmitted first.

LED: *Light Emitting Diode*. Semiconductor device producing light by electroluminescence when a current is passed.

Left shift: Moving the contents of a memory location in increments to the left.

Legal: Recognizable by the system.

Library: File of frequently used source or object code routines to be linked into a program upon compilation.

LIFO: *Last In First Out*. Algorithm used to determine the order of use of items, such as program variables, forming the structure of a stack.

Light pen: Hand-held photosensitive stylus that detects light from a screen and identifies places for manipulation.

Line: A transmission medium, usually wires, and equipment for carrying speech and/or data. In print, a horizontal string of characters or dots on screen or paper.

Line-A emulator: ST GEMDOS routines containing the graphics primitives used by the VDI.

Line-F emulator: TOS routine that replaces frequently used command sequences with just one command.

Line art: Graphics produced by a 'drawing' program, such as GEM metafiles, for inclusion into DTP articles.

Line driver: Software or hardware that controls communications functions.

Line Feed - **LF**: ASCII character 10 causing an upward movement of paper in a printer or text on a screen.

Line noise: Disruptive interference (white noise) on a telephone line.

Line printer: Printer that prints a line at a time rather than a character at a time.

Line protocol: Set of procedures and rules that control the interchange of data in a comms link.

Line spacing: Number of lines to a vertical inch of print.

Line speed: Data transmission speed of a line measured in bits per seconds.

Link: In communications, synonymous with line or circuit although often refers to the data carrying facility rather than the hardware. In databases, using pointers or a table to establish access paths between records of two different files. In file compilation, joining the source code files together with the language's library routines.

Linked list: In programming, list in which each item except the last holds a pointer to the next in sequence.

LISP: *LISt Processing*. Interpretive language used in processing symbol lists and developing and modifying high-level languages.

List: Ordered set of data items and to print out

program source code.

Listing: Printed (to screen or printer) program source code or debugging and testing results.

Listing paper: Continuous stationary.

Literal: In program source code, items (usually within quotation marks) that are to remain unchanged during compilation appearing in output exactly as inputted by the programmer. In printing, a misprint.

Live: Functional and in use.

Liveware: Human computer users!

Load: To place program code or data in memory or processor registers prior to execution or to place a data medium (tape, disk) in a peripheral.

Local: Directly connected to a computer rather than a distant one via a communications link. In programming, a variable or function defined and existing only in one segment of a program.

Local Area Network - **LAN**: Computers or terminals directly connected with cable usually within a building.

Locate: To perform a search.

Location: An addressable position in memory.

Log: To record events, times and data into a computer file or book.

Log in, **L**og on: To begin a session on a network or remote computer by entering an ID and password.

Log out, **L**og off: To end a session on a network or remote computer by using the correct command.

Logbase: Variable or function that returns the address of the base of the ST's logical screen, the one onto which the GEM VDI draws.

Logic: The science or art of reasoning correctly. In computing, the process of breaking down problems of reasoning and comparison to elementary operations which can be performed by electronic circuits and using Boolean algebra.

Logic gate or circuit: Electronic circuit that performs a logic operation.

Logic level: One of two available control voltages as used in most electronic devices, usually +5V and 0V.

Logic operation: An operation in which one or more binary inputs are evaluated or compared in accordance with a rule of logic to produce a binary output.

Logic operator: Any of the operators AND, OR and NOT and their combinations.

Logical device: A virtual device, an operating system identification of a peripheral device that is not an identification of an actual device, e.g. Drive B on a single floppy ST.

Logical device name: An identifier by which a peripheral device is known to the operating system.

Logical Unit Number - **LUN**: A number equivalent to a logical device name.

LOGO: High-level language, graphically oriented and associated with education.

Long, **L**ongword: A 32-bit integer.

Look-up: To read the contents of a location in a table or index as a step in finding the storage location of a unit of code or data.

Loop: A sequence of instructions that is executed repeatedly in order to perform a single operation on or with different operands, thus avoiding the need to write multiple copies of that sequence.

Loop body: That part of a loop that performs the processing function.

Loop control: That part of the loop that performs the loop count and exit condition check.

Low: The lower of two possible voltages in control and logic circuits.

Low-level language: Language designed to produce efficient programs (quick and small) without particular regard for their ease of use. They typically produce one program instruction for each source code instruction and designed for particular processors or computers e.g. assembly language.

Low resolution: On the ST, 320x200 pixels with 16 colours.

Low speed: In data communications speeds of less than 2400 bits per second.

Lower case: Letters that are not capitals.

M.ROS Utilities Disk #1

Reviewed by Ofir Gal

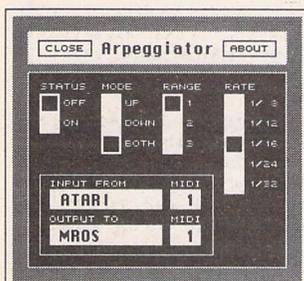
Steinberg have recently released a utilities disk to include with StudioPack, a package aimed at the high end of the ST MIDI market, consisting of Cubase, Midex+ and the above disk for £645. If bought separately, at RRP, these products would cost over £1000. The disk can be ordered directly from Evenlode UK for £24.95, and comes with a neat 16-page manual that can be added to your Cubase/Cubeat manual. There is no doubt in my mind that Studio-Pack is a good buy for someone who was going to purchase Cubase anyway, but is the utilities disk worth the £25 for someone already using Cubase?

What's on it?

There are nine desk accessories on the disk and four folders. The folders contain:

1. **Grooves** - 16 micro grooves for use with the groove quantize feature of Cubase.
2. **IPS** - two banks of Phrases (not Combis) for the IPS (Cubase only).
3. **Mixer Maps** for the MIDI Manager page including maps for DX7II, TX802, K1, M3, PPG, TC 2290, V50 and more (Cubase only).
4. **Songs** - a song by the German keyboard player George Kochbek. There are three versions for use with SY77, M1, and U20. Is this a space filler or what?

The more interesting part is the set of desk accessories, most of



Arpeggiator

them written by Dave Nicholson from Evenlode's help-line:

Fostex Link

This accessory was designed for use with the Fostex R8/G16/G24. These recorders can be controlled from Cubase/Cubeat, pressing Play on Cubase starts the tape, and there are extensive facilities for dropping into and out of record on the 'real' tape without touching its front panel buttons. Until now the only way to control parameters like pre-roll and rehearsal mode was via the MIDI Manager, which meant that Cubeat owners could only enjoy half the possibilities the MIDI port on their Fostex recorder was designed for (Cubeat does not have a MIDI Manager). Fostex Link is an accessory dedicated to controlling the Fostex range, and includes an 8-page manual that goes into every aspect of M.ROS/Fostex integration and I found it a very educating read.

I was unable to test Fostex Link because it will not even appear on screen unless it detects a Fostex recorder (which I do not have) connected to the ST, but it seems an interesting and useful accessory.

File size: 41KB.

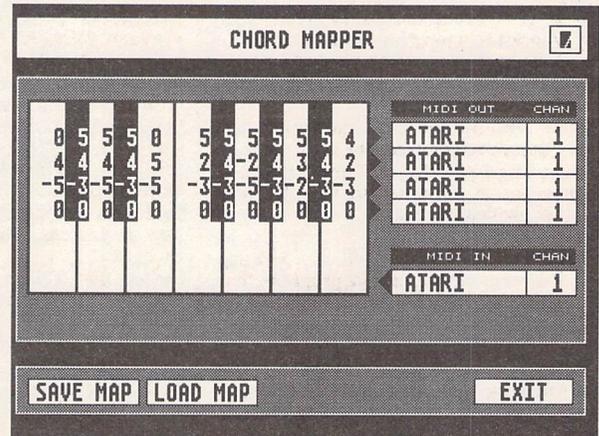
QBS Trax

This is another desk accessory for use with the MIDFed range of Fostex multi-track recorders. It simply lets you offset which Cubase track corresponds to which Fostex track. Cubase owners can do that from the MIDI Manager anyway, so this desk accessory is mainly aimed at Cubeat users.

File size: 9KB.

Chord Mapper

A simple accessory that allows the user to define a 4-note chord for each key over an octave. Chorder maps can be saved to disk for future use. One use I can see for Chorder is automatic



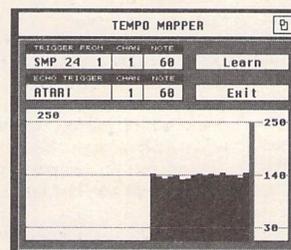
Chord Mapper

harmonising of melody lines, enabling the creation of instant string arrangements from single voice lines. In addition, each of the resulting four voices can be routed to a different MIDI channel and even a different device output (Midex, SMP24). As with all M.ROS programs, input can be a Cubase track or a master keyboard, and output can be a synth or M.ROS routing back to Cubase. This applies to all the utilities in this review. All the normal M.ROS controls such as play, stop, etc., are available at any time via the numeric key pad.

File size: 41KB.

Big Ben

A simple utility that can be of use in the recording studio, it displays the time into a song in hours, minutes, seconds and frames (SMPTE) or in bars, beats and ticks. Switching between the two modes is easy, simply hit "



Tempo Mapper

on the numeric key pad, or 'Esc' to quit.

File size: 9KB.

Arpeggiator

A great desk accessory which should prove useful to Cubeat users who do not have the IPS page or Cubase users who can't be bothered with the IPS when all they want is a simple arpeggio. Operation is easy with only a few parameters to control the rate, direction, range and the usual input and output facilities. The output of the Arpeggiator can be recorded on Cubase and edited in the usual manner, and even be processed in the IPS. As with the IPS, the accessory remains active even when closed.

File size: 13KB.

Tempo Mapper

Tempo Mapper is a desk accessory that allows synchronising to tape without sync code (requires SMP24 or Midex+). This can be useful to re-mixers who often want to add sequences to old tapes. The procedure is to first record sync code to the tape and then to tap your MIDI keyboard in time with the song on tape. Tempo Mapper will then generate a tempo map for use with the Mastertrack of Cubase/Cubeat. It does work, but it is very diffi-

cult to get it right first time round, and to my mind it falls short of C-Lab's offering, which although more expensive, can generate a tempo map from an audio source such as a snare drum or a clap.
 File size: 28KB.

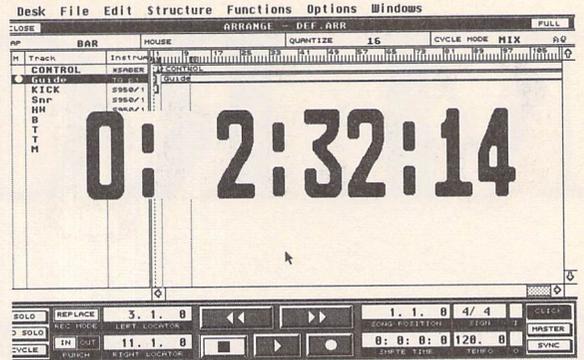
Tempo Calculator

Another simple and useful accessory is the tempo calculator which calculates the time in milli-seconds between beats. All you need to do is set the tempo and Tempo Calc will display the times for crochets, quavers, semi-quavers and triplets instantaneously. This should help you set digital delay times to fit perfectly with the tempo. A pocket calculator of course, can do the same job, but not as quickly.
 File size: 13KB.

The other two accessories are a printing spooler (TOS 1.2 or later, 3KB) that is said to halve the time Cubase takes to print with a floppy disk, and a blitter on/off accessory (2KB).

Conclusion

Highly recommended. The only qualm I have is the price, which on the face of it, is quite reasonable for a utilities disk, but when you add the price of Cubase/Cubedit to the equation things look different. One of the advantages of buying a Steinberg product is that once you have paid a small registration fee, you get free updates for the product, a policy which makes the products more attractive to start with. It may be argued that the programs on the disk are not a direct update but a separate package, indeed not written by Steinberg's Cubase team, but apart from the printer spool and the blitter on/off accessories, the programs are useless without Cubase or Cubedit. This set aside, the utilities are a great addition to an already powerful and flexible system.



Big Ben



Tempo Calculator



from the ST Club
 Price: £19.95

Major Features of this powerful and sophisticated font editor include:

- Font Format Conversions from Signum, Calamus, Degas, Macintosh to GEM, and from GEM to Signum;
- Global Effects: Shadow, Shade, 3D, Contour, Pattern, Lighten, Thicken, Slant, Smooth;
- Grid Edit facilities: freehand, straight line, geometric shapes, bezier curve, nibs, block move and block copy, fill, zoom;
- 256-character Buffer;
- Show font to screen and Print font to paper;
- Re-scale font by point size, by resolution, and by a combination of the two;
- full keyboard shortcuts.

Timeworks Desktop Publisher

User Guide

260+ pages for £9.95
 from the ST Club

At last: a users' manual written from a user's perspective. The author, David Smith, a dedicated user of this versatile package, has learned through experience, and trial and error, how to produce remarkably professional results. This book aims to pass this knowledge on by introducing the basics in such a way that each new feature builds on what has gone before, to form a kind of "learning curve".

The book is full of innovative ideas to produce newsletters, C.V.'s, posters, reports, theses or indeed a professional book (as the guide itself demonstrates). Each feature is explained in easy-to-follow, step-by-step instructions that every novice will appreciate.

Topics covered include: the installation process, setting up a document, importing text and graphics files, special effects, and an extensive section on installing and designing fonts - to make your work really stand out from the crowd. There are numerous worked and visual examples throughout the text.

Going On-Line

Part Three: The First Times

First Time

Have YModem ticked in the Uniterm Transfer menu if you haven't got ZModem set up, and switch the essential History Buffer on. Have a 1 - 12 letter Password prepared. Go to the dialler and enter the details for InterNet. At the terminal screen click on InterNet in the pop-up menu and Uniterm should dial. If you get an engaged tone, Uniterm should display 'BUSY'. When InterNet answers (and after much whistling) you will get a 'CONNECT' message. It helps if you now press the 'SPACE' key. Press 'RETURN' when you get the 'Hit Return' message.

The BBS details should follow. Remember you have the History Buffer on and you can read all this later. Press 'O' for ASCII text mode and the title screen will display. As a new user enter 'O' at the 'ID/Password' prompt to register and answer the questions. Answer 'YES' for InterNet to save your Password. Leave the computer details as they are except reply 'Off' to Paged Output by pressing '4', then '6'. If necessary, your display can be paused with 'CNTL-S' and started again with 'CNTL-Q' at any time.

After this it will take a day at the most to get validated. This is to stop unscrupulous elements at this stage entering messages on the Net using vulgar names and other hassle that sysops unfortunately have to prevent. Your present status only allows you to acquaint yourself with the rules and methods of this BBS. At the 'Select or <CR> for menu' prompt press 'RETURN' to display the Main Menu. At any prompt 'HELP' displays Help. Don't hesitate to use it.

You ought to access the System Notices at the Main Menu and visit the Database area and read the Bulletins which contain information to help you. These messages can be read now or downloaded as a separate file to read off-line later which is much quicker. Make sure you download the File Directory Listing to see what files are available. Switch Download Protocol on by pressing 'T' for Toggle and 'Z' for File Directory Listing. You will be asked for your Transfer protocol. Enter 'K' for 1K XModem/YModem or 'Z' for Zmodem depending on your set-up. Start X/YModem or ZModem Receive (RZ.TOS) using your Function key macro. Also get the Conference Reports which will give you the list of InterNet's message conference bases. Later, you will need to decide which are of interest to you.

InterNet will log you off after 20 minutes, or you can by typing 'OFF' at any prompt or 'B' from the Main Menu. Before you are logged off you will be given your ID. Make a note of this.

Now save the History Buffer. You can read it in Uniterm or in an editor. Review what you have done, making notes if necessary. Later, enter your ID and Password combination in a Function key macro as 'ID/Password' e.g. '1234/fred' followed by 'CNTL-M' which is a Carriage Return. On another Function key enter 'MA' and 'CNTL-M'. This is InterNet's macro command to show all new messages.

In an editor or word processor in ASCII text mode with line lengths of 79, write a short message of greetings to everyone on the network or something similar. You are going to send this when you next log on. It is far better to

This month, to show you what is involved in going on-line, Mark Baines takes you through the steps of logging on to InterNet, a major FNet BBS based in Aylesbury, Bucks., on 0296-395935.

write messages and replies off-line rather than make mistakes and waste time on-line.

The Second Time

A day or two later log on again. At the 'ID/Password' prompt press your Function key macro to send this. At the Main Menu you can now access the Message Bases by pressing 'M'. You will see the InterNet SIG Menu. A SIG is a Special Interest Group containing several conference bases which can be Toggled on or off for reading. Press 'T' to Toggle on each conference base in each SIG you are interested in.

Pressing 'A' will display All the many hundreds of messages in the bases you have Toggled on. However, this may take longer than you have time for. It is best now to press 'C' to Clear the present messages. The next time you log on, the system will display messages received after you log off and always keep track of where you are.

You need to set up the continuous scroll message display. This will cause the messages to flow by quickly into your History Buffer. This is vastly cheaper than reading them on-line or repeatedly pressing the 'Next' message key. Select any base and at the 'Msg Cmd (?=Menu)' prompt press '@' to toggle continuous scroll on.

Go to a conference and at the 'Msg Cmd' prompt press 'E' to enter a message and choose 'B' to upload it. Enter 'K' or 'Z' as before, start X/YModem or

ZModem Send (SZ.TTP) and enter the name of your text file. You can send text files as an ASCII transfer but they will be subject to line noise and corruption.

Before you log-off type 'MENU' to go to the Main Menu and press 'L' to Leave a "thank you" message for the Sysop. Use the Message Editor 'A'. When you have finished enter '/S' on a line on its own to save the message and then log off.

Future Visits

At the 'Select or <CR> for menu' prompt press the Function key macro for 'MA'. This will cause all new messages to continuously scroll into your History Buffer. If continuous scroll is not on, stop all text output with 'CNTL-C' and at the 'Msg Cmd' prompt enter '@' again. Then enter 'MA' to continue reading. Do send replies to these next time.

Don't forget the File Directories. Most BBS work on some sort of credit points system where the more you contribute the more you can download. However, some files might be free of this system. Files can be searched for with the 'F' command or the more complicated 'L' command. When you find what you want 'D' will download it.

With careful off-line planning you can save a lot of time and money on-line. More savings and greater flexibility can be had with the Maximiser off-line reader. More of that at another time.

From the Hotline

Hints, tips and news from the Compo Hotline

AT SPEED

AT SPEED software has been upgraded to version 2.4. The main feature of the new release is support for Overscan, a hardware modification for the STFM or Mega ST (not STE). With Overscan, it is now possible to use the Hercules display mode with the full width showing on the screen. The new software also resolves some minor incompatibility problems. Upgrades cost £4.99 from the COMPO Hotline. Overscan is available from the Atari Workshop/System Solutions (Tel. 0753 832212).

