Price: £1.50

ST APPLICATIONS

The Magazine for Users of Atari ST, STE and TT Computers — *Issue No. 5 April 1991*

THIS MONTH

REVIEWS

- Keys!
- Craft 2
- ISETL
- AdSpeed
- Fast Copy III

ARTICLES

- DIY RAM Upgrade
- Fontswitch 3
- FastFire
- WERCS Part 3

REGULARS

- News
- Adventure Column
- CAD Column
- STicks and STones
- Classified Adverts
- Programmers' Forum
- MIDI Fundamentals

Plus

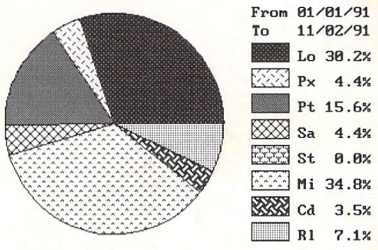
Forum

DeskJet Tips
Integrex Printers
Serial Numbers
Missing Drive 'C'

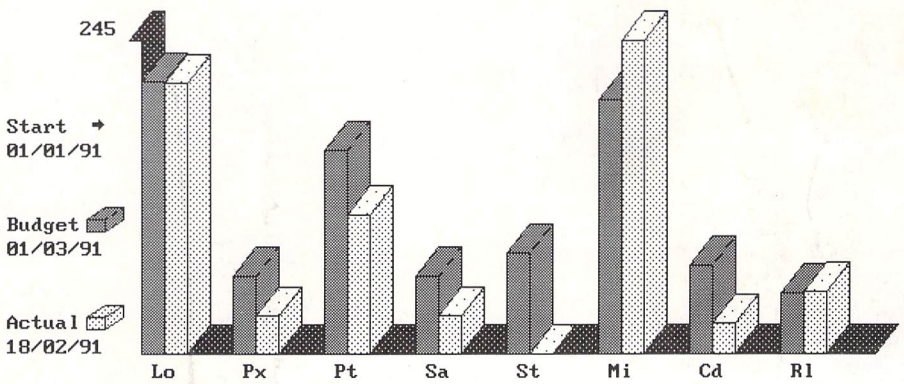
MIDI SERIES

Starting this month is a mini-series of articles on one of the ST's main strengths, MIDI. The first part covers the theory of data exchange: channel voice/mode messages.

P.F.M PLUS



Personal Accounts



Personal Finance Manager is a home accounts programme that can handle up to ten different accounts. Its features include information analysis, budget planning, trend plotting and an impressive range of graphing facilities. How well it does all this is outlined by Michael Baxter in this issue.

Master Time

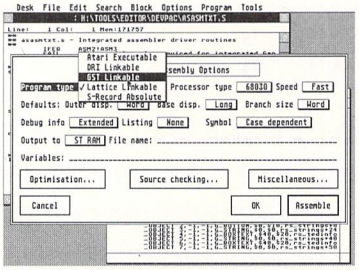
Paul Bocij reviews an educational package that teaches children how to tell the time, both 'analogue' and 'digital'. The incorporation of a sequencing game and a sketch pad adds extra value for money.

HiSoft News

All the latest news and product information.

DevpacTT, now!

HiSoft Devpac TT, the complete assembly language development system for your Atari TT computer, is now available.



Comprising a multi-window editor, a 680x0 macro assembler, a fast linker and a powerful symbolic debugger, Devpac TT provides you with all you need to program efficiently and quickly on the TT. Features include:

Editor

- Full multi-window support with cut and paste between windows and pop-up menus
- Up to 9 tools give a complete visual shell
- Environment variable support
- Powerful non-ASCII character pop-up to allow unusual characters to be entered using the mouse from the editor and within dialog boxes
- High speed search algorithm capable of searching more than 1Mb per second
- Nine bookmarks to remember arbitrary points in the source text of any window
- Support for mouse block marking complete with shift-clicking, word and line orientated marking as well as 'click and drag'.

Assembler/Debugger

- Many directives and optimisations to exploit the 68030/68882
- Extended command line support with optimisations, options and variables all accessible from the command line
- Support for DRI, GST, Lattice format linkable code, Atari executable format and Motorola S-Records
- Assembly of 68030/68882 code at 200,000 lines per minute
- Fully TT compatible debugger with support for 68030/68882 and the TT screen modes
- The debugger contains all the features you would expect: multi-windows, conditional breakpoints, full expression evaluator etc.
- Utilities include a Ramdisk, S-record splitter and debug information splitter.

Devpac TT comes complete with a 300-page, ring-bound manual. Also included is the official Motorola 680x0 family Programmer's Reference Guide which gives complete instruction details for the 68030/68882 etc.

Wordflair News

We are pleased to announce the immediate availability of the UK version of Wordflair, the integrated document processor.

With its powerful combination of text, graphics and calculation regions together with its integrated database, Wordflair is ideal for newsletters, product brochures, form letters, mail shots etc.

Wordflair provides all of the features you need for efficient word processing ... and much more. Wordflair lets you combine text, graphics, and images, with its easy-to-use page layout tools. in addition, you can dynamically link calculations and data throughout your document, giving tremendous flexibility and power.

Many of you will of heard of a new version of Wordflair - Wordflair 2. The US version of this package has just been released in the States and we will have the UK version available in May 1991. Some of the important features of this new release are the inclusion of a spelling checker, a thesaurus and FSM GDOS, which is based on outline fonts, giving much improved display and printing of fonts.

The RRP of Wordflair 2 will be £99.95, initially, and the upgrade price from Wordflair 1 will be £39.95. If you use the coupon below and order before 1 May 1991, you can obtain Wordflair 1 for the special price of £59.95. So why not experience Wordflair now and then upgrade without it costing you a penny more?

HighSpeed Pascal

We have recently discovered a brand-new, and rather exciting, version of Pascal for the Atari ST and TT computers.

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 new TT.

HiSoft has been appointed the exclusive distributor of HighSpeed Pascal in the UK, USA, France, Australia and New Zealand. RRP £89.95. Exisitng Personal Pascal users can upgrade to HighSpeed Pascal at a reduced price - please call for details.

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 our Tornado flight simulator includes improved colour graphics, the ability to save your cockpit set-up, a pause key, more control over the view angle and more ... it even works on the TT!

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

Use this order form to obtain your HiSoft Software directly from HiSoft and we will send you a Starter Pack consisting of a quality mouse mat (printed with the ST ASCII set), an attractive disk wallet and 4 double-sided disks, totally free of charge!

❑	**HiSoft Devpac TT**	**£129.00**
❑	**Wordflair - *special price***	**£59.95**
❑	**HighSpeed Pascal**	**£89.95**
❑	**Lattice C Version 5**	**£149.00**
❑	**HiSoft DevpacST 2**	**£59.95**
❑	**HiSoft C Interpreter**	**£49.95**
❑	**FTL Modula-2 Developer**	**£99.95**
❑	**Power BASIC 1.3**	**£49.95**
❑	**Harlekin**	**£49.95**
❑	**TurboST 1.83**	**£34.95**
❑	**HiSoft KnifeST**	**£29.95**
❑	**ProFlight**	**£39.95**
❑	**Tempus 2**	**£39.95**
❑	**Your 2nd Manual**	**£14.95**

Name: Date:

Address:

I wish to pay by: ❑ Cheque/PO ❑ Access ❑ Visa

Card No:

Expiry Date: Signature:

HiSoft software is available from good computer shops. In case of difficulty, you can order directly from HiSoft. For export terms or further details on any of our products, please call or write to us. All prices include VAT and P&P within the UK.

HiSoft
High Quality Software

The Old School, Greenfield,
Bedford MK45 5DE UK.
Tel: +44 525 718181
Fax: +44 525 713716

CONTENTS

Regulars

Articles

Reviews

Read_Me 1st

Subscription Expired? Check your address label to see when your subscription expires: the first number above your name is the issue of the old ST Club Newsletter that your subscription would have expired with, the second number is the issue of ST Applications that your subscription will expire with, and the third number is the number of the disk mag that your Disk Mag subscription will expire with. If the information line on your address label reads STA5, then you must take out a new subscription in order to receive future issues.

Information

Editor: Paul Glover
Sub-Ed: Nicky Wilson
Layout: David Smith

Published by: The ST Club
49 Stoney Street
Nottingham NG1 1LX
Tel: 0602-410241

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

Re-print Permission

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.

Subscription Rates

United Kingdom:
12-issues : £15.00
12-issues plus 6 Disk Mags : £22.50

Air Mail to Europe:
12-issues : £18.00
12-issues plus 6 Disk Mags : £26.50

Air Mail Worldwide:
12-issues : £28.00
12-issues plus 6 Disk Mags : £34.50

Subscription and Order form will be found on page 57.

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. Disk Mag subscribers will be sent their copy of Disk Mag DMG.22 a few days after this magazine is despatched.

Your Guarantee

If at any time you wish to cancel your subscription to ST Applications you may do so simply by informing us in writing. The full unused balance of your subscription will be refunded by return of post.

CREDITS

Typeset with Timeworks DTP, with some help from FSP3.
Text Preparation: Le Rédacteur.
Final output on HP DeskJet Plus.
Printers: Wiltshire (Bristol) Ltd.

Contributors:

Michael Baxter, James Beswick, Hugh Beyer, Paul Bocij, Peter Cameron, Joe Connor, Derryck Croker, Dennis Douglas, John Durst, Jon Ellis, Frank Hollis, Jeremy Hughes, Steve Jones, Vic Lennard, Bill H Lincoln, Günter Minnerup, Jim O'Keeffe, Piper, Paul Rossiter, Sandra Vogel

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.

NEWS IN BRIEF

Menu Plus

Menu Plus from Rimik Enterprises could be thought of as a poor man's NeoDesk. Programs may be run directly from its menu selection screen and up to 169 programs path-names may be set up in the two-level menu system. Access is given to the file selector, the standard Atari one or any of the popular replacement Item Selectors, and applications may be launched direct from the Item Selector without setting up a menu entry for the program. The system uses just 30K of RAM and so is a viable option on an ST system with just 512K of RAM. Menu Plus will also load and view picture files (Degas, Neo and Spectrum 512), play and edit ST Replay sound samples, and change system parameters such as screen colours.

Menu Plus is available at $39.95 from Rimik Enterprises, 836 Osborne St, Vista, CA 92084, USA.

Cheap, but not that cheap!

Following the launch of the Mac Classic, the list price of a 1040STE in the USA has dropped to $499 (around £337 including 15% VAT). Even in Canada Atari have cut 30% off the price of the 1040STE to bring the list retail price down to C$699. Not too clever when compared to the UK RRP of £499. Shop around in the USA and you can pick up a Mega 4, SM124, Megafile 30, SLM605 Laser and Calamus for just $2500 (£1470).

Spectre 3.0

This latest software upgrade includes facilities for reading and writing DOS (TOS1.4+) disks, use of the Apple File Exchange and printing directly to PostScript lasers in Mac mode using the Async Laser Driver.

ProPlus

The latest add-on for TC Developments' share analysis and investment package ProShare is a comprehensive charting and analysis module. Charts are produced with GDOS and the GDOS Metafile format is supported so that illustrations may be incorporated into other GDOS applications such as Timeworks DTP. ProPlus costs £24.95 and further details are available from TC Developments on 0937-581145.

Avalon ST

Steinberg launched Avalon 2.0 ST at the recent Frankfurt 1991 Show. It is a sound sample processing package and incorporates a SCSI interface and 'synthesizer' facility for creating sounds from scratch. More details from Envelode Soundworks on 0993-898484.

C-Manship Complete

Long time ST users may remember the US magazine ST Log ran a long running series of C programming articles by Clayton Walnum. The book "C-Manship Complete" comprises revised versions of all thirty-one C-Manship columns, all presented in a highly readable and understandable manner. By the time the courses in the book have been completed, the reader will have 'built' a corner clock, a Degas picture viewer, and a home finance package called MicroCheck ST. Two single-sided disks are available with all of the book's source codes and programs. "C-Manship Complete" does not yet have a UK supplier but is available in the USA from Taylor Ridge Books, PO Box 48, Manchester, CT 06040; Tel: 203-643-9673. The book costs $19.95 plus shipping and the disks cost $10 extra.

Beach Boy Joins Atari

James Grunke, technical man for the Beach Boys, is leaving the band to become the Atari Music Industry Representative and MIDI promoter.

Naughty Norman

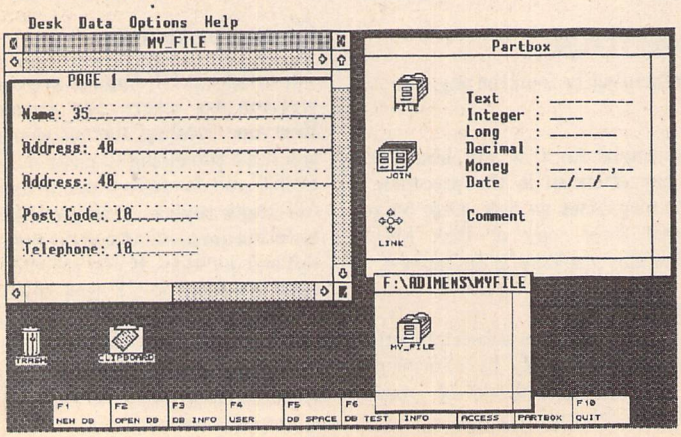
As a result of the recent budget, the rate of VAT on our products and services, except books and magazine subscriptions which are zero rated, will rise from 15% to 17.5%. We shall be absorbing this increase so that our prices will not rise until the next complete price review and catalogue reprint in early May. As from April 1st the list price of all non-zero-rated items should be taken to be including VAT at 17.5%.

Adimens Arrives

Adimens has long been respected as the 'standard' ST database in Germany and most of continental Europe. Now, thanks to Kuma's continuing support for the UK ST market, this product is available in English.

Adimens features include: export and import of data, calculating fields, multi-level sorting, time fields, character replacement, on-line help, extensive search and sort options, merge-form option and interfacing to other programs - such as K-Word 2 - for mail-merge applications. Adimens sports a highly user-friendly graphical user interface based upon desk metaphors. All fields and tools are available from a 'tool box'.

Adimens will retail at £129 including VAT and comes with a 300-page manual which incorporates an extensive tutorial section plus full explanations of Adimens file structures. More details from Kuma Computers on 0734-844335.



Mega STE RSN

The Mega STE shows real promise of being marketed by Atari, in the US at least, as a pure business machine, leaving the STFM and STE to the games and demo's.

The basic Mega STE will come with a 16MHz 68000, 2Mb of RAM expandable to 4Mb using plug-in SIMM cards, 16K of RAM cache, a built in 68881 maths co-processor, blitter chip, and an AppleTalk port. A VME slot is provided for expansion cards, such as Ethernet networking cards or a Viking 19" Moniterm card; and a high speed LAN (Local Area Network) port.

The Mega STE will run TOS 2.02 - the ST/STE version of TOS030 fitted to the TT. The machine is cased in the new-style TT box with a detachable keyboard with very accessible mouse and joystick ports. (Atari do listen sometimes!) All of the other ports are the same as those on current machines; as is the 720K disk drive. There is still no sign of Atari moving over to the High Density 3.5" drives that are now the norm for PC's in this price range.

First UK shipments should be available in the shops late April 1991.

MakeST and Z80 Cross Assembler

Z80 Macro Cross Assembler is a Z80 programmers' development system that runs under GEM on the ST. It comprises a GEM-based text editor, macro cross assembler, linker, and RS232 file transfer facilities to download object code to the target machine. The package costs £79.95 and a demo version is available for £5, which may be discounted against the cost of the full version.

MakeST is a programmers' MAKE utility that will automate the building of executable files from any number of source files. The package incorporates a comprehensive batch file facility and uses the archive bit of files to detect which ones have been modified since the source codes were last compiled.

MakeST comes with full installation details and demonstration batch files for Devpac ST, Prospero C and other popular compilers. MakeST will run on all ST systems and costs £19.95. More details on both products from the publishers D&S Software, PO Box 908, Newport Pagnell, MK16 8YJ; Tel: 0908-615104.

Atari Press Conference

Atari have just announced an aggressive set of targets for the coming year along with a new product range.

After what Bob Gleadow, Atari UK's MD, described as two years of "bleeding dry", Atari are putting behind them the disasters of the Federated chain buy-out and looking towards making themselves market leaders again. And this time they sound like they mean it.

They are going to re-position the Atari range, concentrating on the Lynx as a games machine, the STE as an entry-level computer, the 16MHz Mega STE as a second-time buy, and the TT as the professional power-user's choice.

An unadorned Lynx will, from April, set you back £79.99, with the current packs remaining at £99.99 for those who also want a power lead, and £129.99 including the power lead, comms lead and free game.