DR DOS 5 software (supplied free with AT SPEED) has been upgraded to allow Viewmax to work in VGA emulation mode. Upgrades are free; just return your DR DOS disks to COMPO with an SAE. Registered users of any SPEED board can buy DR DOS direct from COMPO for £9.99.

That's Write tips

That's Write (and *Write ON*) can be customised to start up in the way you want it to. When it loads, it looks for a number of default files: TWRITE.INF (or WRITE_ON.INF - *Write ON* users please adjust other filenames correspondingly), with information about search paths; TWRITE.TWP, the default printer driver, TWRITE.LAY, for page and paragraph layouts, TWRITE.MAC for macros, and FONTS, an ASCII file containing the names of all fonts you wish to auto-load. It is only necessary to list the screen fonts, prefixed "S", as the printer fonts will be hunted out automatically according to the path specified in the printer driver. Font information is contained in TWRITE.LAY as well, so you may prefer to specify your auto-loads fonts there; but don't delete the file called FONTS, or *That's Write* will not load.

TwRITE.INF can work against you if you move *That's Write* to a different folder or logical drive. *That's Write* will look at the old paths, and fail to start. Solution: delete TWRITE.INF, start the program, and "Save" in the Preferences option to create a new one.

It's not obvious how to set some defaults. For example, how do you set hyphenation off as a default? The trick is to use an auto-run

macro. A macro defined on the ESC key will automatically execute when you load the MAC file containing it. So, if the ESC macro is defined to switch off hyphenation (using the keyboard shortcut: CONTROL-O H CONTROL-O RETURN), and if this macro is saved in TWRITE.MAC, then it will load and run whenever *That's Write* is started up. Other defaults could be set in a similar way, for example to configure printing to use the serial port ("Modem").

Thanks to Alan Kennedy who wrote with a suggestion for using a ramdisk to speed up printing on a single drive system. He has version 1.34 (a pre-COMPO version); upgrades to 1.5 cost £50.00 - it's steep because it involves a new dictionary license. He also asks whether *That's Write* supports Jeremy Hughes' 'Trimfont' and 'Fontxpander'. Not yet: this facility is part of the forthcoming *That's Write 2*, and will save us all a lot of disk space, also making multi-font printing much more practical for floppy-based systems.

Alan has problems with underlining, having created a new XFONT for the proportional font in his Star LC10. The probable reason is

incorrect widths table in the .WTS source file - essential for making use of any proportional font.

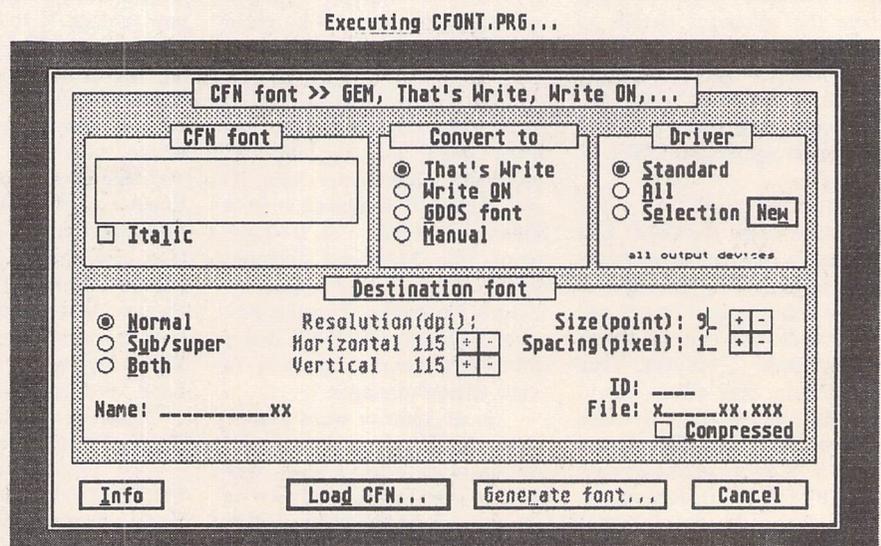
C-Font

Jeremy Hughes has worked with COMPO to produce a handy utility for converting Calamus-format .CFN fonts into GEM fonts, including all the special features required by *That's Write*. There is an option for standard GDOS fonts as well. The Calamus font format is exceptionally well supported at every level: Public Domain, budget fonts, and top-level professional fonts. So this gives *That's Write* users easy access to outline fonts, and will be especially valuable when combined with font compression in *That's Write 2*. Full details will come in a future issue; the cost of C-Font will be modest.

Finally...

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



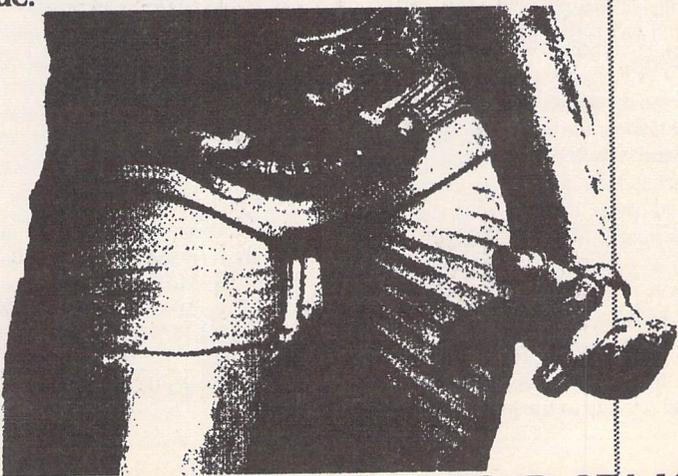
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 Latvian Lithuanian
 Malaysian Manipuri Marathi
 Mizo Moldavian Mongolian
 Naga Nepali Norwegian Old
 Cyrillic Polish Portuguese
 Punjabi Pushto Rajasthani
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 Uighur Ukrainian Urdu Uzbek
 Vedic Vietnamese

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Jeremiah's Journal

History only records one nice thing about Benito Mussolini. He is said to have "made the trains run on time". In the world of Railroad Tycoon, Jeremiah finds that this is actually no mean feat.



Splinterbone

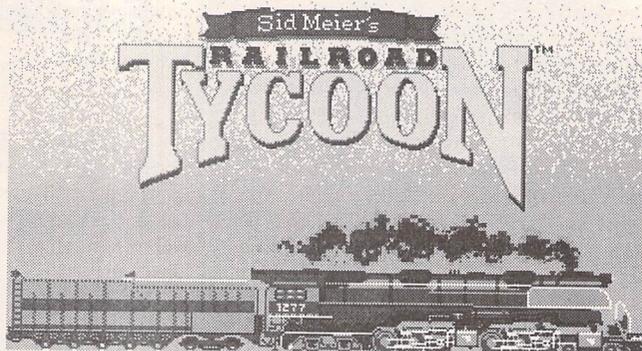
Railroad Tycoon is billed by its publishers as "empire building in the golden age of railroads". You play the part of a young entrepreneur setting out in a land full of opportunity and promise. The world is developing in leaps and bounds, industry is booming, the population is swelling and the need for a quick, cheap and reliable means of transporting the wealth of the nation is sorely needed. Your job is to seize the moment and grow alongside your country, provide the services required and build for yourself a position of immense wealth and power while, at the same time, helping to shape the future of the nation. So, raise capital, lay track, and let the iron horses roll!

From the very first moment that you lay hands on Railroad Tycoon, you begin to suspect that this game just might be something really special. The box itself has the reassuringly hefty feel of a full-size house brick, and an examination of the contents reveals a multitude of goodies.

The software comes on two double-sided disks, and you'll need a full megabyte of RAM with which to run them. Also in the package are a comprehensive 180-page game manual, a 12-page machine-specific technical supplement, and two full-colour double-sided player-aid cards.

The game manual is split into seven sections and each section comprises a number of chapters. The overall layout of each chapter is simple and logical which enables the information to be presented in clearly understandable terms. The scope of the manual, as you would expect from its size, appears to be extremely comprehensive. I have yet to find any aspect of the game which is not covered in sufficient detail.

The first section serves as an introduction to the game and a guide to the game mechanics.



The various options, displays, menus and menu selections are explained in turn with copious illustrations and examples. The second section which follows then takes the player through a sample railroad tutorial. This tutorial is partly software based with explanations contained in the manual to describe what is happening on screen and the desired outcome from each action. In this way, with assured guidance and encouragement, the player is gently introduced to the basic principles of a very complex simulation and, having played through the tutorial a couple of times, will have no trouble in getting to grips with the game proper.

The third section of the manual goes on to explain and discuss the business of railroad engineering, as it relates to the game, in much more depth. It is here that you'll find the information which will influence how and where you lay your track, which kind of bridges to build, how to successfully site your stations, what factors to bear in mind when developing trains and routes, how to develop your network and services, how to identify the most lucrative cargos, and how to take advantage of priority shipments. In short, a whole host of variable factors and conditions, some controllable and some uncontrollable, which will dictate the course that your empire building will follow.

If that weren't sufficient complexity on its own, the next section then tackles the financial side of railroad operations. The day to day flow of operating income and expenditure is covered fairly fully in the previous chapter. This section therefore concentrates on the capital side of the business. Your railroad has shareholders (at least, it has until you can

make enough money to buy them out), and you are responsible to them for any profit or loss that the business makes (too many losses and you'll find yourself ousted in favour of someone more financially sound).

Speculate and Accumulate

On top of this, there is the necessity to "speculate to accumulate". An expanding enterprise needs a strong capital base and therefore the opportunity exists for you to raise additional funding through new share issues or by taking out long term loans. As a result, the money aspects of your operations can become extremely intricate. In order to make sense of your decisions and reflect a true picture of how you are doing (for the benefit of both you and your shareholders), at the end of each fiscal period you are presented with a set of financial statements (e.g. profit and loss account, balance sheet, share price movements, etc.). These are complemented by other efficiency and performance reports.

The shareholders decision on whether to retain or replace you will be primarily based on how the share price has moved during the period. But movements in share price are linked into the amount of profit realised, and of course the profit made will greatly depend on how efficiently you've managed to operate your trains. So, all in all, there are very few factors which you can afford to ignore.

A final level of complexity is then introduced by the addition of other entrepreneurs into the railroading scenario. Your business does not operate in a vacuum. It's a cold, competitive, dog-eat-dog world out there and not everybody can become a tycoon. As well as yourself

there are three other operators present who are determined to find fame and fortune, and if they have to do it over your dead body, then so be it! Your competitors will try to force you out of business by running their services into your stations, at a more cost-effective price, and/or by buying up your stock on the open market in order to mount a takeover bid. Of course, there's nothing to stop you doing the exact same thing to them, and you could wind up operating not one but two, or three, or perhaps four railroads!

Sections six and seven of the manual then go on to fill in a lot of background detail concerning railroads and railroad operations, as well as items which are of particular relevance to the game. The history of railroads, their development and impact upon our lives, plus the rise and decline of the steam engine, are covered in brief but fascinating detail. There is also valuable information relating to the various game worlds, the technical specifications of all the engines present in the game, biographies of a number of historical personalities (any of whom could become your competitors), plus designers notes, playing tips and recommended further reading (should you feel so inclined).

The technical supplement provides further information which is specific to your computer. Loading instructions, additional features, keyboard shortcuts, colour coding for various displays, and world economy notes are all included. The player-aid cards amplify this information with clear summaries of all icons used in each of the four different worlds plus a pictorial depiction of how cargos can flow through the economic model to your financial benefit (e.g. move coal to a steelworks and it will be transformed into steel, move the steel to a factory and it is processed into manufactured goods, which can then be transported to a city or a port for sale or export). In short, play your cards right and you can get paid three or four times for shipping what is basically the one lot of cargo!

This is obviously not a game that you are

going to be able to get to grips with by just swiftly leafing through the manual. In order to enjoy its full richness you are going to have to spend some time in studying and absorbing a mass of detailed information.

Choices and Options

Partway through loading the game, the first screen display will ask you to select either keyboard control or a combination of keyboard and mouse control. This is quite unusual in these days of fully mouse controlled, icon driven games and I can only assume that its a bit of a throwback to the game's PC origins (an environment where rodents are becoming increasingly popular, but are not yet considered essential). However, although it takes a few plays in order to become accustomed to this interface, it does work very well and presents no problems at all after a little practice.

Once you've selected your control method, the game will finish loading, presenting a series of title and credits screens in the process, and you will be presented with the opening menu. From here you can elect to start a new railroad, load a previously saved game, or load the tutorial scenario.

Further option selections follow once you decide to start a new railroad. You need to choose which world you wish to play - Eastern USA (1830), Western USA (1866), England (1828) or Europe (1900). Then select a difficulty level - Investor, Financier, Mogul or Tycoon. The difficulty level affects how much revenue is earned by each delivery and, in other versions, also limits your playing time (from 40 years at the easiest level to 100 years at the hardest). However, in the ST version this facility has been disabled and all difficulty levels allow you a term of 100 years to make your fortune.

Following on from this, you have one final selection to make - the setting of the Reality level. To do this you are presented with three options and you need to toggle between two choices for each option.

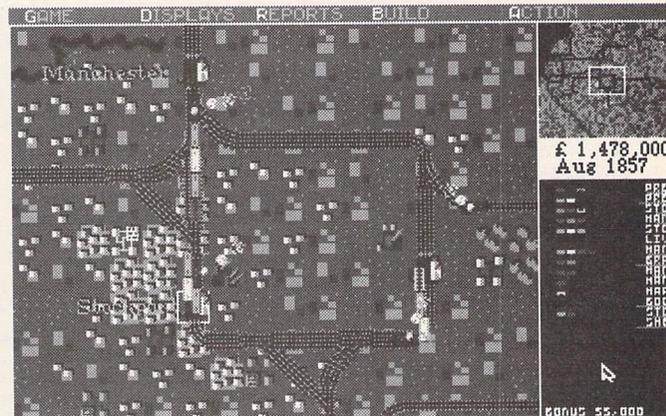
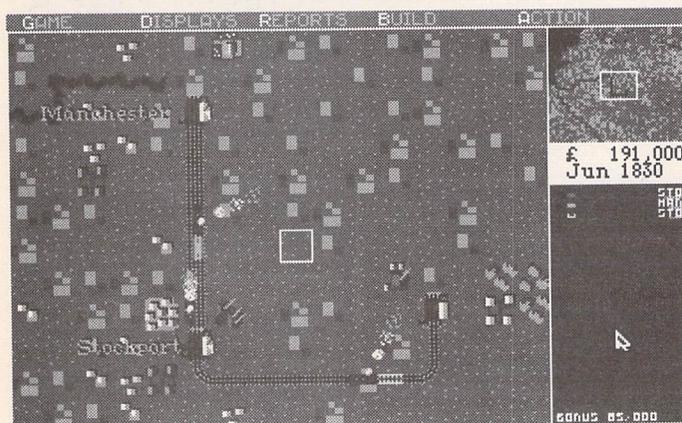
The first choice is between "No Collision Operation" and "Dispatcher Operation". This allows you to select between controlling the signalling and routing operations yourself, or leaving them to the computer to handle. The second choice is between "Friendly Competition" and "Cut Throat Competition". This is fairly self explanatory - on the one hand your competitors will keep their distance and not try to enroach on your operations (although there's nothing to stop you moving in on theirs), on the other hand it's every man for himself and the devil take the hindmost! The third choice is between "Basic Economy" and "Complex Economy". The difference here is between each moderate size city station demanding all cargos (Basic), or only demanding a selection of cargos dictated by the needs of the industry and community which surrounds it (Complex).

As you can probably guess, the various combinations of game worlds, difficulty levels and reality levels allow for a number of different scenarios to be created, each of which can be very different from the others. But the variety is further improved when all options have been chosen and the actual game world is then generated. Each world approximates to the geography of the region portrayed but none of them accurately reflects real geography. To each basic map is added a mix of resources and population centres. This allocation is made completely at random and therefore London may be a main industrial centre in one game, and no more than a country hamlet in the next.

This random generation of world elements plus the different option settings mean that it is very unlikely that any two games of Railroad Tycoon will ever be exactly the same as each other.

Starting out

For my first proper game (following on from working through the tutorial a couple of times) I chose England in 1828, and decided to start off my operations in the North West of the



The network in 1830. Two years have passed and, as well as the main service between Manchester and Stockport, there is now a small spur line extending towards Stockport Crossing.

The area around Stockport in 1857. Notice how much busier it has become. Funnily, it was Stockport and not Manchester that became the focus of my network.

country (since that's my neck of the woods). I quickly identified that there was a need for passenger and mail services between Manchester and Stockport (both were designated suppliers of passengers and mail and, since I was using the Basic Economy option, both were markets for all cargos).

I quickly set up a track between the two centres and then built a station at each end. Laying track is a simple matter of placing your cursor on the point where you wish track to commence and then pressing a combination of the Shift key plus the key on the numeric pad which corresponds to the direction in which you wish to proceed (i.e. "8" equals north, "3" equals southeast, etc).

However, once you've laid your first length of track, all succeeding lengths must join onto those already laid. It is only on the very first length that you get to choose where you wish - so choose your starting point carefully! If you later consider the volume of traffic on any particular stretch of track to be exceptionally heavy, it is possible to lay double width track in order to facilitate the two way flow of commerce (and boost the bank balance further and faster).

I then built my first train. For this you need to have an engine shop attached to a station. The first station you build comes complete with an engine shop, but any further train building facilities you require will have to be paid for. The only locomotive available at this stage of the game is called the "Planet". This was built by Robert Stephenson for the Liverpool & Manchester Railway and delivered in October 1830. It proved to be extremely successful for its day, but is best limited to pulling just one or two carriages at a time. Not very impressive by present standards, but fortunes have been built on less.

In no time at all, I had established a hectic shuttle service moving copious amounts of mail and passengers between my two stations. I double tracked the line between them just to keep up with the business, and improved my stations until they were actually rail "terminals" serving a wide area of the country surrounding them as well as the two principal cities.

I then identified the presence of some coal deposits in an area near to Stockport called Stockport Crossing (a location which, as far as I am aware, does not actually exist). Since there was a steel mill located very close to Stockport itself, it seemed an obvious move to start running coal into this facility. So I built an extension to my existing fledgling network and began to shift bulk freight along with my more established cargos.

I was amazed at the result. Stockport quickly converted the coal into steel which I then transported to Manchester. Revenues began to climb rapidly. More houses began to appear around the outskirts of Stockport as the population rose to take advantage of the new employment opportunities I had created. This

in turn increased passenger traffic and provided a further increase in revenues.

Suitably encouraged, I then drew upon my (admittedly limited) historical knowledge and looked towards Liverpool as my next intended destination. I considered that the port facilities there would provide a rich source of imported goods for my growing cities and a ready market for their improving outputs. The resulting success of this extension to my Line brought raw materials, such as cotton and hops, into the factories where they were swiftly processed into more marketable commodities, such as beer and textiles. Business boomed bigger than ever.

My network continued to grow. Further stations opened up in Bolton, Preston and Lancaster. Then I moved eastwards to establish stations in Bradford and Leeds also. One of my rivals had opened a service in Chester which was extremely close to my Liverpool operation. I decided to take a risk and ran my own service from Liverpool into Chester, thus initiating my first Rate War.

A Rate War takes place over two fiscal periods, during which the quantity of cargo shifted out of the station by the competing factions is closely monitored by the town council. At the end of that time, a vote will be taken and the exclusive contract to service that area will be awarded to the railroad which has provided the best level of service (i.e. transported the most cargo) during the competition periods.

I duly won my first Rate War and began to push my operations further into Wales which proved to be a rich source of raw materials and cargos. At the other end of the network, I was moving down country towards Wolverhampton and Birmingham.

A Tycoon Is Born

By this time my empire had become big and sprawling. I had long since replaced the basic "Planet" locomotive with a succession of faster and more powerful engines. I now had a large number of trains which were regularly pulling the maximum load of eight full carriages on every trip. I had upgraded a number of my main terminals to include restaurant, hotel and storage facilities which improved the quantity of business which each of these centres attracted.

I had also, by this stage, hit the maximum limit of 32 trains in operation at any one time. This caused me to re-appraise my strategy as it now became necessary not to move anything and everything that was available, but to carefully judge which cargos would prove to be the most lucrative and to deploy my scarce resources accordingly. This called for some extensive alterations to be made and some of my stations fell into disuse since I no longer had the trains available to service them.

However, revenues continued to roll in. My share price had been rising steadily through-

out the game with the result that I now had four times as many shares in issue than I had started with. It seems that when your share price climbs towards the £100 per share mark, your capital base doubles so that instead of 100,000 shares at £100 each, you are given 200,000 shares at £50 each. From this new level, the price will rise or fall in line with your fortunes until it once again approaches £100 when a further split will then occur. I found myself in a very healthy situation by this stage with a total of 400,000 shares at a price of about £90 apiece. My shareholders loved me!

With plenty of money in the bank and my own resources stretched almost to the limit, I began to look around for other means of expansion. I had a hankering to extend my network out towards the east in order to create a coast-to-coast service (somehow the idea of a Liverpool to Hull express had particular appeal to me). However, there was another railroad operating in that area at present (run by my old friend Robert Stephenson himself). My first impulse was to run my services into his stations and gradually move myself across country by winning a succession of Rate Wars. However, I had taken part in a number of these conflicts by now and knew that if I was to win in this way I had to dedicate trains to the target stations. I no longer had trains available that I could afford to devote to that strategy.

However, there is always more than one way to skin a cat, and if I could run one railroad, I could run two, couldn't I? I rang my broker and made enquiries about share prices - particularly Robert Stephenson's share price. Well, you've got to do something with all that spare cash your trains generate, haven't you?

Railroad Tycoon is an immensely pleasurable game. It provides a depth and breadth of play which is present in very few other games. It boasts an easy to use interface, an extremely rich background and a level of complexity which can be controlled by the player to present an increasingly difficult and complex challenge. It's a game that will take a little bit of time to get into properly simply because all of its features are too numerous to absorb in just a couple of sittings. But it is a game that will reward your efforts and your interest a thousandfold. It may take you a month to fully understand its workings, but it's a game you'll be playing for years to come.

Very highly recommended - possibly the very best ST game of 1991. Buy it and enjoy!

Product:..... Railroad Tycoon
 Written by:..... Sid Meier, Bruce Shelley
 and Max Remington
 Publisher:..... Microprose Software
 Price:..... £34.99
 Requires:..... 1 megabyte RAM

STICKS AND STONES

Günter Minnerup is off into workstation wonderland this month, examining his brand-new TT and wondering what he has let himself in for...

At last! The long-awaited TT has finally arrived on my desk. So there it is, the future of the ST series, sitting in front of me, looking rather more inconspicuous in its off-white plastic than it always did on those glossy promotional brochures. As I write this, the machine has been barely unpacked, so any serious technical appraisal will have to wait until its strengths and foibles have fully revealed themselves. But as many of you may well be thinking of upgrading to a TT yourselves, and since the games-oriented, glossy Atari press can hardly be accused of promotional overkill of the TT, I thought it might be useful if I shared my initial impressions with you from an ordinary user's, rather than a techie's point of view.

The "wedding cake" design has provoked some unflattering comments, but I like it. The PTC1426 colour multisync VGA monitor, enormously large and heavy in comparison with the SM125, slots neatly and securely into the main motherboard box, the SCSI hard disk is an integral part of the computer, and the keyboard looks smart and business-like. The hard drive comes ready-formatted and partitioned, the computer waits for the drive to come to full speed at boot-up, and even the mouse port is in a readily accessible place on the side of the keyboard. I have taken an instant dislike to the keyboard, but that may well be due to being accustomed to the Mega ST's which has a much more positive feel, and I utterly hate that plastic brick which Atari describes as a mouse. Investigation of the hard drive with the ICD utilities reveals it to be a 48Mb Seagate ST157N, not the fastest or most reliable around. The built-in floppy drive is a standard 720k capacity, although Atari promise that future TTs will come with 1.44Mb high-density drives.

On booting up - the default is the TT's medium resolution - it feels much like a slightly souped-up ST. Experimentation reveals that screen redraws are faster in ST high-resolution mode, no doubt because of the smaller amount of video data to be shifted around. There are two types of RAM for

the TT: standard ST RAM and fast TT RAM. My entry-level machine comes with only 2Mb "slow" RAM, and it takes me barely an hour to regret this when I try running some of the more demanding applications or to print to the SLM804 laser: Fleet Street Publisher looks much faster than it did on the Mega, but refuses to load anything with more than stamp-sized bit images in it, and will only print the smallest of documents. Calamus doesn't show any appreciable speed increase (it is notoriously sensitive to the amount of free RAM available) and also refuses to print. Much the same story with Retouche Professional and Didot Professional. Protex runs fine, but not that much faster than on the Mega. Clearly, more RAM is urgently required, but this is not a simple question of slotting in a few SIMMS: there are two different expansion boards available from Atari, one for more ST RAM, and one for fast RAM. Must ring to find out about prices and availability.

The TOS version built into my machine is 3.01. A great improvement on previous versions, but I soon install NeoDesk anyway. Pity NeoDesk does not allow you to alter the desktop colours on the TT! Some of my familiar AUTO folder programs and desk accessories bite the dust, either because they are no longer needed due to the improved TOS (Fatspeed, Headstart, Pinhead etc), or because of incompatibility (Universal Item Selector 3). It comes as a pleasant surprise to find that 95% of my software runs fine, with the exceptions of some comms (Flash) and graphics (HJBPaint, older versions of MegaPaint) programs. The emulators are a different proposition: no point in trying out ATonce and ATSpeed in the first place, and previous trials have taught me that Spectre GCR will sort of work on a two-floppy set-up, but not with the TT's built-in hard disk. Never mind, it can stay with the Mega ST until Dave Small produces a fully compatible upgrade.

The full potential of the TT is only revealed when I run one of those few applications specifically written for it. Retouche Professional Colour Design not only makes light of shifting around scanned halftones at baffling

speed, it displays the full 256 shades of grey in glorious photographic quality for real-time editing on the standard TT monitor. Even colour scans look almost "true colour" on my modest set-up, so the mind boggles when I think of what can be done with banks of fast RAM, 24-bit colour cards and large monitors. As a high-end DTP engine the TT clearly represents a massive leap forward from the now tired-looking ST range, and the same applies to other graphics and processor-intensive tasks (CAD, financial modelling, MIDI).

By the same token, I can see little reason for upgrading if all you do is word-processing and playing games. The ST is perfectly adequate for these tasks, and while the graphics capabilities of the TT hold out the promise of some truly staggering gameplay, most currently available games do not run on it - a situation unlikely to change while the cheapest TT sells at around the £2000 mark. The next step for the Atari mass market is clearly the STe/MegaSTe, not the TT.

I must confess that I was slightly nervous about ordering a TT, and seriously considered a Mac II, even a 486 PC. On a price/performance ratio, the advantage is not all that clearly on Atari's side anymore as it was in the early days of the ST's "Power without the price" campaign. The decision to go for a TT was based on my desire to protect existing investments in software and peripherals, especially as I was also going to keep the Mega ST. On balance, I still feel I made the right decision. But I am acutely aware that the new acquisition will only justify itself in the long term if it is treated as a new departure into the workstation level, rather than as a straightforward personal desktop computer. The basic, entry-level TT as it sits on my desk now will require considerable additional investment to make the most of its undoubted talents: plenty of fast RAM, a 24-bit colour card, a larger monitor, a bigger and faster hard drive, an adequate backup medium (Syquest cartridges or tape streamer), a replacement 1.44Mb floppy drive, and eventually, I suspect, UNIX for its operating system...

Günter Minnerup

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

Hard Disks

I Just a few comments on the review of hard disks in ST Applications 12. Only the week before I had bought a ProGate 40DC from Cambridge Business Software (CBS), who really were most helpful. I entirely support the reviewer's comments as regards this machine. It's a really well made bit of kit - if a little expensive, it's worth it in the long term, I think.

I found it quite difficult to get any useful help in selecting a drive. Nowhere could I find more than one or two drives in the same place and the few outlets that I visited couldn't really demonstrate them anyway. In the end I bought the Protar on the strength of the review in ST Format. Nevertheless, I'm very pleased with it. After using a floppy system for a few years it really does make an enormous difference - Timeworks DTP seems like a different program when running on a hard disk.

I found the Protar software very easy to use. CBS actually set the thing up for me when I ordered it, and it arrived in just 48 hours. I got it up and running with no problems at all (except the German labelling on the DMA ports), although the drive took up more room than I expected. When you're talking about the depth of the box you also need to allow for the leads that plug into the back. I've got my computer system on a desk with a shelf for the monitor; the whole lot is up against a wall and the drive needs about 3 inches to accommodate the leads and plugs, etc., something I forgot about when working out the space requirements.

The reviews always say buy the biggest drive you can, but I had a word with the folks in the ST Club office and a few other people and the general consensus was that 40MB should do the average user. I'm actually quite surprised how well it packs the data in; I've got First Word Plus, Easy Draw, Timeworks DTP, Fontkit Plus 3, Prodata and Touch Up, including the fonts which are compressed by Fontkit, into just under 4MB, together with six accessories and GDOS. I was expecting this lot to take up the best part of a 10MB partition, as it was on ten or more floppies. I suppose that with any size hard disk a fair amount of space management is a must. All in all, hard drives in

general, and a Protar in particular, have made this computer user very happy. I wish I had bought it years ago. A few articles on hard disk management would come in very handy right now: any takers?

I Further to Piper's hard drive review, I would like to clear up a few of his statements.

a) All SCSI drives can have their SCSI/DMA addresses set by means of jumpers - this is not determined by the reseller's packaging. External switches simply manipulate the signals on the pins usually used by the jumpers.

b) A DMA thru port is NOT necessarily required for multiple drives - they can be chained on the SCSI side of the host adaptor, with the added advantage of not needing further adaptor boards. This is of particular interest to those who already have a hard drive, but would like more space, since for example a bare ST157N 48M drive can be picked up for about £160, much cheaper than a packaged drive. Something that Piper neglected to mention is that the larger drives tested (Protar, Gasteiner and Ladbroke) have enough space inside for an additional drive, and should provide the additional internal power supply connection (mine do). All that is then required to add another drive is a chunk of 50-way cable and a T-piece. The provision of a real SCSI port is very sensible (well done Supra) since external Macintosh drives will work perfectly when plugged in here, with substantial savings. A cased Syquest removable hard drive can be obtained for £350.

c) Auto parking is a feature of the drive mechanism rather than the packaging. An auto parking drive moves the heads to the landing zone after power has been removed by utilising the energy stored in the spinning disk - this is why some hard drives can be heard to spin-down rather quickly.

As far as mechanisms go, I have a Gasteiner Seagate 157N on one machine, and a Ladbroke Quantum P40S on another. The Quantum spins up so fast that I don't need a delay floppy, and has a nice access time of 11ms! The Seagate is somewhat sedentary by comparison.

Incidentally, I would very much like to hear from anyone who is using more than one drive on a GE-Soft host adaptor. I have found these adaptors to be very troublesome when trying

to do this (and I have tried 5 boards and 6 drives in various combinations!). Neither Gas-teiner, Ladbroke nor GE-Soft seem to be able to tell me anything about it. I am very tempted to change over to ICD adaptors.

"Who really needs instant access to 100MB of data?" I'll tell you: direct to disk audio systems. 100MB would give you about 10 minutes of CD quality stereo recording. This is why such systems are often seen in the company of 300MB plus of storage, even on STs. And for my own usage, I could really do with 100MB or so more space, though like everybody else I can't afford it either!

Marcus Bointon

I I read with interest the article on hard drives in STA 12. Having got one of these beasts myself I must say that they so vastly improve the performance of serious computing that anyone considering buying an ST should include it in the basic price! (Although you wouldn't then have the delight of moving from floppy to hard drive!) Hard drive suppliers, as Piper points out, need to sell their product on service, speed and software. To that end they should all ship replacement desktops (or demos if they're canny), backup utilities (I like Vault) and the usual hard drive utilities (and yes, ICD do tend to be the best functionally if not aesthetically).

Actually my real reason for writing is Piper's comments that War in Middle Earth can be played from a hard drive. I have found this to be totally impossible. Indeed, I rang Melbourne House over a year ago and was told it couldn't be done. Could Piper enlighten me as to how he achieved it, since as many of us must know this game is totally unplayable any other way?

Tom Zunder

Gewey and Cli

I I read the articles by Günter Minnerup and William Hern on the subject of the Great GUI/CLI Controversy (STA11) on the day the Madrid summit opened; perhaps these two gentlemen should deploy their eminent common sense in wider fields. Of course there are merits in both approaches; neither is there a total vacuum between the GUI's starry constellation of icons and the Black Hole of a DOS screen, illuminated only by the > prompt. Many DOS users, the most fundamentalist excepted, use utilities such as Xtree, and ST users install all kinds of utilities such as Mortimer or DOSACC which allow multiple selections using filters when carrying out file operations. What we are saying is that GUI implementations do not go far enough in providing such facilities.

It is too easy to get obsessed with the inadequacies of GUI's and CLI's when, particularly in the latter case, they are often invisible to the user once an application has been opened. Users of Word Perfect on the PC don't have to know DOS exists.

I certainly agree with Günter Minnerup on Mac programmes being icon-bound. I use Excel at work: of the 76 items in the heavily nested menus only 23 have keyboard shortcuts, and dragging the mouse to select commonly used functions such as "Save as" becomes very tedious. K-spread 3, for the ST, has some 87 menu items of which 43 have keyboard equivalents. What Excel does have is a feature which I believe has been hi-jacked from the DOS based spreadsheets, Lotus and Supercalc. Pressing "/" causes key letters in the menu bar to be underlined; typing this letter displays the menu with its options similarly underlined and any dialogue boxes follow suit. Word Perfect 5 has an option to use the Alternate key for the same purpose. Obscure commands can thus be accessed from the keyboard without prodigious feats of memory.

Unfortunately, Excel has three menu titles beginning with F, so that "Format" uses the key letter 't' and "Formula" uses 'r', which is not as memorable as it could be. Nevertheless, it is a feature which I miss as I sit typing this in First Word Plus.

Alan Kennedy

Calamus Quotes

Q I use Protext for preparing text files, which I then save as ASCII for loading into Calamus. The only problem with this is that the single and double quotes which I get are all closing quotes, and I have to go through the files changing all the opening quotes into real opening quotes. As the text files I prepare involve a lot of quote marks, this is very time-consuming. Any remedies?

Mike Gerrard

• There is a utility by the name Calquo that solves this very problem. It was on Disk Mag DMG.26.

Spectre GCR

I I have just been explaining to workmates why it has taken nine months to commission a Spectre GCR Macintosh emulator. Although Spectre GCR has received many reviews, I have not seen any published account of the problems which I encountered, although these must have been widely encountered.

I ordered Spectre GCR in November 1990, from a reputable UK distributor (Evesham Micros). They promptly supplied the hardware unit, along with the current version of the software: Version 2.65C. The installation procedure was clear and easily followed, but the unit did not work properly. On any of several ST 1040 and STE 2080s it would usually fail to initiate Macintosh mode, and when it occasionally entered Macintosh mode it would commonly trash the contents of the Macintosh system discs. Accordingly, I returned the unit to the distributors, along with a report of the problem, a copy of which I also sent to the manufacturer: Small Inc., in the USA. Over a period of many months, the dis-

tributors did not manage to find any way to deal with the problem. I tried looking at some bulletin boards for information or advice relating to my problem, and noticed that some other people were having similar troubles but there was no sign of an explanation or solution.

In the Spring of 1991, as a registered user I received a postal package for upgrade of the Spectre GCR software to Version 3.0. I put this aside pending return of my unit. It was only by chance some months later that I happened to open the upgrade package and glance through the notes. Among the notes, with no particular emphasis, I happened to see a statement that 'Version 2.65 simply did not work...' on several ST configurations including monochrome ST-1040s. I regained my unit and tried using the Version 3.0 software - it worked perfectly and has since been completely reliable.

I consider the behaviour of Small Inc. in this episode to have been deplorably unprofessional. What should be done in such circumstances would be for the manufacturer to send a clear separate notice to each dealer and to each registered customer for the faulty version. Even if the problem was believed to be well-known, Small Inc. should have answered my letter with a brief explanation. The behaviour which they showed must surely be detrimental to themselves as well as to their customers. I should add that although Evesham Micros, as distributors, did not manage to find any solution to this problem, it appears that they had received even less useful information than I did.

Norman Marsh

University of Liverpool

Q Can anyone please help me to understand whether/how I might be able to use an external second disk drive on my ST as drive B for Macintosh software using Spectre GCR. Macintosh system software behaviour is such that having a second disk drive would be an enormous help. The Spectre GCR unit plugs into the ST's external disk drive socket. The jokey manual for Spectre GCR states that any second disk drive should have a through connector and that the Spectre GCR hardware should be connected beyond the second drive, but the manual does not make it clear whether this is an essential requirement or merely desirable to some extent. Most ST external drives do not have a through connector. The Spectre GCR unit does have a through connector. If I plug my external disk drive (Cumana CSA 354) beyond the Spectre GCR unit the drive responds but data operations are unreliable.