The ST range will consist of the 520 STFM Discovery pack remaining at £299.99 "as long as there's a demand". The 520 STE Turbo pack drops to £349.99, but the main marketing thrust will be towards the new Family Curriculum pack consisting of a very attractive 1040 STE and 5 different "modules" of software aimed at the entire family, from early learning programs and GCSE aids to productivity software, all for £399.99. No games are included, emphasising Atari's commitment to being taken as a serious computer company, not just a games machine manufacturer.

The Mega STE's come complete with a high res monitor at £599 ex VAT for the 1 MB model, £899 ex VAT for 2 MB with built in 50MB hard drive, and £999 ex VAT for the full 4 MB version. The clock speed is switchable between 8MHz, to allow for greater compatibility with older ST software, and 16MHz for full power uses. There's no news as to whether there will be any software included.

All STE's will be shipped with TOS 1.6, allowing custom icons, keyboard short-cuts and other NeoDesk-like niceties. The TT range will include a high res colour monitor and prices range from £1995 ex VAT for the basic 2MB model to £2395 ex VAT for 8MB. The prices of the package including Unix V.4 are yet to be announced, and the Motif-based GUI front-end is to be unveiled at CeBit.

Products currently under development are ST Book - an STE-based replacement for the notoriously rare Stacy, fixing all the major complaints about Atari's current portable - and the ST Pad, a keyboardless portable which will feature a user interface based on a pen and a smart screen. Neither of these is expected to reach the market this year. The Panther console, on the other hand, is currently out on loan to developers and will be released when there is a "critical number" of titles - around fifteen - available for it.

Other important news from the Atari conference concerns two major announcements from the house of Gollner: the first is the imminent birth of Jean's first grandchild, the second is the rebirth under her control of the much-missed ST World as a monthly magazine. Jean says that now she'll be concentrating solely on this title, covering the serious aspects of the Atari range. With the new thrust from Atari pushing the ST as a serious machine, Gollner are hoping that the circulation figures for the new ST World justify their gamble in putting it back in the market.

Piper

WordUp Returns

Following the demise of Neocept, WordUp version 3.0 is now being supplied and supported by E. Arthur Brown Co. WordUp 3 was never officially launched in the UK, but in the USA it was widely thought of as being an unstable, but potentially excellent, product. E Arthur Brown Co. claim that a number of the WordUp 3 disks sent out by Neocept were faulty, and the company is offering to recopy disks. The current version of WordUp 3 is available from E Arthur Brown for $49.95, with a 30-day money back guarantee. E Arthur Brown Co. can be contacted at 3404 Pawnee Drive, Alexandra, MN 56308, USA; (612)762-8847.

STrabble?

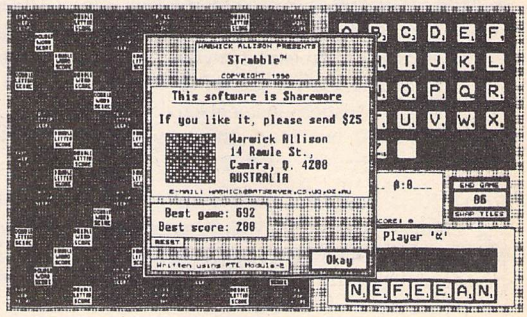
Spears Games have started legal action against The South West Software Library for distributing Warwick Allison's 'PD version' of the board game Scrabble. Whilst the case for breach of copyright (see screen-shot) is pretty well cut and dry, Spears are also claiming damages on the basis that: "Customers ... seeing the screen display ... are highly likely to form the view that the game is endorsed or licensed by Spears...".

Although the screen display may be misleading, a quick perusal of the text file accompanying the game makes the matter clear: "STrabble is similar to the crossword game Scrabble... the primary difference being that this version can be played with just one player - against a computer... If you are unfamiliar with the game of Scrabble, we suggest you read the short description in the rules section, or better still, buy the board game!"

This case opens again the can of worms regarding the use of copyrighted material in public domain works. It is always a shame to see the obvious talents of authors like Warwick Allison going to waste when a re-design of the board and gameplay would have created a game free of copyright violations.

If you have seen a copy of STrabble and would like to comment to Spears on the potential it has for damaging their reputation you can write to the Assistant Secretary at J W Spear & Sons plc, Richard House, Enstone Road, Enfield, EN3 7TB.

Is STrabble Scrabble?



Whoops Corner

FirST Basic Book

It was pleasing to see Lee Corbin's review of our FirST Basic book in the March issue (Number 4) of ST Applications.

Unfortunately, Lee seems to be a little confused concerning the manual that is supplied as part of the FirST Basic package, distributed by Atari UK with most ST computers.

FirST Basic comes with a 32-page booklet that describes the editing environment fully and gives examples of using the system, but owing to cost restrictions has only a brief description (mostly one line!) of the FirST Basic commands.

The idea of 'Your FirST Basic' is to provide the user with a complete manual, including a full command reference, as well as an extensive tutorial. To this end, parts of the Power Basic/HiSoft Basic manual have been duplicated in 'Your FirST Basic'. But this is certainly not a repetition of the booklet supplied with FirST Basic.

David Link

Apologies. Our confusion stemmed from the fact that Atari are supplying FirST Basic with one of two sets of documentation. It seems that the standard FirST Basic documentation is the 32-page booklet, but 1040STE Professional Packs are supplied with a 250-page perfect bound manual which gives a full set of command descriptions. Lee's review compared 'Your FirST Basic' with the 250-page manual; he didn't draw comparisons with the 32-page booklet that most ST users get because we didn't know it existed at the time that the review was prepared.

Fan Thermostat

A glitch crept into last month's Fan Thermostat article thanks to an odder-than-could-have-been-expected bug in Timeworks' handling of the HyperDraw diagrams. The pictures came out upside-down while the captions remained the right way up! We can supply corrected versions of the diagrams to anyone that needs them.

Gem Calc

The description in Issue 4 of the excellent Gem Calc spreadsheet on DMG.21 omitted to mention that the package requires one megabyte of RAM: on a 520ST an error message 8 will eventually appear. If you bought this disk for a copy of GEM Calc and cannot run it, please return it for refund/exchange.

Keys!

As an enthusiastic convert to the WIMP environment, Joe Connor used to wonder why software reviewers moaned about the omission of keyboard shortcuts. What is wrong with the mouse?

Most long-term users of serious software applications would agree that although the mouse allows new users to find their way around an application easily, keyboard shortcuts and macros are a vital aid to productivity. Many applications include some form of key commands, but often they cannot be configured or chained together.

Keys! (Keys from here on) is a macro-handling accessory program which extends the concept of keyboard shortcuts to enable text entry and keyboard shortcuts to be chained together. Where Keys differs from other macro handlers is that it can call up and enter text within dialogue boxes and even access the file selector in mid macro. This is (as far as I know) unique on the Atari ST.

Installation

Keys is installed on either floppy or hard disk in the same manner as other desk accessories by copying KEYS!.ACC and KEYS.RSC onto the root directory and rebooting. Colour system users also have to copy KEYSAUTO.PRG into the auto folder.

Each macro can be assigned to a normal or shifted function key. Macros are created by selecting Keys from the Desk drop down menu. Select a function key using the cursor and enter the desired commands directly. Special characters Control C, A, P and M allow control, alternate, pause and carriage return functions to be embedded in the macros.

Sets of macros can be created for different tasks and saved or loaded from disk as required. A set can be loaded automatically by saving the desired set as DEFAULT.FKY in the root directory. Macros defined in Keys can be turned off via KEYS!.ACC in which case the function keys behave normally within applications which use them. When Keys macros are set on they override any normal function key definitions that may be active. This arrangement allows all function key definitions to be accessed.

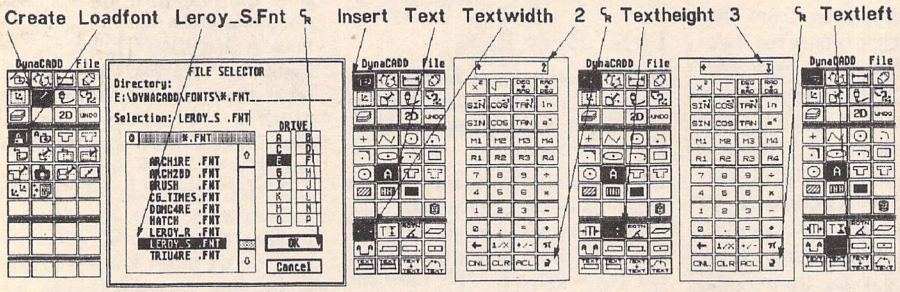
Summary

Points for: ability to edit text inside dialogue boxes and use the file selector within macros. Sets can be loaded and saved. Default set option provided.