The wiring of through connectors for disk drives (and in Spectre GCR) is simply 1-to-1, so it is not clear to me why the physical order of chaining should be important. Are lead lengths critical? I can imagine fitting a through connector to my drive, but this would seem to be quite a lot of trouble with an uncertain prospect of successful operation. Does anyone know if this will work, or if there is any other solution - software adjustments? I do not want

the expense/noise of using a hard disc drive.

Norman Marsh

● Lead lengths for floppy drives can be critical and should be kept to under 1 metre. A more effective solution may be to use a RAM disk for the Mac System files: faster and cheaper than having a hard drive

I Two tips for getting Macintosh software to work with Spectre GCR and one tip for using an ST hardware Add-on with the Spectre GCR:

1. Think C Symbolic Debugger v4.00 or 4.05.

Using a disc sector editor search the Debugger file for

```
00C0 0000 0000 61
```

and change this to

```
0000 0000 0000 61
```

Reason:

Spectre has to use the Atari's MFP68901. In Atari mode this device's interrupt vectors begin at \$100. On the Macintosh these locations are used for system globals. Spectre moves the vectors to \$c0. This works fine usually. But almost all system Debuggers take over all interrupt vectors preventing the MFP68901 from generating interrupts. Modifying the Think C Debugger file stops it from taking over these vectors.

2. Using TMON 2.82

With TMON the code you must edit is in the DATA FORK not the RESOURCE FORK. You must make two sets of changes to TMON. You must delete any other USER AREA File.

(a) At offset \$40 in the DATA FORK change:

```
0040: 3FFF FF8F FFFF FF00 3FFF FF8F 0001 0100
```

```
0040: 3FFF FF00 0001 0000 3FFF FF00 0001 0000
```

if you want TMON to take over Bus Errors and Address errors.

or:

```
0040: 0FFF FF00 0001 0000 0FFF FF00 0001 0000
```

if you want Spectre to keep the handling Bus and Address Errors.

(b) In the DATA FORK look for:

```
700F 7480 41FA FC23
```

and change this to:

```
7001 7480 41FA FC23
```

Reasons:

a) TMON uses a Bit map in the default TMON USER AREA in the DATA FORK to selectively take over interrupt vectors. These changes stop TMON taking over vectors that prevent Spectre from working.

b) TMON always takes over Level 4 to Level 7 Interrupt Autovectors using a bit set instruction. This change lets TMON only take over the Level 7 Interrupt Autovector. (This is important because The Think C Debugger command 'Monitor Control-M' jumps into the Debugger through this Level 7 Autovector; it

does not use the \$A9FF trap.)

3. Using AdSpeed 16Mhz Accelerator

My Spectre does not run when I try to start it up in 16MHz mode. The solution is to change to 16MHz mode in Macintosh Mode. The way I do this is to create an 'FKEY' resource in the System file. An FKEY resource contains code that is executed with certain key strokes.

(a) Using RESEDIT create an FKEY resource ID 5.

Type in the following Hex codes:

```
33FC 0000 00F0 0000 4E75
/*      move #0,$f00000
      rts      */
```

This sets AdSpeed to 16Mhz.

(b) Create an FKEY resource ID 6.

```
33FC 0000 00F1 0000 4E75
/*      move #0,$f10000
      rts      */
```

Result:

Holding down Shift-Control '5' will set 16Mhz mode,

Holding down Shift-Control '6' will set 8Mhz mode.

See Inside Macintosh Volume V p36.

Ten Most Wanted

Ten programs needed for the ST:

1. An accessory to draw chemical formulae.
2. A cheap MIDI standard file sequencer.
3. MIDI select instruments accessory (GM/GS standard for common equipment).
4. An outliner for a standard word processor
5. A Quixx variant for the ST
6. An archaeology adventure program
7. A railway simulator
8. A converter from MIDI to STE sound
9. A grammar corrector (English or German)
10. A project manager

This list is meant to provoke comments, corrections and inspire users to write new programs.

Try making your own list. Preparing this one was an interesting experience. Not only did it clarify personal priorities, but programs which met some requirements became readily recognizable in magazine reviews!

Britt Johnstone

German ST Scene

I The very popular Fcopy 3 has been updated. It is a commercial program now and called Fast Copy Professional, the price is DM 89. The publisher has informed registered users that they can upgrade to FCopy Pro for DM 30. The publisher is:

ICP-Innovativ Computer Presse GmbH
Wendelsteinstraße 3
8011 Vatersstetten
Germany

Hannu Pohjanheimo

I Reading the October issue of the German magazine "ST Computer", I see various 16MB memory upgrades for the ST available, NVDI 2.0, MultiGEM, Maxon PixelWonder (to rival Overscan), ST SuperVGA, Pure C (new version of Turbo C), "Outside" (E30 virtual memory for TT), CyPress (smart looking WP), and some very nice looking PD software...

Marcus Bointon

I I was interested to read the letter in Issue 11 by Marcus Bointon who says he asked Atari UK about the possibility of a ROM upgrade to TOS 2.0. Since Atari UK were unable to give him a definite answer, perhaps I can help. In the latest issue (Nov, Vol 11) of the German magazine, ST Computer, there is a full page advert (p.46) for an upgrade to TOS 2.06 for ALL ST's. Evidently Atari are not distributing the upgrade themselves but have given the job to another company called 'artifex'. The advert claims that the upgrade (actually called a TOS Extension Card) is the official upgrade for TOS 2.06 and is 'for all ST-Models' (their words in quotes). They then go on to highlight all the benefits (e.g. user-defined icons) of TOS 2.06 and finally quote a price for the TOS extension card plus original TOS 2.06 ROMs, of DM198. Obviously the ROMs will be German ones but at least we now know that such an upgrade is possible.

If anybody is interested the address and telephone number is: Artifex Computer gmbh, Holbeinstraße 60, D-6000 Frankfurt/Main 70; Phone:(069) 6312456.

Marcus Bointon's other question was why aren't Atari UK advertising their products here (for example the TT)? I think one possible answer might be that they simply couldn't supply the machines if demand were any more than it is. Atari, it seems, are currently completely re-organising the way they manufacture their products and this is causing some disruption. I think Atari have enough trouble supplying the German market let alone the UK one. This might also explain the huge discrepancy between the German and UK price for a TT. As a matter of interest, a recent interview in ST Computer with Alwin Stumpf (Worldwide Sales Manager for Atari), disclosed that Atari have been selling between 600 and 1000 TT units per month in Germany for the last year and estimate a German population of about 10,000 TTs.

Herbert M Sauro

Technical Information

- Paul Chamberlain - Forum STA3
- Leslie Dewhurst - Forum STA3
- Iain Laskey - Forum STA6 & 9
- Alan R Cooper - Forum STA10
- Dr D M Weber - Forum STA10
- Marcus Bointon - Forum STA11
- Keith Baines - Forum STA12
- David Gray - Forum STA13

I I agree with many of the Forum contri-

butors who have commented on the availability of technical information. However, I think that many software houses should release information about their programs. It is not just Atari who are the problem, but the ST community in general. For example, many wp/dtp packages have their own fonts, but no-one seems to know the font formats. How is the PD/shareware scene to develop on the ST if it is obstructed at every step. On the PC, and to a lesser extent on the Mac, users have forced software houses to release such file formats, and other information. Although Atari are setting a bad example, everybody does not have to follow suit! I am currently thinking about writing a vector font conversion-utility, but I am totally unable to get hold of any information.

Thomasz Kasperkiewicz

I I would find it quite staggeringly useful to have a PD disk of descriptions and examples of as many different file-formats as possible. You know the sort of files I mean, picture formats, fonts, CAD, MIDI, DTP, etc, etc, etc... There are so many around that any decent piece of software has to cater for at least half a dozen or so different formats (not to mention creating several of its own).

Surely it would be in everybody's interest to have a library of formats which could be consulted by anybody who wants to write widely compatible software. Many of these formats already have publicly available definitions but actually finding them is another matter. Many are also already available within bits of PD software as a result of long hours of trial and error. Wouldn't it be nice to collect all this hard-earned information together for the benefit of everyone - software houses included.

Chris Marland

FSM GDOS

Q What has happened to the new GDOS which uses vector fonts - I believe the same ones as those used by Fleet Street and Ultra-script? If it exists, does it run on the ST/STE or TT, etc.? I am also interested in 24-bit colour but don't know of any hardware or software which will use this capability, and also output a suitable postscript file, maybe version 2.1 of PageStream?

M E Wakeham

- FSM GDOS seems to have stumbled to a halt. Best guess at the delay would centre around the fact that FSM GDOS is built around technology included in Ultrascript, whose developers, Imagen, have ceased support for the ST version of this software. Rumours circulating amongst developers in the USA suggest that Imagen wanted Atari to have only Imagen-developed software, whilst Atari want (need?) to develop and enhance the product beyond what was possible with the Imagen software.

First Word Plus

I I have been following, with interest the recent letters in Forum regarding First Word Plus v3.20.

Shortly after the first letter from L R Curtis (STA 8) regarding the footnote bug, I spoke with GST and requested a replacement for the copy I had. This arrived and, strangely, I needed to produce a document containing several footnotes. In so doing, I discovered that my "upgrade" was, in fact, the same as the disk I had returned.

I spoke to someone else on Softline (sorry, credit where credit's due, but I forget his name!) and he informed me that I had been mistakenly sent an uncorrected version. A new one was in the post that day and the footnote bug does appear to have been laid to rest. The later version is easy to spot on account of the new printer drivers which have been added, including a DeskJet driver (Tony Brown's letter, Forum STA 10).

Interestingly, though, I discovered a "feature" that they were certainly unaware of. It may only work on DeskJet printers, but if you include the ampersand ("&") in a header or footer you'll find the date is printed in US format (MM/DD/YY); use a dollar ("\$") and you get the date in European format (DD/MM/YY)! (This should, perhaps, be the other way round!?) The person to whom I spoke at Softline was unaware of this feature. Has anyone any more?

Ian Braby

Spurious Spaces?

COMPO Hotline - STA 10

I "Although most typists never use more than one space, some follow the tradition of putting two spaces at the beginning of sentences. If you can't break the habit, ask Compo for the special version which fixes this."

I was taught to use two spaces between sentences; moreover, I like to see slightly more space between sentences than between words in a sentence in a well-printed document; I most certainly wish to have more space between sentences than between an abbreviation stop and the following word in the same sentence.

Is this problem peculiar to That's Write and Write ON? If so, perhaps Compo might consider making their "fix" a regular part of the next upgrade. How do other programs justify additional spaces in lines?

Anthony G Curwen

- The way spaces are treated by word processors and Desktop Publishers vary. Timeworks Publisher does not like 'spurious spaces' and usually removes them: it has, in any case, its own routines for word spacing and ignores the width of Ascii character 32. Because of this, I have to get rid of double spaces in texts sent to the ST Club for layout in the magazine;

a space inserted between a word and a following question or exclamation mark is not a good idea, either: it often sends the ? or ! to the start of the next line! (DFS)

Q Can I stop the Reformat commands in First Word Plus and Word Writer deleting the blank line (carriage return) following the end of the paragraph reformatted? It's maddening!

Anthony G Curwen

- First Word Plus will not allow a paragraph to end with a space character. Put as many spaces as you like between sentences, but do not put any spaces at the end of paragraphs.

Atari Education

I In the current Atari adverts (the one showing the STE, Mega STE, STacy and TT), they say that the Mega ST is (and I quote) 'an ideal machine for the student...'. If this is so, then does Atari have a policy towards teachers and students such as Apple have? If you are a student Apple will make a large discount off the price (either VAT off, or the equivalent I think). Silica Shop (Tottenham Court Road) seemed non-plussed at enquiries.

John Watkins

- Most educational establishments should be able to get around 20% discount on Atari hardware. There are no schemes for individual students and teachers. When the trade discount on all Apple hardware was around 40%, a 15% educational discount was no great give-away. I doubt that Apple are out-performing Atari on the low end machines (Classic and LC) on which the trade discount is only 20%.

Battery Power

Q Does anyone know if there is any way an ST can be powered from a car battery?

G Fletcher

- Using a pair of regulators (12V @ 1A and 5V @ 10A) and a switch on the internal power supply would suffice. But how are you planning to power the monitor? It may be a lot simpler to use one of the gizmo's, sold in camping shops, that allows 240-volt equipment to be run from a car battery.

Brownie Points

I I had my 520 STE upgraded by Evesham Micros in Birmingham and - within an hour of phoning them up to enquire if they could do the upgrade for me - I was back at my desk working with it. The cost was £90 all in, and it has made a tremendous difference to the usefulness of my computer. I can't see the point in Atari selling a 520, as the difference in performance is so great, yet the difference in price so small.

Mike Hill

I In his review of Calligrapher Junior (STA12), Dr Henderson pays tribute to the manual supplied with the package. I agree, the manual is excellent.

Personally though, I rather felt that an important detail was missing, and I would like the opportunity to provide it: the manual was written by Graham Wayne. There - credit where it's due.

Salvatore Marigliano

DeskJet Matters

Keith Baines - Forum STA1

Andrew Barclay - Forum STA3

DA Jones, HHPaterson - Forum STA5

WMowatt, JGFrazier - Forum STA6

David J Lindsay - Forum STA7

Paul Bates, John Wilkinson, N Linett, J I Logan, and Jeremy Hughes - Forum STA11

M Carey, D Henniker - Forum STA12

J C Ingate, Tony Brown - Forum STA13

I First Word Plus is indeed hard wired for Epson-style graphics, and won't print pictures on a DeskJet - unless you buy the Epson emulation cartridge. (Pay an extra £58 to degrade your DeskJet's performance!)

However, there are numerous PD and shareware DeskJet graphics printing solutions. I'd like to mention two which should help Dave Henniker.

HPCNVERT by Patrick Houston will convert NEO, PI1 and PI2 files to PI3 format, at warp speed. You can choose the dither patterns that will be substituted for each palette colour (if the intelligently chosen default patterns are not, for some reason, acceptable). It will also print the picture, either portrait or landscape.

FLEXIJET (by an author who shall be nameless) will print a PI3 picture, cropped as required, any size, and at any position on the page. Ideal for printing in the blank space left by First Word Plus.

Given the complementary nature of these two programs you may like to know that their respective authors are collaborating on a forthcoming production and will be glad to receive requests for additional features, bells, whistles, etc.

Martyn Dryden.

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

Q My HP DeskJet 500 printer works perfectly, prints first time, with Calligrapher, but not with Protex v5. With Protex I have to "push the button" - GO - five or six times before printing starts the first time of use. After that everything is fine. I wonder if there could be a fault in the Protex printer driver?

I have found that if I start with Calligrapher, quit and then - without resetting - run Protex, I can print straight away. Rather long winded!

D Maydew

Modulators

I We note with interest a reader's letter printed in the August issue of ST User detailing an apparent problem of sourcing a modulator allowing use of a colour TV with an Atari 520ST computer.

We are pleased to announce that we are able to supply such a modulator ex-stock at a price of £67.00.

W.T.S. Electronics Ltd.

Studio Master House, Chaul End
Lane, Luton, Beds LU4 8EZ.

Tel: (0582) 491949

Atari Planetarium

Q In 1986 I bought my first ST and just soon after an Astronomy program came out for it based on the old 130XE program called Atari Planetarium.

I saw the write-up on it in a magazine, which of course has been long lost. Really it was a rip off because it was selling for £90, the manual was translated badly from German into pidgin English, and was just not worth the money.

What I would like to find out is, if anybody knows who developed the program so that I can write to them and see if it has been improved in any way.

E A Symons

● No information to hand on this product: at a guess it sounds like the work of Rotek/Club 68000, who went bust over a year ago. If you can supply details of the name of the authors and/or publishers of the package in Germany (or Holland?) then we may well be able to track down what happened to Atari Planetarium.

Proxima

Q Has anyone experienced difficulties with Proxima?

Apart from a list of minor annoyances, I am amazed that the Search and Replace functions are totally ineffective. Can anyone confirm this, or otherwise shed some light on the subject? Also, according to the 'forever helpline' that goes with the package (and let's face it - the program needs at least that much backup support), the reason that Proxima doesn't always import some IMG files, is because there are many different IMG file standards; the only proper one is handled by Easydraw! Can this be true?

What puzzles me the most is how these problems were not picked up by the technical editor of ST Format in his extensive and positively euphoric review of Proxima.

A set of dual controls for a 1968 Wartburg Knight to the writer of the most helpful response.

Salvatore Marigliano

● Easydraw doesn't support IMG files at all, so someone is getting their wires crossed here. EasyDraw doesn't even support the 'correct' GEM vector image file format. We don't have a copy of Proxima, but PageStream 1.52 - which is a very close cousin - happily imports both GEM and IMG files, the only glitch being that any text within a GEM metafile is lost.

There do seem to be some IMG files that will not load into PageStream and Timeworks DTP, but do load into Touchup. We haven't tracked down the precise cause, but it does seem to be limited to IMG files that have been used by Calligrapher. Maybe it is these files that are the source of your Proxima tribulation? If so, the images may be converted (re-compressed) using either Touchup or the Squeeze Img utility on DMG.25.

Without a copy of Proxima it's difficult to comment on other technical problems with this software. Suffice it to say that PageStream 1.52 - upon which Proxima is heavily based - is garbage compared to PageStream versions 1.8x and 2.1. The 'Search and Replace for Attributes' feature does not work in PageStream 1.8, so I assume the same is true for Proxima.

Following the death of Peggy Shean, the 'senior partner' at Network News, Proxima is no longer available until Probate has been settled. Apparently, work is continuing on the successor to Proxima, Proxima 2, and the users' helpline continues to operate.

Sage Accounts

Q Re: Sage Businesswise Accountant Plus - Integrated accounting plus stock control and invoicing system. Has anyone had any experience of using this system on a 2 Meg ST with twin disk drives, or similar?

Sagesoft have told me that I do not require a Hard Disk to operate this system. A Hard Disk is only required by their 'Sterling' Accountant Plus System. Is this really advisable?

Mike Hill

Powered Up Scanner

Q I've got a Golden Image hand scanner which I only use occasionally, so I don't normally leave it connected to the computer. I remove both the cartridge and the scanner, with power off of course. Will it do any harm to leave it connected all the time? I know the scanning light shouldn't stay on, and so far, if I have left it connected, it has just flashed on for a second or two then stays out. If the scanner can stay connected and powered up with no harm, that seems better than possibly damaging it by regular disconnection. I rang Golden Image with this when I bought it, but they were very non-committal on this point.

● I can't see any good reason why leaving a scanner powered up should be harmful: this doesn't damage computers, monitors and printers. But it seems odd that the manufacturers couldn't come up with an answer!

DESKTOP DISCUSSIONS

Review of the Year

William Hern takes a look back over the events of 1991 and names his products and personalities of the year.

This is the time that all columnists dread, when editors phone up asking for columns that "sum up the events of the year". It's not an easy task, for even in the dullest of years there is enough material to fill an entire year's worth of column, but, never one to shirk his duty, here is my unashamedly subjective view of 1991.

The most radical change in the ST marketplace was the introduction of new ST hardware. Up to 1991 it didn't matter whether you had a £400 520 STFM or a £1400 Mega 4 ST: all STs had roughly the same processing power. After five years of rumours, promises, and marketing hype, Atari finally gave us the STs with more bite that we had been crying out for - the 32 MHz 68030 equipped TT and the 16 MHz 68000 Mega STE.

The TT firmly deserves its mantle as the flagship of the ST family. However, it is wasted merely acting as a faster ST. Bundled with Unix, the TT makes an ideal low cost workstation and with the right marketing Atari could sell large numbers of the machine into the business and academic markets. They had better hurry, mind you - the prices of RISC-based workstations are

falling fast and the window of opportunity for establishing the TT as a viable workstation could shut before the end of 1992.

However, for most ST users the launch of the *Mega STE* was the more significant event. While we can all dream of upgrading to a TT, the cheaper Mega STE is a much more realistic possibility. It's a pity, though, that the Mega STE, like the TT, isn't as fast as it could be owing to the memory chips being clocked at the same 8 MHz rate as all previous STs.

1991 also saw one of the biggest gambles that Atari, under Jack Tramiel's leadership, have ever taken. In the middle of the year the company closed down its manufacturing plant in Taiwan so that the property could be reclassified as residential and then sold, earning Atari over \$40 million. Supplies of Atari hardware were affected as a result, and stocks may well not have recovered in time for the Christmas rush.

Moving on to software, *Calligrapher* is definitely my application of the year. In spite of its long absence, Calligrapher is still more than a match for its competitors and now that the erratic side of its nature has been curbed, there can be no doubt that it is the premier ST word processor. Its re-appearance might even make up for the disappointment I suffered when I heard that Word Perfect Corporation had shelved plans to update the ST version of its product. It'll be fun watching First Word Plus and Calligrapher Junior fighting for supremacy in the coming months.

Among public domain software, there were three utilities that particularly impressed me. *Gemview*, written by Dieter Fiebelkorn, managed to usurp Picswitch as my first choice picture viewer. The list of file formats that Gemview handles is extensive and

includes all the ST standards along with support for GIF images, Sun rasterfiles, and X bitmaps. About the only glaring omission is the lack of support for Macintosh graphic formats.

What makes Gemview really stand out is the care and detail that has gone into its presentation. Gemview is beautifully GEMmed, runs in all resolutions, can use the extended colour palettes of the STE and TT, supports large scale monitors, and can run either as a program or as a desktop accessory. If only all software could be this polished.

MGIF v3.2, written by Bill Rosenkranz, is another picture viewer albeit a rather more specialised one as it only displays GIF files and runs in monochrome. However, it deserves mention here because it manages to simulate grey-scale by clever use of a flicker palette. The effect is fascinating to watch and surprisingly convincing. MGIF requires two megabytes of memory, although it can be recompiled to run on a one megabyte machine. It's worth tracking down just to convince yourself that it can be done.

The final utility, the *Double Height Emulator* written by Lars Erik Østerud, offers STE owners near workstation resolutions without the expense of special monitors or video cards. It doubles the vertical resolution of each of the standard modes so that low res becomes 320 by 400, medium 640 by 400, and high an enormous 640 by 800, all displayable on standard monitors. These additional modes can be displayed either by pan and scan (as the mouse reaches a border, the display is scrolled to show more of the screen) or by interlacing. Interlaced high resolution mode has the least amount of flicker and is a genuine aid to productivity - software such as First Word Plus can display nearly a

full A4 page of text at once which is a great help during the final stages of editing.

There were many people who made major contributions to the ST scene in 1991 but two deserve special mention. The first is *Eric Smith* of the University of Western Ontario who wrote the multi-tasking operating system MiNT. That in itself is no mean feat, but Eric's continuing dedication to the project has been extraordinary. Now up to version 0.9, MiNT has become a viable system rather than just a curiosity.

Another stalwart has been *Allan Pratt* of Atari US. Over the past couple of years Allan has kindly answered many of the technical queries emailed to the Usenet comp.sys.atari-st group, and all in his spare time. The value of his contributions has been immense and I know are appreciated by Usenet readers all round the world.

Rounding Off

The award for product placement of the year goes to the *Atari Portfolio* pocket computer used in the blockbuster movie, Terminator 2. In the film, the young hero uses it to crack into bank accounts via cash machines and withdraw large sums of money. While it was great to see Atari hardware feature in the \$100 million film, I'm sure that most Atari owners are diligent, honest, and law-abiding citizens who would never even dream of using their machines for nefarious purposes. Perhaps we should try to claim some of the vast amount that the movie has grossed by suing the producers for insinuated defamation of character. Well, perhaps not - they might send Arnie round

William Hern

Programmers' Forum

As promised, ST Applications' regular programming column begins a review of techniques for inter-program communication. Also this month: more on the problems of resolution changes, a request for more information on one of the new system variables, and a replacement bomb handler.

Inter-program communication

The basic functions to support communication between accessories and applications have been present and documented in GEM for many years now, but have never featured heavily in discussions of GEM programming. This is regrettable since communication between resident programs is potentially a powerful force for the construction of an integrated working environment.

We have already seen an example of the usefulness of such communication in the *Programmers' Forum* of STA 10. In that article, a desk accessory working in conjunction with the German shareware desktop replacement Gemini was able to cause a program to be executed; a task which seems to be impossible for an accessory to accomplish cleanly on its own. Over the course of the next few columns we will explore some of the possibilities opened up by such co-operation, and also discuss some of the problems to be overcome.

To begin with though, a brief introduction. Any GEM program which uses `evnt_multi` or `evnt_mesag` is already communicating with another program - the AES screen manager. This is the part of the operating system that handles windows and drop-down menus. The application receives information by means of an 8-word message buffer or pipe into which the screen manager writes a report of the actions of the user: eg, clicking on a scroll bar or selecting a menu entry. Desk accessories are activated when they receive a message from the screen manager informing them that their menu entry has been selected.

The AES communication functions

However, there is nothing unique about the screen manager's ability to send messages to GEM applications. One application can send a message to another using the `appl_write()` function. The general form of this is:

```
appl_write(receiver_id,length,message);
```

where 'receiver_id' specifies the program to which the message should be sent; 'length' is the size of the message in bytes (not words); and 'message' is a pointer to a buffer which contains the data to be sent. Of these, the 'length' argument is straightforward, but the others need some explanation.

'receiver_id' is the AES identifier for the receiving process. Applications are told their own AES identifiers when they use the `appl_init()` function to register their existence with the AES. Fair enough, but how does an application find the identifier for another process, in order to send it a message? This requires the use of another AES function: `appl_find()`. `Appl_find` is used as follows:

```
id_number = appl_find(program_name);
```

where 'program_name' is a pointer to a string which is the filename (without the .PRG or .ACC extension) of the program whose identifier is desired. The string should be exactly eight characters long; short names should be padded out with spaces. As an example, to determine the identifier for the Control Panel:

```
control_id = appl_find("CONTROL ");
```

If the application with the specified name is not installed, then the return is -1.

When a message is sent successfully, the recipient will find part or all of the message in their message buffer. If the message is 16 bytes or less in length then all of the data will be in the buffer, and it can be read directly. Longer messages will have the first 16 bytes placed in the buffer, and the rest held back by the AES. In order to receive the remainder of the message, the AES function `appl_read()` must be used:

```
appl_read(identifier,length,message);
```

where 'identifier' is the AES identifier of the pipe owner (i.e. the program that is calling `appl_read()`); 'length' is the number of bytes to read; and 'message' is a pointer to a buffer into which to write the message data. To read all of the remainder of a long message, 'length' should be set to the total message size-16 (for the 16 bytes already in the message pipe).

Message format

When a program receives a message, there are certain pieces of information which are likely to be needed to process it correctly, whatever its nature. The most obvious requirement is that each message type should have some kind of code number to differentiate it from the others.

Furthermore, the recipient must have some way of determining whether the message pipe contents represent the whole message, or merely part of a much larger one for which `appl_read()` must be used. Also, it may be useful for the recipient to know the origin of the message, so that it can be replied to.

In order to provide this general information about the message, the first three words have been given particular meanings:

word 0	Code number indicating type of
word 1	message AES application identifier of the sender
word 2	Number of bytes in message in addition to the 16 (8 words) held in the pipe.
words 3..n	Vary according to the needs of the message, but often word 3 is a window handle.

Atari have defined messages with code numbers between 10 and 41. Code numbers for custom messages are best allocated well away from this range to allow for future development by Atari. Word 2 will be 0 for all currently defined messages originating from the screen manager, as all are shorter than 16 bytes (8 words). To reassemble a longer message into one block, copy the first 8 words out of the pipe into a buffer, and then use `appl_read()` to fetch the rest of the message into the buffer, beginning at the ninth word of the buffer.

AES communication functions in use

As an example of the use of these functions, Listing 1 and Listing 2 contain C source code for an application and a co-operating accessory, respectively. Compile these listings

separately and copy the file produced by Listing 2 into the root directory of your boot disk. Ensure that the application filename is DEMO.PRG, and that of the accessory COMMS.ACC, and then reboot to install the accessory.

When COMMS.ACC is activated by selecting the 'Comms Demo' item from the desk menu, it attempts to locate DEMO.PRG using appl_find(). This will only succeed if COMMS.ACC is activated from within DEMO.PRG. If the search is successful, COMMS.ACC sends DEMO a custom message using appl_write(): a list of numbers and an instruction to add them up. DEMO responds to this message by collecting the numbers using appl_read(), adding them, and then returning the total using appl_write(). If you activate COMMS.ACC from within another program, or if DEMO.PRG is renamed, the appl_find() call will fail, and an alert box will be displayed.

To show how custom message handling can be integrated with that of more common messages, DEMO.PRG installs a normal menu bar and responds to screen manager messages generated by interaction with it. Also, selecting 'Work...' from the 'Demo' menu displays a dialogue box with a line of text which is updated every second by a timer event. A mouse click in the shaded box is used to remove the dialogue. While the dialogue is displayed, the menu bar is still accessible because form_do has not been used.

From these programs, it should be possible to get an idea of how to use the AES functions. Next month we will discuss some of the limitations of the AES communication system, and some attempts to overcome them.

Desk Accessories and resolution changes

Readers with an interest in programming desk accessories may well remember the continuing discussion about the problems caused by screen resolution changes. A fuller background can be found in the *Programmers' Forum* columns in STA 11 and STA 12, but for new readers, the problem is outlined below.

When the resolution is changed from low to medium (or vice versa), the operating system re-initialises GEM. As part of this process, desk accessories are removed from memory and later reloaded. However, this is not the same as a reboot: the system vectors area is not reset, and the AUTO folder programs are not reloaded. For most accessories this is not a problem, but if an accessory intercepts a system vector for its own purposes, there may be trouble. After the accessory is unloaded, the vector is left pointing to an address in free memory. If this area is then overwritten by a new program or data block, a crash will probably result when the vector is next used.

Jeremy Hughes from Oxford (author of *Fontkit Plus*, etc.) has written in explaining how he dealt with this problem in his *Fontswitch* accessory:

The way I resolved this in Fontswitch was to take over the GEMDOS vector and watch for Mfree calls which release memory starting at the accessory's basepage; once

this happens, Fontswitch restores system vectors and performs some other tidy-up operations. I have since heard that this method is recommended by Atari as a way of getting round their failure to implement an ACC_TERMINATE message. The method allows more than one accessory to take over system vectors, since the order in which each accessory is removed by GEM is the reverse of the order in which they were initially installed.

In Listing 1 of the STA 12 *Programmers' Forum*, I used the same method for detecting when a resolution change was in progress, but used it to turn a resolution change into a proper warm reboot back into the new resolution. Jeremy's solution is much cleaner, as it requires no fiddling with DESKTOP.INF. The important insight is contained in the last sentence - only if the accessories are unloaded in this order is it safe to simply restore the vectors. Given this information, Listing 3 shows how a clean resolution change handler might be implemented. Thanks are due to Jeremy for sharing this technique.

New system variables and a bomb handler

David Hardy from Newcastle has written to ask for more details of one of the system variables first documented in TOS 1.4:

In the November issue of ST Applications, you included a listing illustrating the installation of an XBRA vector grabber. In that listing the following section of code was included:

```
new_trap lea 6(sp),a0    Assume arguments
                                on supervisor
                                stack.
                                tst.w longframe.wMPU is 68000 ?
                                beq.s 1$
                                lea 8(sp),a0    ALLOW for extra
                                                word on 68010 and
                                                later.
```

with 'longframe' being equated to \$059E. I have not seen this particular word documented before. Could you answer the following questions in your column:

- 1) Is this location now documented by Atari?
- 2) What values may it (legally) contain?
- 3) Is it valid on pre-STE models?

Taking the questions in order: yes, it is officially documented by Atari. Longframe will be set to 0 for 68000 based machines, (ST, STF, STFM, STE, Mega-STE) and to non-zero for 68010/20/30/40 based machines (TT). As I understand it, longframe is valid on all models, but its contents are ignored by the operating system on the older machines.

Longframe is needed because the more advanced processors (68010 and above) handle exceptions in a different way from the 68000. When the 68000 enters an exception state, it stacks the PC and the SR before jumping through the appropriate vector. The later processors stack an additional word which contains the offset of the vector which has

been invoked by the exception. This allows generic exception handlers to determine which exception has occurred, and to act accordingly.

Interestingly, there is a generic exception handler in all versions of TOS - the routine that produces the bombs when the machine crashes. In order to implement this on a 68000 machine where the vector number is not available, Atari have had to resort to rather a neat trick. If you examine the exception table beginning at \$000000, you will see that many of the vectors point to the same 24 bit address, but that the high byte of each vector contains something different. In fact, this byte is used to determine the number of bombs printed. The bus error vector has the high byte set to 2 (-> 2 bombs), the address error vector has a high byte of 3 and so on.

This trick only works because the 68000 only uses 24 bit addresses - the high byte is ignored. On a 68020/30/40 machine, these vectors would all be interpreted as pointing at different addresses because the full 32 bits are used.

The exception handling routine must recover the bomb number (which will be held in the top byte of PC). This is done by using a dummy subroutine call to stack the PC, and then reading the high byte off the stack into a variable where it can be accessed later.

Listing 4 is a useless little diversion with which to amuse yourself over the remainder of the Christmas holiday. It installs a resident generic exception handler for all of the common error vectors. This performs all of the system tidying tasks that the normal error handler does, but then goes on to display something rather more seasonal than bomb icons. It works in all three resolutions, is not TT compatible and assumes a normal ST screen size. Listings 5 and 6 are for tiny programs which cause an address error and a bus error respectively, so that you can try the exception-handling program out.

Next month

Next month, *Programmers' Forum* will feature more of your letters and continue the discussion on inter-program communication. 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.

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

```

add.l    #16000,a6      Move halfway down the screen.
move.b   sshiftmd.w,d0 Fetch screen mode.
and.w    #3,d0         Mask off the unwanted bits.
lsl.w    #3,d0         Multiply by 8.
lea      mod_table,a0  Address list of icon routines.
move.l   0(a0,d0.w),a5 Fetch icon-printing routine.
move.l   4(a0,d0.w),a4 Pointer to icon data.
move.w   2(a4),d5       Fetch width of icon in bytes.
move.w   0(a4),d6       Height of icon in lines-1.
l$      lea      0(a6,a3),a0 Calculate the screen address.
        lea      4(a4),a1     Copy the icon data address.
        move.w   d6,d4       Copy the icon height.
        jsr      (a5)        Print the icon.
        add.l   d5,a3        Shift across for next icon.
        dbra   d7,1$        Loop to print next.
        rts

```

```

**
** A set of printing routines, one for each resolution, which
** write the replacement icon directly onto the screen.
** Inputs:      a0 -> Screen address of top left corner
**             a1 -> Icon data block.
**             d4.w Number of lines in icon-1
** Outputs:     None
** Destroys:    **

```

```

icon_hi  move.l   (a1)+,(a0)      Transfer 1 line of data.
        lea      80(a0),a0       Move down a line.
        dbra   d4,icon_hi      Loop for all lines.
        rts

```

```

icon_mid movem.l  (a1)+,d0-d1     Fetch 1 line of icon.
        movem.l  d0-d1,(a0)      Write it out.
        lea      160(a0),a0      Loop for all lines.
        dbra   d4,icon_mid
        rts

```

```

icon_lo  movem.l  (a1)+,d0-d3     Fetch 1 line of icon.
        movem.l  d0-d3,(a0)      Write it out.
        lea      160(a0),a0      Loop for all lines.
        dbra   d4,icon_lo
        rts

```

```

;-----
**
** Program data area.
**

```

```

save_area dc.l    0              Initial value of BIOS sav_ptr.

message   dc.b    13,10,'Bomb replacement installed',13,10,0

```

```

**
** The table of vectors to be replaced. Each entry
** is two long words - a pointer to the exception
** vector, and a place to store its existing value.
** This allows them to be replaced if required.
**

```

```

DATA

vec_table dc.w    7              Number of table entries-1.

        dc.l    $0008,0          Bus error vector.
        dc.l    $000C,0          Address error vector.
        dc.l    $0010,0          Illegal opcode vector.
        dc.l    $0018,0          CHK violation vector.
        dc.l    $001C,0          TRAPV vector.
        dc.l    $0020,0          Privilege violation vector.
        dc.l    $0024,0          Trace vector.
        dc.l    $0060,0          Spurious interrupt vector.