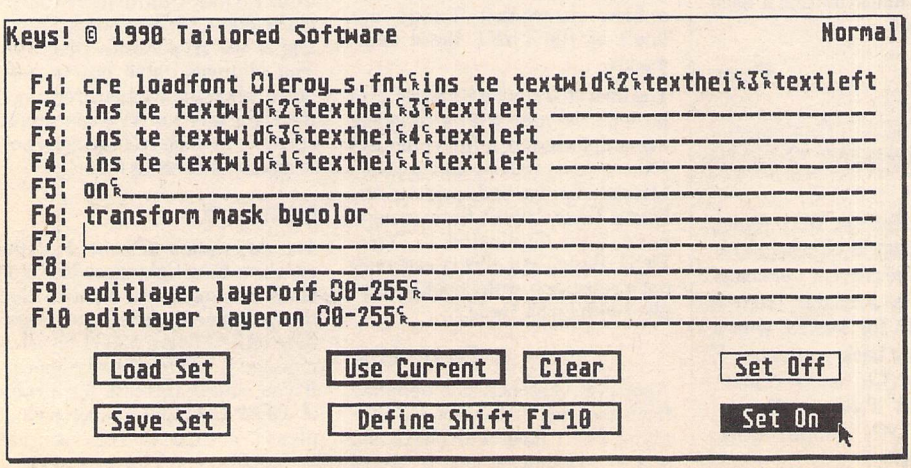
Points against: macro length limited to 61 characters. Unshifted function keys are often pre-assigned with useful functions. Macros must be entered into Keys directly instead of 'recorded' from inside an application.

Conclusion: The ability to edit text fields within dialogue boxes is (as far as I know) unique and enables powerful macros to be assigned.

Alternatives: Key Master (£6.95), Retrace (PD), Key_mac (PD), Cat (PD). All of these are available from the ST Club and worth a look as each program provides different features.



The example above shows a list of commands, manually executed, taking a minimum of 13 mouse clicks. The same sequence has been assigned to the F1 funtion key in Keys!, shown below, and can be executed by a single keystroke.



Product: ..... Keys!

Version: ..... None!

Supplier: ..... Atari Workshop
80 Sumner Road
London SE15 6LA

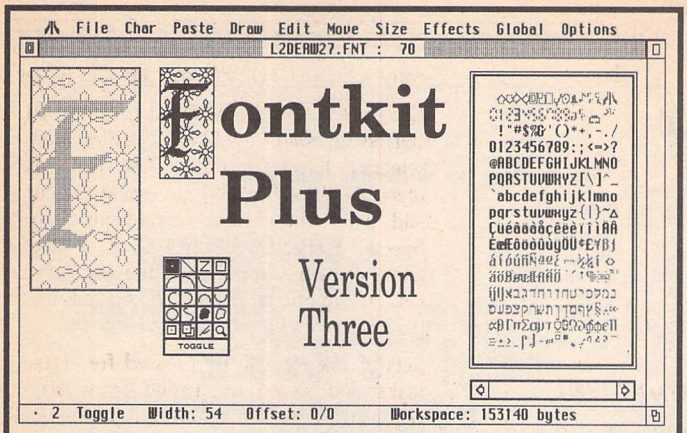
Telephone: 071 708 5755

Fax: 071 708 5754

Price: ..... £ 9.95

Manifest: .....12-page A5 Manual, 1 single-sided disk.

System: ..... Runs in medium and high resolution (including large screens). Works with all versions of TOS. Uses less than 30K RAM.



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.

RAMARA HOUSE SOFTWARE

ATARI ST BOOKLIST

3D Graphics Programming	Abacus 18.45
6800 Assembly Lang. Prog.	Mcgraw 19.95
Applications Guide in C	Compute 19.45
Basic Sourcebook & Tutorial	Atari 9.50
Disk Drives Inside and Out	Abacus 18.45
From ST Basic to C	Abacus 17.95
Game Makers Manual	Sigma 11.45
GFA Basic v3 Development + disk	Glen 17.95
GFA BASIC Prog. Ref. Guide	Michtron 22.50
Graphic Applications	First 9.75
Introducing ST Machine Code	ZZsoft 21.00
Midi & Sound Book	M&T 16.25
Programming the 6800	Sybex 23.95
Presenting the Atari ST	Abacus 15.45
ST Programmers Guide	Webber 22.45
ST Artist	Compute 16.95
ST Format	Fut Pub 9.95
ST Machine Language	Abacus 16.10
The C Programming Language	K&R 23.45
Tech' Reference Guide vol 1.	Compute 19.45
Tech' Reference Guide vol 2.	Compute 19.45
Tech' Reference Guide vol 3.	Compute 22.45
Tricks & Tips on the ST	Abacus 16.40
Your FirST BASIC	Bookmark 14.45
Your Second Manual to the ST	14.95

MISC ITEMS

Kempston Scanner 100-400 dpi	224.95
VidiST video frame grabber-Rombo	84.95
Vidi Chrome Colour Upgrade	18.50
ATonce PC286 AT-Emulator	**179.95**
Twin joystick/mouse lead	5.95
13 pin open ended lead	8.50
Naksha mouse + House & Mat	**33.95**
Universal Printer Stand - Plastic	9.95
Dust Cover ST520/1040	5.25

ATARI ST PROGRAMS

Accountant v3	Sage 124.95
Accountant Plus	Sage 219.45
Bookkeeper v3.2	Sage 82.95
C-Lab Notator V3	457.35
Canvas	12.49
Cashbook Combo	Digita 49.95
Cyber Control	28.95
Cyber Dev/Design	Disks 15.95
Cyber Paint	**36.95**
Cyber Sculpt	55.95
Cyber Studio	38.95
Cyber Texture	34.45
Data Manager Prof.	**28.95**
Degas Elite	19.95
Delux Paint III	39.95
Devpac v2	Hisoft *** **43.95**
Digicalc	Digita 29.16
Easy Draw 2	36.75
Easy Text DTP	ZZsoft 19.95
First Word * New v3	*** **55.45**
Flight Simulator 2	29.99
Fontz Designer	19.95
Fun School 2 all ages	14.95
Fun School 3 all ages	18.95
GFA Basic V3.5 Int.	*** **37.95**
GFA Compiler v3.5	21.95
GFA Draft Plus V3.13	**78.95**
GFA Gem Utility	23.95
GFA Raytrace	29.95
GST C Compiler	15.95
Harlekin	Hisoft *** **36.45**
Hisoft C Interpreter	36.95
Hisoft Forth	29.95
Home Accounts	Digita 18.95
K-Data	Kuma 38.45
K-Resource 2	Kuma 32.45
K-Roget Thesaurus	35.95
K-Spread 1	Kuma 18.49
K-Spread 2	Kuma 41.95
K-Spread 3	Kuma 61.95
K-Spread 4	Kuma 84.95
Knife ST	Hisoft 22.45
Lattice C v5	Hisoft **109.95**
Masterplan	66.56
Master Sound	29.75
NeoDisk 3	*** **28.55**
Personal Finance Man. Plus	31.96
Personal Pascal	Hisoft 57.96
Prodata - Arnor	*** **58.99**
Protext v4.2	*** **69.45**
Protext v5	**108.95**
Quartet	35.95
Sequencer 1	71.95
Spectrum 512	22.95
Superbase Personal	18.95
Superbase Personal 2	68.95
Superbase Professional	168.95
System 3 Extra -	Digita 58.95

ATARI ST PROGRAMS

Syntex OCR	Signa Phone
Tempus 2	Hisoft 29.95
Thats Pixel	Compo Phone
Timeworks DTP	*** **67.50**
Timeworks Tutor	24.95
Turbo ST	Hisoft 28.45
Twist Switcher	Hisoft 20.21
Werks	Hisoft 21.45
Wordfair	Hisoft New Phone
Word Perfect	175.95
Word Writer Timeworks	39.95

***** SPECIAL OFFER *****
Timeworks DTP & First Word V3
Only £98.99

ATARI ST MACHINES

520STE Turbo Pack	368.95
520 STFM Discovery Pack	274.99
1040 STE Extra Pack	439.99
Atari Lynx Handheld	125.99
Portfolio Pocket PC	179.95

MONITORS

Atari SC1224 Colour	268.95
Atari SM 124 Mono	119.95
Philips CM8833 II Colour	249.95
Monitor cable ST to scart	9.95