```

```

**
** Table for selecting icon printing.
**

```

```

mod_table dc.l    icon_lo,lo_data
        dc.l    icon_mid,mid_data
        dc.l    icon_hi,hi_data
        dc.l    icon_hi,hi_data

hi_data   dc.w    31,4
        dc.l    $00000000,$00000000,$00060000,$00060000
        dc.l    $000D0000,$000F0000,$001B8000,$001F8000
        dc.l    $003FC000,$003EC000,$006FE000,$007FE000
        dc.l    $00FFF000,$00DD0000,$01FF7800,$01FFF800
        dc.l    $03BBFC00,$03FFFC00,$00060000,$00060000
        dc.l    $00060000,$00060000,$00060000,$00FF0000
        dc.l    $00FF0000,$00FF0000,$007FE000,$007FE000
        dc.l    $007FE000,$007FE000,$003FC000,$00000000

mid_data  dc.w    27,8
        dc.l    $00000001,$00004000,$00000001,$0000C000
        dc.l    $0000000F,$0000F800,$0000000F,$0000F800
        dc.l    $0000001F,$0000FE00,$0000001F,$00007E00

```

```

dc.l    $0000007F,$0000FF00,$0000007F,$8000FF00
dc.l    $000001FF,$0000FF80,$000001FF,$84007B80
dc.l    $000007FF,$0000FFED,$000007FF,$0000BFED
dc.l    $00000FEF,$0000FFFB,$00000FEF,$0000FBFB
dc.l    $00003FFF,$0000FFFE,$00053FFA,$0000FFFE
dc.l    $00007FFF,$0000FFFF,$00007FFF,$0000FFFF
dc.l    $00000003,$0000C000,$00000003,$0000C000
dc.l    $00000003,$0000C000,$00FF0000,$FFF00000
dc.l    $07FF0000,$FFED0000,$03FF0000,$FFC00000
dc.l    $01FF0000,$FF800000,$00FF0000,$FF000000
dc.l    $007F0000,$FE000000,$003F0000,$FC000000

```

```

lo_data  dc.w    34,16
        dc.l    $00200000,$00200000,$00000000,$00000000
        dc.l    $00600000,$00600000,$00000000,$00000000
        dc.l    $00700000,$00700000,$00000000,$00000000
        dc.l    $00F00000,$00F00000,$00000000,$00000000
        dc.l    $00F00000,$00F00000,$00000000,$00000000
        dc.l    $01F80000,$01F80000,$00000000,$00000000
        dc.l    $01B80000,$01B80000,$00000000,$00000000
        dc.l    $03FC0000,$03FC0000,$00000000,$00000000
        dc.l    $03FC0000,$03FC0000,$00000000,$00000000
        dc.l    $07FE0000,$07FE0000,$00000000,$00000000
        dc.l    $07BE0000,$07BE0000,$00000000,$00000000
        dc.l    $0FFF0000,$0FFF0000,$00000000,$00000000
        dc.l    $0FFF0000,$0FFF0000,$00000000,$00000000
        dc.l    $1FFF0000,$1FBF0040,$80000000,$00000000
        dc.l    $1DFB0000,$1FFF0200,$80000000,$00000000
        dc.l    $3FF00000,$3FF00000,$C0000000,$C0000000
        dc.l    $37F00000,$37F00000,$C0000000,$C0000000
        dc.l    $7FFF0000,$7FFD0002,$E0000000,$E0000000
        dc.l    $7BFF0000,$7FFF0400,$E0000000,$E0000000
        dc.l    $FFF00000,$FFF00000,$F0000000,$F0000000
        dc.l    $FFF00000,$FFF00000,$F0000000,$F0000000
        dc.l    $00F00000,$00F00000,$00000000,$00000000
        dc.l    $00F00000,$00F00000,$00000000,$00000000
        dc.l    $00600000,$00600000,$00000000,$00000000
        dc.l    $00600000,$00600000,$00000000,$00000000
        dc.l    $0FFE0000,$00000000,$00000000,$00000000
        dc.l    $0FFE0000,$00000000,$00000000,$00000000
        dc.l    $0FFE0000,$00000000,$00000000,$00000000
        dc.l    $0FFE0000,$00000000,$00000000,$00000000
        dc.l    $0FFE0000,$00000000,$00000000,$00000000
        dc.l    $07FC0000,$00000000,$00000000,$00000000
        dc.l    $07FC0000,$00000000,$00000000,$00000000
        dc.l    $03F80000,$00000000,$00000000,$00000000

```

Listing 5

```

*****
**
** Listing 5.
** Programmers' Forum, January 1992
**
** Tiny program to produce an address error when run.
**
** Assembler: ASSEM v12
** Written: 17th November 1991
**
TEXT

move.l   1(pc),d0      Read a longword from an odd address.
clr.w   -(sp)         Terminate in case we ever return.
trap    #1

END

```

Listing 6

```

*****
**
** Listing 6.
** Programmers' Forum, January 1992
**
** Tiny program to produce a bus error when run.
**
** Assembler: ASSEM v12
** Written: 17th November 1991
**
TEXT

move.l   $0,d0        Attempt to read from protected area.
clr.w   -(sp)         Terminate in case we ever return.
trap    #1

END

```

```

cleanup  btst    #13,(sp)      Were we in supervisor mode ?
         beq.s   1$           No, args are on user stack.
         lea    6(sp),a0      Point a0 to args on supervisor stack.
         tst.w  longframe.w   MPU is 68000 ?
         beq.s   2$           Yes, a0 set up correctly.
         addq.l #2,a0         Allow for extra word on 68030 etc.
         bra.s   2$           Skip on, all set up.
1$      move.l  USP,a0        Fetch the user stack pointer.
2$      cmp.w   #Mfree,(a0)   GEMDOS Mfree call ?
         bne.s   go_old      No, pass on to system now.
         move.l  2(a0),a0     Fetch the address to be freed.
         cmp.l  block(pc),a0  Freeing our basepage ?
         bne.s   go_old      No, give it back to the system.
;
; We have detected the unloading of this accessory.
; In the old version of this, we modified DESKTOP.INF
; and then rebooted. Since the accessories are unloaded in
; the opposite order to that in which they were loaded, it is
; safe to simply restore the vectors.
;
         move.l  cleanup-4,trap1.w  Unlink from the GEMDOS trap.
;
; Include a similar line for the other vectors hooked
; by the accessory.
;
**
** Pass the call back to the previous handler in the chain.
**
go_old   move.l  cleanup-4,a0    Old handler address.
         jmp    (a0)           Hand off immediately.
**
** Routine data area.
**
block    dc.l   0
        END

*****
**                               **
**           New Bomb Handler           **
**           =====                 **
** (C) Jon Ellis, 1991 All commercial rights reserved **
**
** Program to illustrate how subvert the bomb handler and **
** use it to print a custom icon on a crash. An utterly **
** frivolous program ! **
**-----**
** Filename: BOMB.ASM      Version: 1.00  Date: 17/11/91 **
** Assembler: ASSEM v12  Options: **
*****

TEXT

** System variables...
**
reset_pc    equ    $0004
sshiftdm   equ    $044C
_v_bas_ad   equ    $044E
savptr     equ    $04A2

** Post-mortem dump area...

proc_lives   equ    $380    $12345678 if valid
proc_dregs   equ    $384    Saved D0 to D7
proc_aregs   equ    $3A4    Saved A0 to A6 and SSP
proc_enum    equ    $3C4    Exception number (1st byte)
proc_esp     equ    $3C8    USP
proc_stk     equ    $3CC    Sixteen words from SSP

** Offsets of fields in base page...

p_tlen   equ    $0C    Size of text segment
p_dlen   equ    $14    Size of data segment
p_blen   equ    $1C    Size of BSS segment

** Symbols for operating system calls...

GEMDOS   equ    1
Cconws   equ    $09
Ptermres equ    $31
Pterm    equ    $4C

XBIO$    equ    14
Supexec  equ    38

```

```

** Begin here with installation. Hopefully most
** of this should be fairly familiar to you.
**
start    move.l  4(sp),a0      Find our basepage address.
         move.l  p_tlen(a0),d6  Add up the total length of all
         add.l  p_dlen(a0),d6  the program segments to find how
         add.l  p_blen(a0),d6  much memory is required.
         add.l  $0100,d6       Include the basepage.

         pea    install(pc)    Go into supervisor mode to alter
         move.w #Supexec,-(sp) the system variables.
         trap   #XBIO$         #XBIO$
         addq.l #6,sp          Clean up the stack.

         pea    message(pc)    Print our installation message.
         move.w #Cconws,-(sp)
         trap   #GEMDOS
         addq.l #6,sp

         clr.w  -(sp)          We have a return code of 0 (OK !!)
         move.l d6,-(sp)      Stack the number of bytes to keep,
         move.w #Ptermres,-(sp) the GEMDOS function code Ptermres.
         trap   #GEMDOS       Leave now.

**
** The installation code proper. This must be
** called in supervisor mode as it modifies
** variables in the protected area of memory.
**
install  lea    exception,a0   Get address of our handler.
         move.l a0,d2
         lea    vec_table,a0   Address table of vectors to change.
         move.w (a0)+,d1       Fetch number of vectors-1.
1$      move.l  (a0)+,a1       Point to the vector.
         move.l  (a1),d0       Fetch its existing value.
         move.l  d0,(a0)+      Save it in our table.
         and.l  #$FF000000,d0  Clear out the bottom 24 bits.
         or.l   d2,d0         Write in our handler.
         move.l  d0,(a1)
         dbra   d1,1$         Loop for all vectors.
         move.l  savptr.w,save_area Copy the initial save area ptr.
         rts

;-----;
**
** A generic exception handler which uses the 68000
** specific method for exception number detection.
** This has the same functionality as the TOS bomb
** handler: it updates the crash record area,
** displays an indication of the exception and then
** terminates the current GEMDOS process. It will
** be called in supervisor mode.
**
exception bsr.s  autopsy      Fill in post mortem area.
         move.b  proc_enum.w,d7 Fetch the exception number.
         bsr.s  display      Tell the user about it.
         move.l  save_area,savptr.w Reset the register save area.
         move.w  #$FFFF,-(sp) Terminate the process with a
         move.w  #Pterm,-(sp) return code of -1.
         trap   #GEMDOS      Should never return.
         move.l  reset_pc.w,a0 Make sure by doing a warm
         jmp    (a0)         reboot if it does.

**
** Subroutine to fill in the post-mortem dump area
** which allows other programs to find out what caused
** the last exception.
** Inputs: 0(sp).l High byte is exception number
**         ** SUPERVISOR MODE **
** Outputs: None
** Destroys: d0-d7/a0
**
autopsy   move.l  (sp),proc_enum.w Save exception code.
         movem.l d0-d7/a0-a7,proc_dregs.w Save all registers.
         addq.l  #4,$1C+proc_aregs.w Correct SSP value.
         move.l  USP,a0           Save the USP.
         move.l  a0,proc_esp.w
         movem.l 4(sp),d0-d7      Copy 16 words from
         movem.l d0-d7,proc_stk.w supervisor stack.
         move.l  #$12345678,proc_lives.w Validate post-mortem.
         rts

**
** Subroutine to display a line of custom icons
** when an error exception occurs.
** Inputs: d7.w Exception number (2=bus error etc)
**         ** SUPERVISOR MODE **
** Outputs: None
** Destroys: **
**
display  subq.w  #1,d7          Adjust exception number for dbra.
         sub.l  a3,a3          Zero the horizontal offset.
         move.l  _v_bas_ad.w,a6 Point to start of screen.

```

```

    }
    else if (title == DEMOMENU)
    {
        if (item == DEMOWORK)
        {
            form_dial(FMD_START,0,0,0,dx,dy,dw,dh);
            objc_draw(dialogue,0,9,dx,dy,dw,dh);
            working = TRUE;
        }
        else if (item == DEMOQUIT)
            return(FALSE);
    }

    return(TRUE);
}

/*
** Function to handle the custom message from the
** companion desk accessory. The argument is a
** pointer to the message pipe. There are no
** return values. The custom message is a request
** to add up the enclosed list of numbers and to
** return the total using a second custom message.
**
** Usage:  handle_custom(pipe);
**
**         void handle_custom(short *);
**
*/

void handle_custom(msg_pipe)

short *msg_pipe;

{
    int f, len, total;
    short buffer[200];
    short senders_id;
    short output_pipe[8];
    for (f=0; f<8; f++)
        buffer[f] = *(msg_pipe+f);
    appl_read(ap_id,msg_pipe[2],buffer+8);
    form_alert(1,"[1][Application: Received ADD_UP|message. | ][ Ok ]");
    len = msg_pipe[2]/sizeof(short) + 5;
    senders_id = msg_pipe[1];
    total = 0;
    for (f=0; f<len; f++)
        total += buffer[3+f];
    output_pipe[0] = ANSWER;
    output_pipe[1] = ap_id;
    output_pipe[2] = 0;
    output_pipe[3] = total;
    appl_write(senders_id,sizeof(output_pipe),output_pipe);
}

Listing 2
=====

/*
** Listing 2.
** Programmers' Forum January 1992
**
** Sample desk accessory that works in coordination
** with DEMO.PRG, illustrating the use of the AES
** communications pipe program. Ensure that the filename
** of the accessory is COMMS.ACC.
**
** Compiler system: Lattice C v5.06
** Compile options: Phase 1: -cafku Phase 2: -ms -v
** Link with CACC.O, LCG.LIB and LC.LIB
** Written on 20th November 1991
**
*/

#include <aes.h>
#include <portab.h>
#include <stdio.h>

/*
** Symbols for the custom message types...
**
*/

#define ADD_UP 100
#define ANSWER 101

/*
** Global variables...
**
*/

short ap_id; /* AES application ID */
short data[] = {0,0,0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18};
char *woken = "[1][Accessory received AC_OPEN|Now what ?][Nothing|Send]";
char text[250];

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

```

```

int main(void)

{
    short pipe[8];
    short button, target;
    ap_id = appl_init();
    menu_register(ap_id," Comms Demo");
    data[0] = ADD_UP;
    data[1] = ap_id;
    data[2] = sizeof(data)-16;

    /*
    ** This is the main program loop which is never
    ** exited. The first thing to do is to wait for
    ** a wake-up call given when the user clicks on
    ** our desk menu entry.
    */

    while(TRUE)
    {
        evnt_mesag(pipe);
        if (pipe[0] == AC_OPEN)
        {
            button = form_alert(1,woken);
            if (button == 2)
            {
                target = appl_find("DEMO  ");
                if (target == -1)
                    form_alert(1,"[3][Accessory could not|find Demo][Abort]");
                else appl_write(target,sizeof(data),data);
            }
        }
        else if (pipe[0] == ANSWER)
        {
            sprintf(text,"[1][Accessory: Custom message.|Result is %d.][ Ok
]",pipe[3]);
            form_alert(1,text);
        }
    }
    return(0);
}

Listing 3
=====

**
** Listing 3.
** Programmers' Forum, January 1992
**
** Fragment of code illustrating Jeremy Hughes'
** technique allowing vector-intercepting accessories
** to handle resolution changes cleanly. Modified from
** Listing 1 of Programmers' Forum STA 12.
**
** Assembler: asm v5.06
** Written: 16th November 1991
**

**
** Define the symbols we use...
**

trapl equ $0084 GEMDOS vector address.
longframe equ $059E Non-zero if long exception frame MPU.

Mfree equ $49 GEMDOS function number

;=====
**
** Installation code for the resolution-change
** code. In most cases you would probably want
** to amalgamate this into your accessory's
** installation code. Note that, as written,
** this routine MUST be called in supervisor mode.
** _pbase is the Lattice C 5 variable that holds the
** address of the program's basepage. If you are using
** another system, you should ensure that the internal
** variable 'block' is set up as a pointer to the basepage.
**

install move.l __pbase,block Copy our basepage address.
move.l trapl.w,cleanup-4 Grab the GEMDOS trap.
move.l #cleanup,trapl.w Install us.
rts

;=====
**
** This is the protection against nasty resolution changes.
** The initialisation code should splice this into the
** GEMDOS trap. Before splicing in, the internal variable
** 'block' should be set to the start of the program's memory
** block. Note the XBRA prefix for the handler.
**

dc.l 'XBRA'
dc.l 'RZCH' Our XBRA ID: ReZ Change.
dc.l 0 Old GEMDOS trap vector.

```


Rainbow TOS Exposed

When TOS 1.4 ("Rainbow TOS") and TOS 1.6 (as fitted to the STE) were quietly introduced into UK STs, technical details enabling programmers to make the most of the new features were, as usual, thin on the ground. In this article Mathew Lodge presents a thorough coverage of the changes from TOS 1.0, and the new features present in TOSes 1.4 and 1.6, from the advanced ST programmer's viewpoint.

by Mathew Lodge

From the user's viewpoint, the new TOSes came as a life saver. No more problems with the "40 folder limit" and dramatically decreased file access times were just two of the major reasons for upgrading. For those with hard discs, the increased speed in searching File Allocation Tables (FATs) makes your ST feel like a whole new computer.

But these and other "surface level" improvements weren't the only changes. GEMDOS, responsible for process, memory and file manipulation, had a thorough overhaul, and GEM was also given a few tweaks. The rest of the article covers these improvements from the bottom upwards.

Low-level

Several new system variables have been introduced. Some of these variables actually existed before but weren't documented. Another was added to cope with the use of processors other than the 68000 in the ST.

The variable `_sysbase` at \$4F2 points to the system header block, containing various information, as shown in Table 1. The new entry at offset \$20 points to the variable `_root`, which holds the base address of the OS pool (see GEMDOS section below). A faster method of looking at the keyboard shift status is given at offset \$24, which points to a longword containing the keyboard shift state bits. Using this pointer is much faster than using the `Kbshift` BIOS call. More support for multiple processes under GEMDOS is added with the pointer at offset \$28, which points to the system variable `_run`. This is the process ID (currently implemented as the basepage address) of the currently executing GEMDOS process.

A new variable, `_longframe`, has been added to the system variables in the \$400-\$600 area. Located at \$59E, this word value is non-zero if the current processor uses "long" frames. The 68000 exception frame is three words long for "group 1 and 2" exceptions (Trace, Interrupt, Illegal op-code, Privilege violation, TRAP, TRAPV, CHK and Divide by zero) and seven words long for "group 0"

exceptions (Bus error and Address error). On the 68010, '020, '030 and '040, the stack frame is four words for group 1 and 2 exceptions, and a whopping 29 words for group 0 exceptions.

This is important if a program installs any of its own exception handlers, and the `_longframe` variable enables a fast check of the processor type.

The "Reset Bailout" vector was never properly documented. Upon a processor reset, if the contents of \$426 (`_resvalid`) are \$31415926 then the user routine pointed to by \$42A (`_resvector`) is executed. This user routine can return to the TOS reset code with the instruction `JMP $24(A6)`

Finally in this section, the `_drvbits` variable at \$4C2 (indicating which drive letters are valid) is cleared upon a cold and warm reset. In previous versions of TOS it was left unaltered after a warm reset.

BIOS and XBIOS

In TOS 1.0 both the BIOS and GEMDOS maintained separate clocks, which caused a few problems for programs that only set one or the other clock! In the new TOSes, the BIOS and GEMDOS clocks are one and the same. This means that setting the BIOS time also sets the GEMDOS time, and vice versa. This feature was in fact introduced in TOS 1.2 (first released with the Mega STs) because of the addition of the Mega ST's real time clock.

Another feature introduced in TOS 1.2 but not properly documented was the "sector skewing" feature of the XBIOS format floppy disk track routine, `Flopfmt()`. Before I show how to use the feature, a little background on disk formatting and the theory of skewing:

When a disc is formatted, each sector on each track is numbered. On a normal TOS formatted floppy disc, the sectors are numbered in order: 1,2,3,4,5,6,7,8,9. If you assume that most disc accesses are going to be sequential (not an unreasonable assumption), then, when a file is read, consecutive sectors will be required.

In the case of the floppy disc, after sector 9 has been read, the disk drive steps onto the next track to read sector 1. If sectors on this next track are also numbered from 1 to 9, then sector 1 has whizzed past the read/write head in the time it took the disk drive mechanism to step to the next track. The computer then has to wait for one entire disc revolution before sector one comes round again.

Skewing aims to eliminate this wait by numbering the sectors so that the sector you want arrives at the read/write head just after the drive mechanism has moved the head to the next track. It is known that two sectors will pass the read/write head in the time it takes to step from one track to the next. So, if sectors on the first track are numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, then sectors on the next track should be numbered 8, 9, 1, 2, 3, 4, 5, 6, 7. Sectors 8 and 9 pass the head during the step time, and sector one is found straight away.

The new binding replaces a filler parameter of the old binding with a pointer to a sector skewing table. This table of 16 bit words is the list of sector numbers for the track that is to be formatted:

```
int Flopfmt (buffer, skew_table, dev, spt,
            track, side, interleave,
            magic, virgin)
long buffer, skew_table, magic;
int dev, spt, track, side, interleave,
    virgin;
```

To make the XBIOS recognise that `skew_table` points to a valid table of sector numbers, the `interleave` parameter must be set to -1.

In the new TOSes, the `Flopfmt()` routine also adds extra information and appropriate sector spacing to allow some fussy IBM clones to read discs formatted on the ST.

And now on to the great unfinished RS232 saga. It's a saga because problems with RS232 on the ST have been around since it was launched, and it's unfinished because Atari still haven't managed to fix the problem in the new TOSes!

Most people connect either a modem or a printer to the serial port of the ST. There are two methods of flow control or "handshaking" - the system used to prevent the ST flooding the modem/printer with data and vice versa. The simplest protocol is XON/XOFF. When the receiving device's data

buffer is almost full, it sends the XOFF control character (?S) to the sender. When it is ready to receive again, it sends the XON control character (?Q). The other method is RTS/CTS, which requires the connection of the Ready To Send and Clear To Send lines between sender and receiver. Operation is as simple as it sounds - the receiver asserts CTS when it is ready to receive, and the sender asserts RTS when it is ready to send.

Most printers are fast enough to work without any handshaking at all, and the slow transmission speeds of the telephone network ensured that modems never had a problem with data overflow! However, with the advent of high-speed modems and MNP level five, effective transmission speeds of 19200 baud are possible and flow control is essential. The XON/XOFF protocol has always worked on the ST, but is no good for binary file transfers. The RTS/CTS system has never worked on the ST but is the only option!

In the old TOSes, the routines which dealt with RTS and CTS were bug-ridden and didn't stand a chance of working. In the new TOSes, perhaps because Atari knew it wasn't going to work, it is impossible to set RTS/CTS flow control using the Rscnf() XBIOS call. If you try, you're simply ignored. However, the code that handles RTS and CTS was rewritten and is bug free! To make RTS/CTS flow control work, all you have to do is initialise a few registers in the MFP and set the system variable that tells TOS to use RTS/CTS.

A complete solution to this problem is a public domain program called TURBOCTS.PRG, written by Bill Penner. This program replaces the XBIOS Rscnf() call and the RS232 routines with its own code, optimised for RTS/CTS flow control. It's one of those invaluable ST PD programs that everyone should have. There is also an official Atari fix for the RTS/CTS problem, in the form of TOS14FIX.PRG. This dual-purpose program not only allows the Rscnf() XBIOS call to set RTS/CTS flow control, it also fixes an obscure bug in the routine used by the AES to parse file names.

Table 1
OS system header block layout

Offset	Length	Use
\$2	1	Major version number
\$3	1	Minor version number
\$4	4	Address of routine executed upon reset
\$8	4	Pointer to start of OS ROM
\$C	4	Pointer to start of free RAM
\$10	4	Address of default shell
\$14	4	Address of GEM magic
\$18	4	Creation date of ROM (in hex, eg \$02061986 for 2/6/86)
\$1C	2	PAL / NTSC and country code
\$1E	2	Creation date in GEMDOS format
\$20	4	Pointer to base of OS pool, _root
\$24	4	Pointer to kbshift variable
\$28	4	Pointer to current process ID, _run

Table 2
Buffer control block layout

Offset	Length	Use
\$0	\$4	Pointer to next Buffer Control Block (BCB)
\$4	\$2	Set to -1
\$6	\$A	Reserved area (5 words)
\$10	\$4	Pointer to 512 byte buffer

The C structure given in the Atari documentation is as follows:

```
struct _bcb
{
    struct _bcb    *b_link;
    int            b_neg1;
    char           *b_buf;
    char           b_space[512]
};
```

The final change to XBIOS and BIOS is in the area of setting the physical screen base address. There are two ways of doing it - using the Setscreen XBIOS command, or setting the system variable _screenpt at \$45E. If the XBIOS call is used, the screen base is set immediately, but if the system variable is set then the value takes effect at the next vertical blank. If both methods are mixed then you won't get the results you expect, so stick to using one or the other.

GEMDOS

The two major problems of the early TOSes were the "40 folder limit" and the fact that the crucial memory allocation call, Malloc, was almost completely broken. These two problems were related to GEMDOS' inability to manage the OS pool, an area of memory used by the system to keep track of memory and folders.

The OS pool is split into blocks, with two blocks used for every "active" folder, one block per open file, and one quarter of a block used for each allocated or free memory block. In the older TOSes, the definition of an "active" folder was that it had been "seen" (found in a directory search).

This meant that if a disk had 40 folders in its root directory, then after you'd listed the directory of that disk you couldn't open another folder. The only way to continue was to reset the ST.

In the new TOSes, an "active" folder is one that is the root directory of a device, or has open files, or is somebody's current directory, or which has an "active" child directory. The recursive definition carefully uses the phrase "somebody's current directory" because each process has its own current directory on every logical device. However, a folder will only ever have one entry in the OS pool, irrespective of the number of reasons for its "activity".

As well as the change in the definition of "active", old TOSes performed minimal clean-up of the OS pool. If blocks had been used for folder details they couldn't be reused to hold memory block information, and vice versa. In the new TOSes, full and efficient maintenance and clean-up of the OS pool is made.

This clean-up operation leads to a new problem with the GEMDOS memory allocator, called with Malloc(). The first Malloc() had some stupefying bugs in it, the worst being a limit of 20 allocated memory blocks per process. Attempting to allocate more would crash the machine. Programmers also came to rely on the fact that if two memory blocks were allocated one after another, those blocks would be allocated contiguously in memory (i.e. the second block would start immediately after the first).

For this reason, the Malloc call is permanently crippled. So many programs rely on the contiguous allocation side effect of the original Malloc that this behaviour has had to be duplicated in the new re-worked memory manager. When this new memory allocator was written a bug was unwittingly introduced into the routine that coalesces contiguous free memory blocks into one large free memory block.

Allan Pratt, keeper of GEMDOS at Atari in Sunnyvale, California, spotted the bug after

Table 3
New AES call details

Title: FSEL_EXINPUT

Parameters:

control(0) = 91
control(1) = 0
control(2) = 2
control(3) = 3
control(4) = 0

int_out(0) = fs_ireturn /* 0 = error, != 0 no error */
int_out(1) = fs_ixbutton /* 0 = Cancel clicked, 1 = OK clicked */

addr_in(0) = fs_innpath /* Address of path string (altered by user) */
addr_in(1) = fs_innsl /* Address of initial file name (altered) */
addr_in(2) = fs_label /* Address of label for file selector */

Sample C binding:

```
fs_ireturn = fsel_input(fs_innpath, fs_innsl, &fs_ixbutton, fs_label);
```

Title: WIND_NEW

Parameters:

control(0) = 109
control(1) = 0
control(2) = 0
control(3) = 0
control(4) = 0

Sample C binding:

```
wind_new();
```

TOS 1.4 was released, and produced a patch program, POOLFIX.PRG. Unfortunately, this patch was itself bugged, and the replacement, POOLFIX2, was released. This also had a bug in it, and POOLFIX3 was released - this one is bug free! It works by frequently coalescing free memory blocks so that the bugged routine within the new TOS never executes.

Some hard disc drivers have a problem with POOLFIX3, so Claus Brod, a German ST programmer, modified it and called his version POOLFIX4, much to the anger of Allan Pratt who felt that it might be confused with the official Atari releases. However, the names stand as they are, and POOLFIX3 has a permanent place in the AUTO folder of my hard disc.

Of course, it is still possible to run out of OS pool space, and the famous FOLDRxxx.PRG, which increases the size of the OS pool according to the number substituted for xxx, still works to increase the pool size. If you do run out of space in the OS pool, the following message appears, and the ST must be reset:

```
*** OUT OF INTERNAL MEMORY:
*** USE FOLDR100.PRG TO GET MORE
*** SYSTEM HALTED ***
```

The message is always in English, regardless of the country of the ST. Only attempting to make another folder "active" or opening a file will cause this message to appear. If there is no space left in the pool for Malloc to work, it simply returns zero to indicate that the Malloc failed.

Moving on to file attributes now, the documentation for the new TOSes clarifies the rules applied by the Ffirst and Fnext directory search calls as follows:

1. If input attribute is \$08, only files with attribute \$08 are matched
2. Otherwise, if the file has archive or read-only attributes, or if a file has no attributes, it is matched
3. If the file attributes include the given input attribute, the file is matched.

These three rules are combined into one logical expression, where FA is the File Attribute, and IA is the Input Attribute:

$$((\text{not FA and } (IA \diamond \$08)) \text{ or } ((IA \text{ or } \$21) \text{ and FA}))$$

The (not FA and (IA \diamond \$08)) part implements rule 1, the (IA or \$21) handles rule 2, and "anding" of this with FA implements rule 3.

It is a consequence of this rule that for a file to be hidden it cannot have its read-only or archive bits set, and similarly for a "system" file. A file which has both its "hidden" and "system" attribute bits set (but nothing else), it will appear in a file listing if either of the "hidden" or "system" bits are given in the input attribute.

You can create files with any combination of archive, hidden, system or read-only bits using Fcreate(), but you cannot use Fattrib() to change to an illegal combination. You also cannot use Fattrib(), Fopen() or Fdelete() on labels or subdirectories. Previously it was possible to turn files into directories and vice versa!

GEMDOS has always used a cluster caching system in an attempt to speed up disc reads. In the old TOSes the caching system didn't work properly and was next to useless, but it has been fixed in the new TOSes. A buffer control block has the layout shown in Table 2.

There are two buffer lists: one for File Allocation Tables (Fats), and one for root directories and any other disc data. To add a buf-

fer, do the following (examples give C language statements):

1. Allocate space for a BCB, call it b
2. Set b.b_neg1 to -1
3. Set b.b_bufnr to point to b_space[0] (i.e. b.bufnr = b_space)
4. a) To add to the FAT buffer list
Set b.b_link to the contents of the longword at \$4B2 (_bufll[0])
Set _bufll[0] to point to b (i.e. _bufll[0] = &b)
b) To add to the data buffer list
Set b.b_link to the contents of the longword at \$4B6 (_bufll[1])
Set _bufll[1] to point to b (i.e. _bufll[1] = &b)

The easiest way to do this is to use the official Atari program, CACHExxx.PRG, which adds xxx K of memory to the FAT and data buffers.

A number of small enhancements have also been made to many GEMDOS calls in the new TOSes. Most of these are to fix the huge number of problems that used to occur when input or output on the standard devices (console, printer etc.) was redirected to a file.

Redirection to the PRN: device is handled correctly, Cconws() is faster when redirected to a file, and Cconrs() has been fixed to handle 8-bit characters, and it also does not echo the input line to standard output when redirected. Character I/O now also works when redirected, and closing any of the standard device handles (0-5) now results in safe and predictable behaviour.

Frename() can now rename folders, and it can also move files about in the directory structure of a given device. It cannot move files across logical devices, but the fastest way to move a file between two directories on the same logical device is to use Frename(). Frename() cannot move directories in the same way (think about it).

The execute process call, Pexec() has also been reworked. It now will not bomb out, it releases memory correctly, and it can handle executables with more than 32K of relocation data. However, the Atari documentation states that Pexec mode zero (load and go) "is the only one that works reliably. The others run into trouble with memory and file ownership and things like that. Use them only with extreme caution."

Another new feature in Pexec() is "fast loading". In the older TOSes, all of free memory is cleared (set to zero bytes) by Pexec() before a program is run. If you have a few megabytes of memory this can take considerable time (up to one second). This behaviour was spotted by Charles Johnson and Co. at Codehead, who wrote the Pinhead utility to get around the problem. Pinhead simply doesn't clear the whole of memory, just the uninitialised data section (the BSS). In the new TOSes, if the "fast load" bit of an executable program is set, then Pexec() behaves exactly like Pinhead. Otherwise, it behaves as before - this is important for some programs (such as Microsoft Write)

which rely on free memory being all zeroes. Atari didn't document which bit in the executable program header to set - instead they released a program, MAKEFAST.PRG, which can set, unset and check the fast load bit.

GEM (VDI and AES)

The VDI has only three changes to it: The Ptsin array can now contain up to 512 vertices, vq_extent() now works correctly when the angle of rotation is 270 degrees, and vq_mouse is now more robust.

The most noticeable change to the AES is the new file selector. As well as the cosmetic differences, a number of internal changes and fixes have been made. The fixed limit of 100 files per file selector has been removed, long path names are handled correctly and multiple "abort/continue" errors are handled properly. The file selector also preserves the current DTA buffer address, VDI clipping rectangle and GEMDOS default directory.

After appl_init() has been called, the new TOSes return a version number of \$0130 in global\$01. A number of small bug fixes have also been made: the dot pattern of windows is no longer corrupted by some redraw attempts and editable fields followed by non-editable characters are handled properly. The wind_get() call with a parameter of WF_SCREEN returns the address and

length of the AES' internal menu and alert screen buffer.

Finally, there are two new AES calls. The first, fsel_exinput, allows a program to give a title to the file selector, otherwise it has the same functionality as fsel_input(). More recent ST language products (the entire HiSoft range springs immediately to mind) include these calls in their GEM libraries, but information given in Table 3 allows you to write your own GEM library bindings.

The second new AES call, wind_new(), is a godsend to programmers who wish to return the AES to a known state when things have

gone drastically wrong in their GEM program. It closes and deletes all windows, resets the wind_update() semaphores, flushes all window buffers and restores mouse ownership back to the AES. The GEM Desktop calls wind_new() after the termination of a program it has launched to ensure that its windows and menus are not locked by the possible crash of the program.

As you have seen, the new TOSes have a lot going for them, and we may see more applications taking advantage of their new facilities now that information on them is more widely available.

Rainbow TOS utilities

All the programs mentioned in the text are available from the ST Club on disk UTI.125. It contains the following utilities with full documentation:

CACHExxx.PRG	- Add memory to GEMDOS caches
TURBOCT5.PRG	- Relieve those RS232 blues
POOLFIX3.PRG	- (Atari) Never fall foul of the new Malloc bug
POOLFIX4.PRG	- (Claus Brod) For those with hard discs that are fouled by POOLFIX3
TOS14FIX.PRG	- Fixes that obscure GEM bug
FOLDRxxx.PRG	- Increases size of OS pool
MAKEFAST.PRG	- Sets/clears "fast load" bit of executables
SHIPACC.PRG	- Ships all hard discs. Can be .PRG or .ACC
MACCEL2.PRG	- Combined mouse accelerator and screen blanker
STBLANK.ACC	- More advanced, full featured screen blanker

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CAD Supertest

Several major new CAD releases prompted us to compare five general CAD packages covering a wide price range. Perhaps you need a specialist CAD package such as Platon for circuit board layout or maybe you could get by using EasyDraw to generate vector graphics. Joe Connor helps you draw your own conclusions...

CAD software draws, edits and outputs drawings. Most CAD software produces similar quality output - after all they drive the same devices. What really makes the difference between them is:

- 1) getting the information in
- 2) editing the drawing

The Bar charts represent 12 key features that affect these two aims. Each numbered feature is commented in the column below. The more blocks the better. Overall ratings provide useful pointers but it is important to scrutinise features below the dotted line. Of course, features should not be equally weighted but that's where you take over.

Icons at the foot of each column detail the System requirements; refer to the Key shown below.

The table below provides an idea of relative performance. The COLUMBIA drawing was used as this is included with most CAD packages. A 16MHz 68881 maths coprocessor was used for the Drafter and DynaCADD tests.

BeckerCAD	CADja	Draftplus	Drafter	DynaCADD	Description
36031	35572	17332	16240	48608	File size
6.6	6.1	5.2	8.8	4.7	hard disk load
27.8	12.8	9.4	12.5	25.8	floppy load
5.8	6.1	2.4	7.5	1.5	8 MHz redraw

Distributors:

BeckerCAD (£99.00), Cambridge Business Software, Melbourn Science Park, Moat Lane, Melbourn, Royston, Herts. SG8 6EJ. Tel: 0763 262582; Fax: 262425.

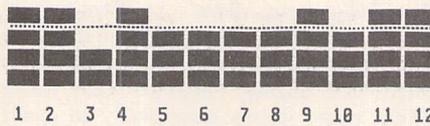
CADja (£199.00) and **DynaCADD** (£763.75), Expressworks Ltd, Vyne Cottage, 75 Heath Lane, Farnham, Surrey GU9 0PX. Tel: 0252 726255; Fax: 727125.

Draftplus (£79.95), GFA Data Media (UK) Ltd, Box 121, Wokingham, Berkshire RG11 1FA. Telephone: 0734 794941; Fax: 894618.

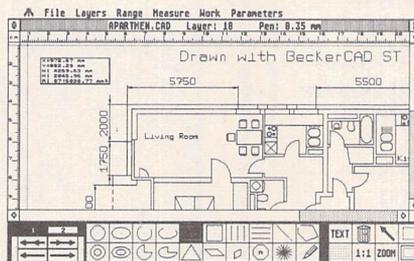
Technobox Drafter (£199), Silica Systems Ltd, 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX. Tel: 081 309 1111; Fax: 309 0017.