PRINTERS & ACC

Citizen 120D Plus	154.95
Citizen 124D	229.95
Citizen Swift 9 Pin	219.95
Citizen Swift 24 Pin	316.95
Colour Upgrade Swift 9/24	38.95
Star LC10 Mono	165.95
Ribbon for LC10 (min 2)	2.95
Ribbon 120D/Swift 9 (min 2)	2.95

DISK DRIVES

Cumana 3.5 1 Meg CSA354	79.95
Zydec 3.5 1 Meg Ext. P.S.U.	69.95

3.5 DISKS

Sony branded 2DD box (10)	10.25
Sony/Memorex unbranded (10)	6.45
Datapulse MF2-DDMulticolour (10)	14.95

RECREATION SOFTWARE

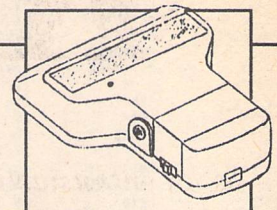
Gazza 2	18.45
Shadow Warriors	14.95
Powermonger	23.95
Shadow of the Beast	18.45
Robocop 2	18.45
Mutant Turtles	18.45
Drakken	22.45
Ultima V	22.45
Future Wars	18.45
Iron Lord	18.45
F19 Stealth Fighter	23.95
Back to the Future 2	18.45
Rick Dangerous 2	18.45
Kick Off 2	18.25
Cricket Captain	18.45
Speedball 2	18.45

ALL PRICES INCLUDE VAT CARRIAGE FREE (UK) & BFPO :
PLEASE SEND CHEQUE / PO MADE PAYABLE TO:
RHS, RAMARA HOUSE,
22 Grange Road, Staincliffe, Nr. Batley, West Yorkshire WF17 7AT
Telephone Sales: 0924 473556
Hours of business 10am - 7pm Monday to Saturday
PRICES SUBJECT TO CHANGE

PANDAAL

Marketing Ltd

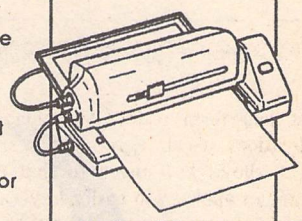
DAATAscan RANGE



The DAATAscan Pro range combine Japanese quality with British know-how. Our software has been developed over 2 years and has received rave reviews from leading ST journalists.

Software features:
- Real-time scanning display
- 100-400 dpi resolution
- Scans line-art or photographs
- Pixel perfect editing
- Zoom, crop, rotate, flip & inverse
- Supports IMG, TIFF & DEGAS
- Full printer support

» New low price « with Syntex OCR ► £169.99 / £269.99



Syntex OCR allows you to convert a scanned page of text from an IMG file into a standard text file for use in DTP & WP. Very fast!

Scanner offers come complete with a free DAATAFAX, personal organiser (RRP £39.99).

» Limited Offer « with Sheet Feed with Syntex OCR ► £399.99 / £499.99 / £599.99

MUSIC

DAATASOUND sampler converts your ST into a powerful sound sytem.

- Real-time oscilloscope
- Sample magnification
- Fade in/out & flip
- Cut, copy, paste & splice
- Real-time echo facility
- MIDI compatible
- 18 track sequencer

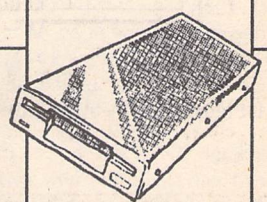
Compatible with all ST, STE and MEGA ST in either colour or mono.

DAATASOUND ► £39.99

HARDWARE

DAATAdisk drive is a 3.5" external 2nd drive manufactured in the UK.

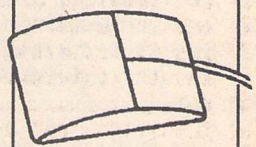
- 720K formatted capacity
- Slimline case with on/off switch
- Dedicated psu



EXTERNAL DRIVE ► £69.99
INTERNAL DRIVE ► £49.99

Also available, internal 1 MEG drive upgrade.

DAATAmouse is a silky smooth 360 dpi high resolution microswitched replacement mouse almost twice as fast as Atari's standard mouse.



DAATAMOUSE ► £29.99

FAST Mail Order Service

All prices include VAT & postage. Please make all cheques payable to PML. Send your orders to the address below.

CREDIT CARD HOTLINE 0234 855666

PML, 44 Singer Way, Woburn Road Industrial Est, Kempston, Bedford MK42 7AF Fax:0234 841331

```
CRAFT/GPshell for Atari ST Series - Version 2.0.9
© 1987, 1988, 1989  Gert Poletiek, ComMedia Amsterdam
78 built-in commands, 19 keywords

@           df          history     pathname    setres
alias       echo        keyclick    palette     shift
alloc       errorfile   keydelay    popd        sleep
basename    exit        keyrepeat   printenv    source
bell        extension   logout      pushd       tee
cache       filename    lpr         pwd         time
cat         find        lprn        ramdisk     touch
cd          font        lpq         read        umount
chmod       free        ls          rehash      unalias
clear       funcs       man         rm          unset
cp          getres      mkdir       rmdir       unsetenv
cursor      hashstat    moreheap    rmfunc      verify
date        hashtable   mount       set         which
dirs        help        mv          setenv      who

break       default     endif       if          time
breaksw     do          endsw       repeat      until
case        else        foreach     switch      while
continue    end         function    then

[a: ] _
```

The display on pressing HELP in the shell

```
STedi : © by J.Vermaseren,1987

Leave this help mode by pressing <help> again.

Cursor movements:

↑       Cursor up                       shift-↑ One page back.
↓       Cursor down                     shift-↓ One page forward.
→       Cursor right                    shift-→ Cursor to end of line.
←       Cursor left                     shift-← Cursor to column 1.
ctrl-→  Horizontal scroll right         ctrl-←  Horizontal scroll left.
ctrl-↑  Scroll screen to start          ctrl-↓  Scroll screen towards end.
↑ ↓     In command line : go through command history.
                shift-ctrl-←    Cursor left one character
                shift-ctrl-→    Cursor right one character

<Home>                  Reset to begin of file. Recount lines.
shift-home              Go to end of file.
Ctrl-home               Top of screen.
shift-ctrl-home         Botton of screen.

The rest of the help file becomes visible by using shift-↓.

 1≡MGE  YCP  1 2 3 4 5 6 7 8 9 0  r  R W S Q  IA=NY B1 STEDI.HLP
```

Part of the editor's help file

Craft 2

Two years ago I bought my ST - at last a real computer after the ZX81 and Amstrad CPC. Since then I have been trying to find a small, fast, simple-to-use text editor. My searches have taken me through several PD catalogues and examination of the few commercial products available.

For a while I was using the MicroEmacs editor and the Gulaam shell, both available from the ST Club. These were good, but I was searching for something better, more friendly and much more configurable.

I now use what I consider to be the best product available. The first time I saw the name was in a review in ST World some 18 months ago. It received a lukewarm write-up and was at that time priced at £100! This was a lot more than I was prepared to pay.

The package consists of a text editor and a command line shell, and now retails for £50 (£36 from Softmachine). All files are on one single-sided disk, with full documentation. Updates are supposed to be provided and feedback is encouraged. However, after six months I have received nothing from distributor or originators. This does seem to be the case with so many products!

Craft has been developed by a company called ComMedia, based in Amsterdam. The English is excellent, and that includes the 600-odd page manual.

It seems that all professional software these days comes with a large manual! In this case it is very well written, and gently takes you from making a backup copy through to comprehensively describing all the commands.

Some people may not like the non-GEM appearance of these programs, but don't be put off by this. GEM applications have their place, but for purely textual uses, menu systems are not necessarily the best choice. I make no apologies to Tempus devotees.

Craft Shell

This was an added bonus for me as I had just started to program in C and was not impressed with the 'all-in' compilers available.

Different screen fonts can be installed. These must be monospaced GEM fonts, eight pixels wide, but any height betwen 8 and 16 (for mono resolution). Some are supplied (more about these later), but you can use your own. I use Fontkit Plus to generate my own .FNT files.

Pressing HELP calls up a list of available commands. Most of these are an integral part of the shell, but some are provided as external programs.

Groan! Not another command line shell/editor!
Well yes, but read on - this package is not just for experienced programmers. It's both a cheap introduction into UNIX-style interfaces and, according to Steve Jones, an editor you'll wonder how you ever managed without.

The implementation looks like a combination of UNIX with VAX_VMS and MS-DOS. I should add that the writers appear to have used the best parts of each of these operating systems!