512k RAM minimum	1Mb RAM minimum	Maths coprocessor routines provided	GDOS necessary for output	Hardware Key used in joystick port	640x400 resolution eg Atari SM124/5	320x200 resolution colour utilised	extended monochrome res. supported	extended colour res. supported
------------------	-----------------	-------------------------------------	---------------------------	------------------------------------	-------------------------------------	------------------------------------	------------------------------------	--------------------------------

BeckerCAD v1.29



- 1) **Draw:** good range of commands includes freehand drawing which partially makes up for the lack of curve commands.
 - 2) **Edit:** good range of commands. Individual elements edited by moving control points (as in EasyDraw). Ideal for ellipses. Shape command rescales groups of elements including dimensions, pseudo associativity.
 - 3) **Dimension:** limited but easy-to-use range of commands (including the cutest radius option).
 - 4) **Layer:** slightly cumbersome but fully featured layer system enables elements to be turned on/off, locked, cut or pasted between the 300 layers available.
 - 5) **Symbol:** 97 architectural, 94 electrical installation, 80 hydraulic/pneumatic, 34 electronic and 14 electrical included. Only fixed symbols are possible; these can be scaled before loading and previewed before insertion.
 - 6) **File:** imports native CAD format and MAC macro files. Exports HPGL, Postscript, Epson plotter and GEM Metafiles.
 - 7) **View:** all or in a resizeable GEM window with scroll bars, 1:1 (full size), zoom in (by rectangle) and previous.
 - 8) **User interface:** 54 icons, drop down menus, Mac-like dialog boxes, keyboard shortcuts, prompts and commands form a powerful but confusing GUI.
 - 9) **Text:** can be sized, positioned, bold, italic, underlined, mirrored and proportionally spaced. Includes font editor and 5 vector fonts.
 - 10) **Cursor position:** a basic selection includes direct co-ordinate entry, grid and end/centre point snap.
- Note the tape deck style UNDO and co-ordinate box which follows the crosshairs around the screen.

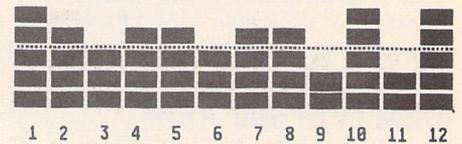


- 11) **Customisation:** a macro programming module utilising a Postscript-like language enables complex tasks to be automated and assigned to the function keys.
- 12) **Manual:** V1.X 252-page main manual, wobbly translation. 16-page symbol reference. Tall A5 ring-bound in slip case.

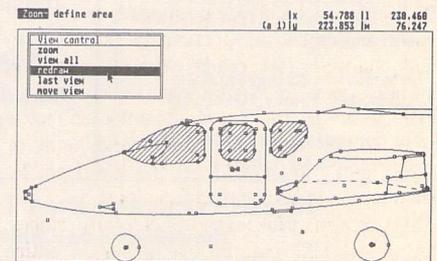


57%

CADja v1.4



- 1) **Draw:** wide range of commands includes excellent range of curve/arc curve commands. Ellipses implemented as tangential arcs.
- 2) **Edit:** wide range includes unusual extras.
- 3) **Dimension:** intuitive range of commands with flexible range of parameters and styles.
- 4) **Layer:** fully featured layer system enables elements to be turned on/off, deleted, locked and copied between the 40 layers available.
- 5) **Symbol:** samples included. Fixed or variable symbols. Powerful insert option allows insertion between points, rotation and scaling or scaling only.
- 6) **File:** trouble-free native DWG format. Imports ASCII files. Exports IMG, PLO (plot files), STEVE files and comprehensive ASCII files. Optional DXF import/export utility available.
- 7) **View:** centred on point, all, zoom in/out by window, pan and previous. Pleasant zoom window/pop-up menu combination provides quick access to any desired view. Regeneration can be further enhanced by toggling text, hatching and dimensions off.
- 8) **User interface:** screen tablet of 154 icons initiates all commands. The elegantly simple GUI provides an uncluttered drawing screen which displays help prompts, pop-up menus, dialog boxes and CLI when required.
- 9) **Text:** rudimentary text handling enables text to be sized and positioned. (V2 will provide improved text functions.)
- 10) **Cursor position:** a joy to use. Any combination of mouse, keyboard, grid snap or element snap co-ordinate entry can be made. Cute snap function graphically captures end, mid, outline, intersection and pre-defined points.



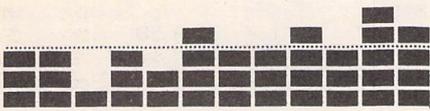
End/centre points can be graphically displayed. Info commands assign co-ordinates onto F Keys.

- 11) **Customisation:** no built-in facilities provided. A README file details the use of many utilities such as Harlekin and CodeKeys.
- 12) **Manual:** excellent up to date 240-page main manual. A5 ring-bound in slip case.



63%

Draftplus v3.13



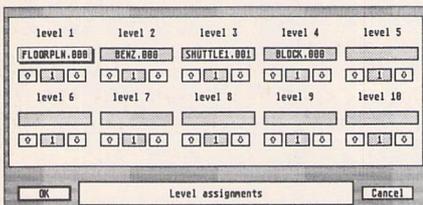
1 2 3 4 5 6 7 8 9 10 11 12

1) **Draw:** limited range of commands mostly hidden away in drop-down menus without keyboard shortcuts.

2) **Edit:** powerful window mode offers wide range of commands including stretch/compress and (uniquely) skew.

3) **Dimension:** only point to point and angle between lines. Other dimension styles are drawn using construction (leader) lines.

4) **Layer:** each level is treated as a separate drawing by Draftplus.



Up to 10 levels can be held in memory and worked on. Every level change saves the existing level to disk. Useful if memory is tight, otherwise use a RAM disk.

5) **Symbol:** 21 architectural, 15 electrical, 44 electronic, 16 flowchart and 9 drawing forms are included. Fixed symbols only. Symbols are previewed before insertion.

6) **File:** native numeric format (e.g. .001) also serve as level labels. Imports DXF (but loses lots of information) and HPGL. Exports DXF, HPGL and (using GDOS) GEM Metafiles.

7) **View:** at AO, A3, A4, 1:1, 8 user-defined zoom factors and 4 user-defined views. Optional scroll bars and zoom by rectangle.

8) **User interface:** 34 icons, drop down menus, dialog boxes, and the CLI form a basic but sluggish GUI.

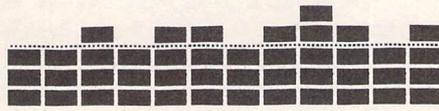
9) **Text:** can be sized, positioned, bold, mirrored angled and proportionally spaced. Special character set reads each character as symbol, great for custom characters sets.

10) **Cursor position:** a combination of mouse step, cursor step and snap to end point or direct entry in the CLI get the job done. No snap on guide line or grid functions.

11) **Customisation:** Draftplus really shines. Using the CLI macros can generate entire drawings. Macros can be generated using any programming language. Utilities such as Harlekin enable drawing files to be opened, edited and implemented without leaving the main program. The CAD hackers' program.

12) **Manual:** V3.0 228-page main manual. A5 ring-bound.

Drafter v2.1



1 2 3 4 5 6 7 8 9 10 11 12

1) **Draw:** basic range of commands. No curve commands. Ellipses implemented as tangential arcs.

2) **Edit:** basic range of commands.

3) **Dimension:** good range of intuitive commands. Excellent associative dimensioning option updates dimension text after rescaling.

4) **Layer:** basic range of commands. Excellent option greys out elements not on the active layer. 9999 layers possible, although the status line soon overflows, causing havoc with keeping track of what is where.

5) **Symbol:** 1216 in all! 168 architectural, 120 electrical, 98 hydraulic/pneumatic, 672 engineering, 152 electronic and 6 title boxes included. Fixed and variable symbols can be scaled before loading and include associative dimensions and variable text COMMENTS.

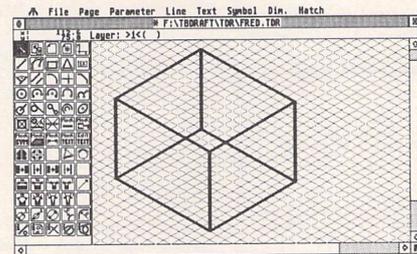
6) **File:** trouble free native TDR format. Imports DXF files. Exports HPGL, Postscript and GEM Metafiles.

7) **View:** resizable GEM window with scroll bars enables all, zoom in (by rectangle) and previous. Excellent option displays line widths.

8) **User interface:** 62 icons, pop-up dialogs, drop-down menus, dialog boxes, keyboard/command shortcuts and prompts make up a friendly and easy to use GUI.

9) **Text:** powerful options to angle, size, position, justify left, centre, right, italicise, space, underline. Lines can be single, multi-line or auto placed under existing text. 5 vector fonts are included. No font editor.

10) **Cursor position:** a excellent range of snap grids enables 2D, isometric, dimetric and other user-defined projections to be more easily drawn.

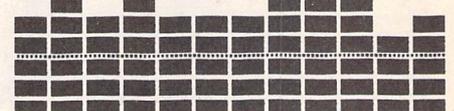


Any combination of mouse, keyboard, grid or element snap can be used. Limited snap tool (end and outline points only) and info commands makes it hard work moving around the drawing.

11) **Customisation:** function keys can be programmed with any command.

12) **Manual:** V2.1 332-page main manual, patchy translation and not very helpful. Excellent 107-page symbol reference, 31-page tutorial. Wide A5 cloth-bound.

DynaCADD v2.06

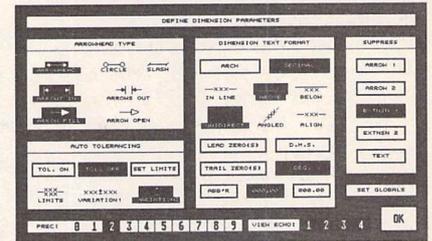


1 2 3 4 5 6 7 8 9 10 11 12

1) **Draw:** extensive apart from chamfer and a few circle/arc options. Ellipse and curve functions not very intuitive. True 3D drawing module included.

2) **Edit:** full range complemented by extensive range of options.

3) **Dimension:** unsurpassed control over every minute aspect of dimensioning.



4) **Layer:** total flexibility, any desired layer system could be implemented.

5) **Symbol:** samples included. Fixed or variable symbols can be rotated, stretched, mirrored and scaled in the x, y and z axes during loading.

6) **File:** weird native file format still confuses me after several years' use! Imports 2D & 3D DXF and 3D2. Exports DXF, IMG, GEM Metafiles, Postscript PS & EPS.

7) **View:** all, at maximum size, centred on point, step zoom in/out, by rectangle, drag and previous. In addition up to 16 views can be defined and accessed from Images drop down menu.

8) **User interface:** superbly organised hierarchical icon-based interface combines with drop-down menus and dialog boxes for pre-set options. All commands can also be typed directly. Comprehensive on-line help. Useful in-built programmable macro function. Digitizer option.

9) **Text:** complete control of typeface, positioning, kerning, spacing, size & display. Includes font editor and 14 AGFA Compugraphic vector fonts.

10) **Cursor position:** every conceivable point of the drawing can be selected (apart from tangent points) using any combination of direct co-ordinate entry, snaps, grids and powerful filters.

11) **Customisation:** DynaCADD offers such a vast range of commands and options that tasks can be achieved by several different routes. A macro programming function enables commands to be chained together and assigned to any Control+letter key combination.

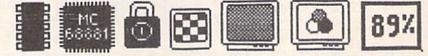
12) **Manual:** good V1.6 473-page main manual. Excellent 110-page 2D & 3D tutorial. A5 ring-bound in slip case.



53%



61%



89%

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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).

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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).

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figured copy of Uniterm on disk. Call 081-593-6117 (Evenings) Dagenham area. (14).

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Kozmic 2.1 (TOS 1.62 OK) Direct from the author. Psychedelic Pattern Generator STF Rating 89% Aug 91. DS Disk needs 1 Meg Ram. Infinite patterns save to disk. £5.00 for two disks incl. source code + extras. Dave Henninger, 199 Bruntsfield Place, Edinburgh EH10 4DQ. (19).

Atari SM124 Mono Monitor, screen expanded to full size as per 2nd Manual £85 plus p&p. Star LC24-10 Dot Matrix printer, excellent Graphics. Updating to latest Colour printer - £120 plus p&p. Ring Jack Ingate on 03224-37464, or write to 63 Dunwich Road, Bexleyheath, Kent DA7 5EN. (14)

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Reviews: A Book on C, STOS, HP Desk Jet Plus, Football Crazy, Canvas, Goliath 2, HiSoft Forth. Articles: Fontkit Plus Tutorial I, NEC P2200 Ribbons, First Steps in Prolog - I, Monitors - adding an audio amplifier, GEM Retrace, News from Japan.

Newsletter Issue 29

Reviews: Le Rédacteur v3, Citizen Swift Printer, Astronomy Lab, Hyperpaint. Articles: First steps in Prolog - II, Some thoughts upon learning C, Fontkit Plus Tutorial II, Canadian News.

Newsletter Issue 30

Reviews: Atari Tower, K Spread 3 & K Graph 2, PC Ditto 2, PC Board Design, Lattice C version 5. Articles: First steps in Prolog - III, Calamus Comment, Hardware - DMA Port and Hard Disks, Fontkit Plus Tutorial III.

Newsletter Issue 31

Reviews: Supercharger version 1.4, Xenomorph, Scanner Appeal, Zubair Z-RAM Board, Resolution 101, Chronoquest II. Articles: First Steps in Prolog - IV, Cupertino Cowboys, DIY Half Meg Upgrade, Fontkit Plus Tutorial IV.

ST Applications Issue 1

Reviews: NeoDesk 3, Universal Item Selector III, Deluxe Paint ST, East Draw 3, Tristan, PD Adventure Games: Invasion and Darkness is Forever; Jeremiah's Journal: Adventure Probe Convention, Operation Stealth, Tamoret; Book Reviews: C - A Dabhand Guide, The Oxford Dictionary of Computing; Articles: Computer Entertainment Show '90, MIDI Hands on Show, MIDI in the UK, Fontkit Plus Tutorial V, That's Write, Hard Disk Backup, Searching Directory Trees, MIDI Software in C, Reading CPM disks, Gadgets by Small; Regulars: PD Update 11.1 Forum, CAD Column, STicks and STones.

ST Applications Issue 2

Reviews: NeoDesk CLI, Le Rédacteur v3.03, Megapaint II, Protext v5, Jet Setters (Inkjet printer), Dr. T.'s Tiger Club, Headstart; Articles: Whistle Stop Tour, Fleet Street Publisher 3 or Timeworks?, TeX Notes, Fontkit Plus Tutorial VI, ST Parallel Port Buffer, MIDI Software in C; Regulars: PD Update 11.2, CAD Column, GFA Problem Page, Programmers' Forum, Adventure Column, Forum, STicks and STones.

ST Applications Issue 3

Reviews: Wordflair, Molgraph, Write ON, EdScheme; Articles: Computer Shopper Show, Living with the Atari Laser, Working in Tandem (ST & HP Deskjet), LaserFace, On-Line Conferencing (CIX), Racing Spreadsheets, Giving it the WERCS Part 1, Dan Wilga Interview; Regulars: News, Forum, Adventure Column, CAD Column, PD Update 11.3, STicks and STones, Programmers' Forum.

ST Applications Issue 4

Reviews: Harlekin, CADja, Calligrapher, Titan Designs' Reflex Board; Articles: 16-bit Computer Fair Reports, Pictures - Scanners and Pixels, Your FirST BASIC, ST Internals, DIY Fan Thermostat, Fontswitch 3 Part 1, Giving it the WERCS Part 2, GEM Dialogue boxes in C; Regulars: News, Forum, Adventure Column, CAD Column, STicks and STones, PD Update 11.4, Programmers' Forum.

ST Applications Issue 5

Reviews: Keys!, Craft 2, ISETL, AdSpeed, Personal Finance Manager Plus, Master Time, Game Makers' Manual, FastCopy 3; Articles: FastFire, Bertha (DIY Upgrade), MIDI Fundamentals Part 1, Auto-Run, Software Documentation, Fontswitch Part 2, Tempus Part 1, Giving it the WERCS Part 3; Regulars: News, ST Internals, STicks and STones, Adventure Column, Forum GFA Problem Page, Programmers' Forum, CAD Column.

ST Applications Issue 6

Reviews: Playback, Quartet, Opus 2.2, Auto-Switch Overscan, In The Public Domain; Articles: Atari Press Conference, ST in the Office, Scanning New Horizons, Switch-On Delay Unit, Tempus Part 2, Giving it the WERCS Part 4; Regulars: News, STicks and STones, MIDI Fundamentals, PD Update 11.5, Adventure Column, CAD Column, Forum, Programmers' Forum.

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ST Applications Issue 13

Reviews: GFA Draft Plus v3, Hotwire, Avant Vector, Games in Black and White, Printer-Q, Public Domain Software; Articles: ST Internals (Part 9), Getting to Grips with Cubase (Part 6), Going On-Line, Signum - The Jewel in the Crown, From the Hotline, Traps for the Wary (Part 4); Regulars: News, Licenceware Update, Jeremiah's Journal, A to Z of the ST (H-I), STicks and STones, Forum, Desktop Discussions, Programmers' Forum, CAD Column, Classified Adverts.

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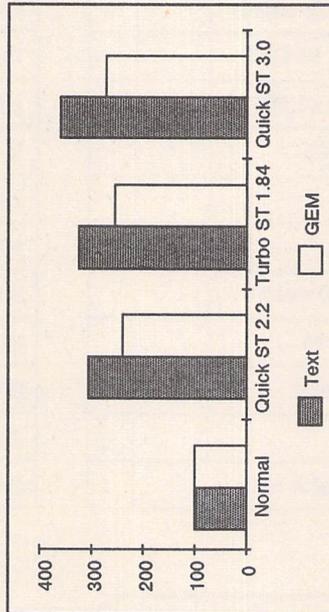
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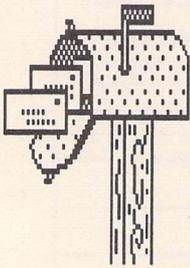
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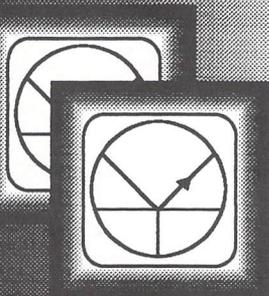
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