The program is 90,000 bytes long, and comes with sample login/logout files. These are executed on starting/exiting the shell and allow some customising. For example, it can prompt for the current date and time. Aliases may be set up, e.g. the command 'ls -lR' (which displays a listing of all files with length, time and date through all subdirectories) can be abbreviated to ll, or whatever you wish:

```
alias ll    ls    -lR
```

Commands are entered via a command line. Previously entered commands are stored in a history file and may be recalled with the cursor keys. FULL editing of these recalled commands is available (unlike the atrocious MS-DOS variety).

Copy, rename, move and delete files and subdirectories are possible, although I prefer to use the desktop for most of these operations.

I/O redirection is as good as you would expect, supporting pipes and tees. With this you could, for example, redirect a full disk listing to a printer and file.

```
ll > lpr tee listing.txt
```

For advanced programmers, the 'make' facility looks more than adequate, occupying some twenty pages in the manual. Script files can also be called up.

The shell has its own programming language with **for, if, while, switch** commands among others - very much like 'C'.

A disk cache command is available; choose a size to suit the size of your machine's memory.

A built-in ramdisk is supported along with a print spooler if required. Print jobs can be performed as batch queues.

Craft editor (STEDI)

This editor is supplied in two versions - as a .PRG and an .ACC, each 50,000 bytes in length. Online help is available, with this file being completely editable. In addition, a configuration file may also be generated.

It is a full-screen editor, allowing the cursor to roam anywhere on the screen, limited to a line length of 256 characters. This can be re-defined to wrap; for example to 80.

On entry, a command/status line is displayed at the bottom of the screen. Here commands can be entered from the keyboard. Press ESC or click on the bar with the mouse to access the line. The cursor position and edit mode currently in operation is also displayed. These modes can be quickly changed by clicking on the relevant symbol with the mouse.

To read a file, press F8, use the keyboard command line, or click on the status line to call up the standard file select box.

Cursor key combinations are used to move the cursor. Access to editing commands is via the function keys, the command line or mouse.

The keyboard is re-configurable, with all key combinations available; e.g. ALT+left, SHIFT+Control+key.

Eight buffers are available, in addition to the two yank buffers, selected by ALT+number.

Scrolling and search/replace are very fast. Click on first/last line of displayed text to move up/down a screen at a time.

Tabs are real, but can be replaced with spaces if you really insist. Printing a file can be done with tabs or spaces. Toggling ALT+T displays white spaces (tabs/spaces) as viewable characters. A straightforward command will convert tabs to spaces or vice-versa.

Block commands are implemented in the normal manner, and in column (box) mode. This is ideal for moving tables of data around. I prefer to see a block that I have defined highlighted, which this editor does not do.

The feature that really puts the icing on the cake for me is the ability to 'fold' lines of text. Probably the easist way to visualise this is to imagine several lines of a file compressed into a single titled line. Users of GFA Basic v3 will know about this, as subroutines in this language can be folded so that only the PROC line appears on screen. In Craft, the start of the folded area is specified by:

```
xxx#[`title string'
```

and the last line by:

```
xxx#]'title string'
```

where x stands for any character.

As the first 3 characters are selectable, start and end lines for folds can be 'hidden' in remarks used in most programming languages, e.g. Basic (REM); C (/*); Pascal ({).

Folding is achieved by clicking the right mouse button within the fold area.The entire area is then replaced with a single line containing the 'titlestring'. Click on this line to re-open the fold.

Thus, a program composed of several long routines can be represented on one screen. It is only necessary then to open the fold in which you want to work. Although I have been talking about programming, this feature can be used in plain text files, where lines/paragraphs/chapters can be similarly folded.

Files can be written in Atari, Unix or Raw format. The latter reads in the specified file without interpretation of control sequences (CR,LF etc.) as a 64-character wide binary file. This allows files to be edited as with a disk sector editor. I have found this very useful for simple language translation on PD programs.

As in the shell, GEM (.FNT) fonts can be loaded. ALT+F toggles between the two chosen. This is useful if one is defined as a standard set and the other with hexadecimal equivalents (provided on the program disk). Others on the disk include an IBM-style font and a thin font which looks really good on a black mono screen.

Ten learn buffers are provided, each of which allow you to record a sequence of up to 100 keystrokes and replay them at any time. This facility is excellent for repetitive tasks.

Stream editing is possible by using character sequences to represent commands. This allows files to be modified without the need to read them into the editor's buffer. It is especially useful where a sequence of operations must be carried out on several files.

A trivial example is where all lines containing the word 'example' must be copied from a file and written to another. More complex possibilities could be in the area of file format conversions.

Undo facilities have been provided for most operations.

```
set°cursormode°=°`cursor°-i`
set°clickmode°=°`keyclick°-i`
set°delaymode°=°`keydelay°-i`
set°repeatmode°=°`keyrepeat°-i`
set°verifymode°=°`verify°-i`
#
#       °Now°we°can°set°some°system°parameters.
#
palette°0°0     °       °#°invert°the°screen°(for°color°and°monochrome)
palette°3°777   °       °#°this°is°needed°for°medium°resolution
palette°15°777  °       °#°and°this°for°low°resolution
clear           °       °#°clear°the°screen
cursor°blink°=°35       °#°set°the°blink°rate°to°35
keyclick°off    °       °#°no°additional°noise°from°the°keyboard
bell°on°        °       °#°but°errorbells°may°be°useful
keydelay°14     °       °#°delay°before°repeating°starts
keyrepeat°2     °       °#°and°the°speed°for°repeating
#
#       °Let°the°user°select°an°alternate°font
#
set°fontdir°=°a:fonts   °#°that's°where°the°fonts°are
clear
echo°'available°fonts:'
ls°${fontdir}${dirsep}*.fnt
  60 @ M G E   Y C P   1 2 3 4 5 6 7 8 9 0   r   R W S Q   IA∞NY B1 LOGIN.SH
```

Part of the login script file, with hard tabs indicated by filled circles, and the status/command bar.

If you want to run a program without exiting the editor - no problem, just move to the command line and call it up.

The editor is so good, it justifies the cost by itself. Why is there so little information about this product in the press if it is so good? No, I don't work for the sofware house. Am I being over-enthusiastic? That's something only you can judge. On the other hand, this product is distributed in the UK by HiSoft, who just happen to have one of their own products called Tempus...

Craft will run in all resolutions on all STs. However, if you have an STE, check with HiSoft about compatibility. When I enquired (six months ago), they were experiencing some problems with these computers.

ISETL

While the ST programming community settles more and more on C and assembler, other languages are still making their appearance on our machine. One of the most recent of these is ISETL, or Interpreted SETL. Peter Cameron looks into it...

What are the features of this language, and why might you be tempted away from your usual compiler to look at this new offering?

ISETL is described in the documentation as a language for teaching discrete mathematics. This is a fair description, if a bit narrow; many mathematical concepts relevant to computer science can easily be explored in ISETL, including sets, sequences, permutations, sorting, recursion, polymorphism, object-oriented programming. And it has all the benefits of an interpreted language for learning purposes: instant results, no lengthy compile-link-run cycle.

Syntax

ISETL looks like a kind of hybrid of Pascal and C. It follows Pascal (and natural usage) in using = to test equality and := for assignment. On the other hand, like C, it uses a semicolon for a statement terminator; function definitions, **if**, **for** and **while** loops must have **end** at the end.

Programmers familiar with either language will adapt to ISETL with some confusion but no real difficulty.

Data types

There are two delights in store when you consider the data types. First, there is no limit to the size of integers (apart from a practical restriction to about 20,000 digits). Operations with these long integers are fast. If you need to know 2^10,000, you can use ISETL as a calculator!

Second, sets and tuples are implemented in a very straightforward way. Thus, {1, 2, 3, 4, 5} denotes a set (in which the order of the elements is unimportant), while [1, 2, 3, 4, 5] is a tuple with a first, ..., fifth element. In addition, "12345" is a string. Elements of sets or tuples can themselves be of any type, so complicated objects are built up without the need for elaborate declarations.

In fact, type declarations are not supported. This sometimes causes a problem, when the interpreter makes an assumption about the type of a variable which is contrary to your intentions and causes trouble later. But there are ways around this.

Files

Limited but adequate file handling is supported. Files can be opened for reading, writing, or appending data. Of course, there is no limitation on the type of data you can write to a file. Input and output can be redirected to a file. The syntax for writing resembles Pascal rather than the more esoteric C.

Functions

A function, or func in ISETL, is defined much as in C; it can return a value or not, as you choose. Functions can have parameters and local or global variables; the values of global variables can be assigned when the function is defined or when it is called (and, in the former case, the values are retained). This makes some features of object-oriented programming easy. Consider the following example:

```
counter := c where
    c := func();
        last := last + 1;
        return last;
        end;
    last := 0;
    end;
```

Successive calls to counter() return 1, 2, ...; but the variable last is hidden from the calling program, and cannot be read or assigned.

Logic programming

In addition to the usual Boolean operations, we can quantify over sets. If S is a set and f(x) a Boolean-valued expression, then

```
forall x in S | f(x)
```

is true if **every** element of S makes f true, while

```
exists x in S | f(x)
```

is true if **some** element does.

Operators

If the symbol for any function of two variables is preceded by a dot, it can be used as an infix operator. This is convenient for defining algebraic structures like groups.

If the symbol for an operator is preceded by a percent sign, and followed by a set or tuple, then it combines all the elements of the set. Thus, for example,

```
%+ [ n*n : n in [1..100] ]
```

sums the squares of the integers from 1 to 100.

The # operator returns the number of elements in a set, or the length of a tuple or string.

Editing and running

The language has a small number of system commands. If there is a syntax error in what you type, you may edit the current statement with a very basic search-and-replace editor (or, alternatively, clear it and start again).

For more complicated input, you can include text from a file, which is treated as if it had been typed at the terminal. It is assumed that you will have a programmers' editor to create these files. Since only two processes, editing and running, are involved, it is easy to work either from a general-purpose shell like Gulam, or from an editor having a program launch facility (such as Tempus).

Documentation

There is a formal specification of the ISETL language included in the package. This is in no sense a tutorial, and is heavy going in places (especially where a few details like the definition of a SPECIFIER seem to be incomplete). To make matters worse (for some!), the documentation is in TeX format, and will be a bit impenetrable if you haven't a TeX compiler.

A large collection of examples is supplied. These are supposed to fill the role of a tutorial, but are almost entirely devoid of comments. Your best bet is to turn echo on, and then to include some of the files; their output is meaningless if not read in conjunction with the input producing it. The examples include such things as verifying that a set with a binary operation defined on it satisfies the axioms for a group.

The documentation speaks of an American discrete mathematics textbook which uses ISETL. There may be further explanation there, but I haven't got access to it.

Conclusion

Apart from the minimalist documentation, this is a first-class implementation. Aside from syntax errors, I found it impossible to crash (even when I wanted to, when a recursion was taking much longer than I'd expected). It makes many jobs much easier than traditional languages, and encourages exploration of novel features of mathematics and computer science. (And these things are fun, no matter what some may tell you!)

But who will use it? Probably only those motivated to teach or learn these concepts. (The ease with which you can generate all permutations of a sequence is probably not enough to sell it to anagrammists.) And I am a bit reluctant to recommend a non-standard package for educational purposes, whatever its advantages.

But if this review makes ISETL sound attractive, then get hold of it, and enjoy!

ISETL is available in the public domain from the ST Club on disk LAN.62.

ICD AdSpeed™

If your ST is showing signs of strain, it could be time for a heart transplant. Joe Connor performs surgery on his rotten old Mega ST.

Choosing an accelerator board is a bit of a gamble as there are so many different ST configurations around. Not all boards work or even fit in some STs. Owners of early models like my Mega ST2 should be especially cautious, I have tried various accelerators without success. AdSpeed however works perfectly and claims to work with ALL ST models.

How do they work?

All accelerator boards currently available for the ST involve removal and replacement of the existing 68000 CPU (central processing unit). CPU speed is normally measured in Megahertz (MHz) and termed the 'clock rate'. All current STs run at 8MHz which means that every second 8 million operations or 'cycles' can be processed by the CPU. Doubling the clock rate to 16MHz logically increases the potential number of operations per second to 16 million 'cycles'. Unfortunately, without a complete redesign, the parts of the ST which control memory management, Input/Output and screen display cannot run any faster. Consequently much of the time a 16MHz CPU will be idling around waiting for bottlenecks in the sub system to clear. The simplest accelerator board designs suffer from this problem and offer little in terms of improved performance.

Other boards available are designed to minimise 'bottlenecks' by providing fast RAM cache memory on board. As data is read by the CPU it checks whether the information is already in its memory cache. If it is the CPU reads it from the cache directly at 16MHz; if the data is not in the cache then it is read normally and no speed increase results. Cache size and design is a vital factor in the overall speed improvement.

AdSpeed ST

This board has a large cache comprising 32K of high speed static RAM. 16K data/instruction cache and 16K cache tag memory (fast and clever to you and me). No jumper leads need to be soldered, so the board is simply plugged in. Multilayer surface mount technology has resulted in the small board so it will physically fit all ST models. Changing between 8MHz and 16MHz mode can be via software or optional switch at any time without a reboot. High speed TOS ROMS (70 nanosecond or faster) can be installed which AdSpeed can access at 16MHz.

Installation

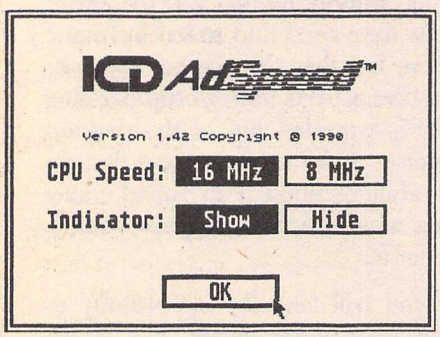
The existing 68000 CPU must be removed. If you are competent with a soldering iron you can cut out the old CPU. Clip all 64 pins from the chip then desolder each pin one at a time, taking great care not to damage the motherboard.

Atari Workshop offer a fitting service and can even desolder your existing 68000 intact allowing you to plug it back in at a later date.

Software

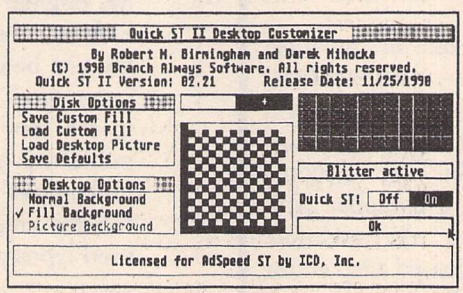
As usual, ICD supply a comprehensive set of utilities. The double-sided disk contains: 2 programs to set the speed from the desktop or alternatively from the AUTO folder. An accessory program ADSPEED.ACC performs several functions. A small speed indicator can be shown or hidden. Running speed and speed indicator can both be set via the Desk drop down menu. The accessory checks for a file named ADSPEED.CFG which can be edited within any text editor to control defaults, hot key definition and application specific settings.

A cut down version called ADSPEEDX.ACC is provided. The speed can still be set but the speed indicator, hot key and configuration file are not available.

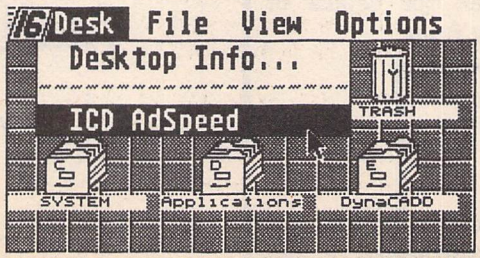


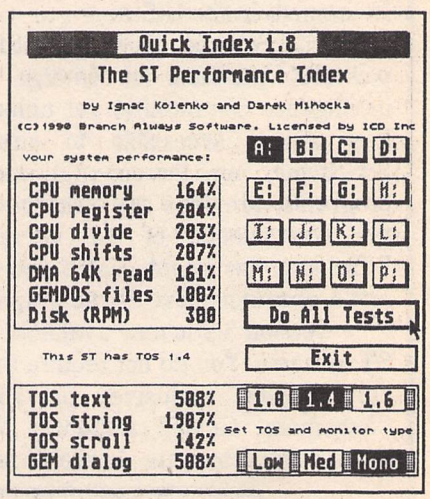
Above: ADSPEED.ACC allows software control of AdSpeed within most applications. An optional configuration ASCII file controls default, hot key and application specific settings.

Right: The sporty 16MHz indicator is a nice status symbol but results in a 2-5% speed degradation. The custom desktop fill serves as a constant reminder that Quick ST is active.

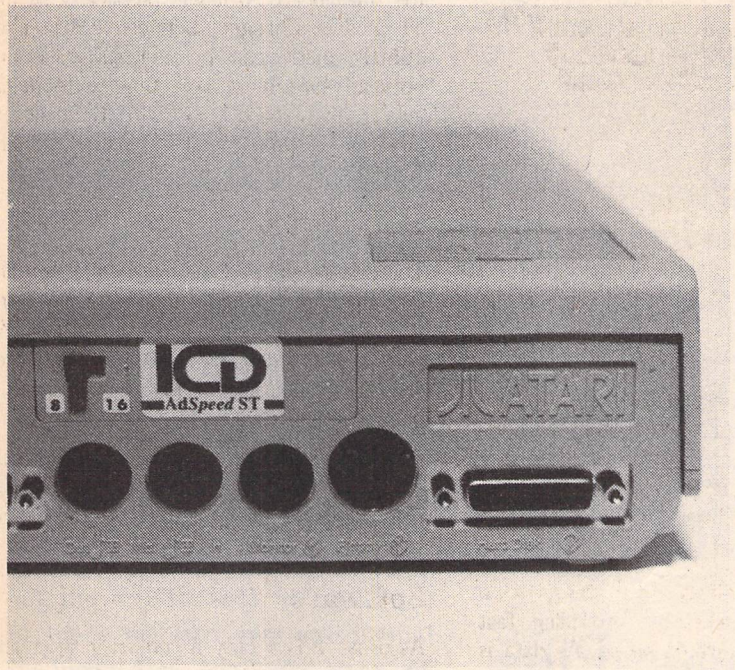


Above: QST2CUST.ACC can be used as a normal accessory or renamed QST2CUST.PRG and run from the desktop. Default settings for Quick ST are set from this utility.

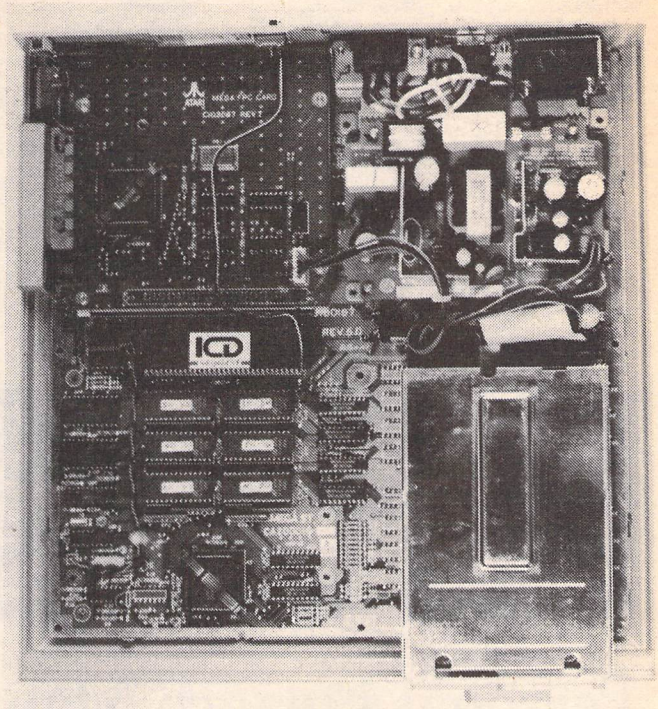




Above: Quick Index has become an accepted performance benchmark for the Atari ST. This version has been licensed by ICD. AdSpeed achieves the higher CPU results. Both the blitter and Quick ST contribute to TOS and GEM dialog results.



A switch can be installed to enable hardware switching between 8 and 16MHz modes. Mounting the switch on the removable rear panel on a Mega ST makes it easy to fit and remove.



The AdSpeed board is compact and does not obstruct the expansion slot. This allows the maths co-processor board (shown), graphics boards and other add ons to be used together.

Quick ST II

Several software Blitters are available and earlier versions of Quick ST are in the Public Domain. ICD have licensed a special version specifically for use with AdSpeed. Both colour and monochrome monitors (including A3 monitors) are supported. Screen display speed is increased by intercepting calls to the slow TOS screen handling routines and redirecting them to its own fast machine code routines. Both QUICKSTC and QUICKSTM.PRG must be placed in the AUTO folder.

An accessory QST2CUST.ACC enables Quick ST to be turned on and off, desktop fill to be edited, loaded and saved or a Degas picture background to replace the desktop pattern. Quick ST occupies 29k of memory (59k with Degas background picture).

Compatibility

Programs which depend on precise timing are liable to cause problems with AdSpeed running at 16MHz (Although I couldn't find any). Known problems exist with Quantum Paint, any program which displays Spectrum 512 pictures, Procopy and the Discovery Cartridge, but these should all work fine in 8MHz mode. ICD claim ALL programs are compatible with AdSpeed in 8MHz mode! I tested a wide variety of programs at 16MHz and 8MHz, first with Quick ST turned on then off. The only program that refused to work properly with AdSpeed was the PD colour screen emulator BIGCOLOR.PRG. QuickST did not like the A3 monitor emulator BIGSCRN.PRG but ran perfectly with the alternative MONSTER.PRG. The Supercharger PC emulator performed normally but with no speed improvement.

Summary

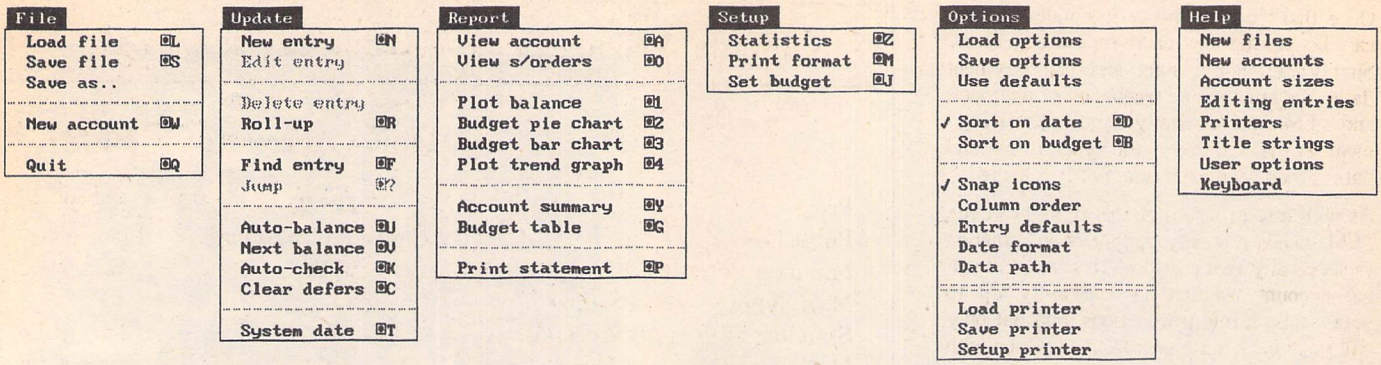
Points for: Fits all ST models, sophisticated RAM cache, able to switch speeds via software or hard wired switch at any time without causing a reboot, fast replacement TOS ROMS can be accessed at 16MHz.

Points against: CPU removal will invalidate warranty (this of course applies to other boards).

Conclusion: Excellent quality, features, compatibility, utilities and performance confirm ICD as a leading supplier of quality ST products. Fit an AdSpeed ST today.

Alternatives: Hypercache (£199.99), Procache 16 (£195.50), and available real soon now, Mach 16 (£239.50). 68020 and 68030 based boards are becoming available; these start at around £650.

Product:	AdSpeed ST
Version:	V1.42
Manufacturer:	ICD Inc. 1220 Rock Street Rockford IL 61101-1437
Supplier & Fitting service:	Atari Workshop 80 Sumner Road London SE15 6LA
Tel:	071 708 5755
Price:	£199.00 + £30.00 fitting charge.
Manifest:	20-page A5 manual detailing installation, utilities, compatibility and an assembly language routine to enable programmers to detect AdSpeed. 1 double-sided disk. AdSpeed board.
System:	All ST's. Viking A3 monitor interface card requires additional capacitor to be soldered.



P.F.M PLUS

Personal Finance Manager Plus

Keeping a tight rein on your financial situation isn't the most enchanting of pastimes, especially if you can't keep your hand out of your wallet when you walk into a shop. Similarly, accounting programs aren't exactly the most appealing of applications, but for those users who can put them to good use, they can help avoid all sorts of monetary mayhem.

Michael Baxter has been putting PFM+ through its paces.

Any accounts program worth its salt should be able to spot underlying trends in your spending, and tell you where your are going wrong, or indeed right. It should also do it with the minimum of fuss - nobody wants to spend hours slaving over the keyboard only to be told something you could have worked out on a piece of paper in ten minutes.

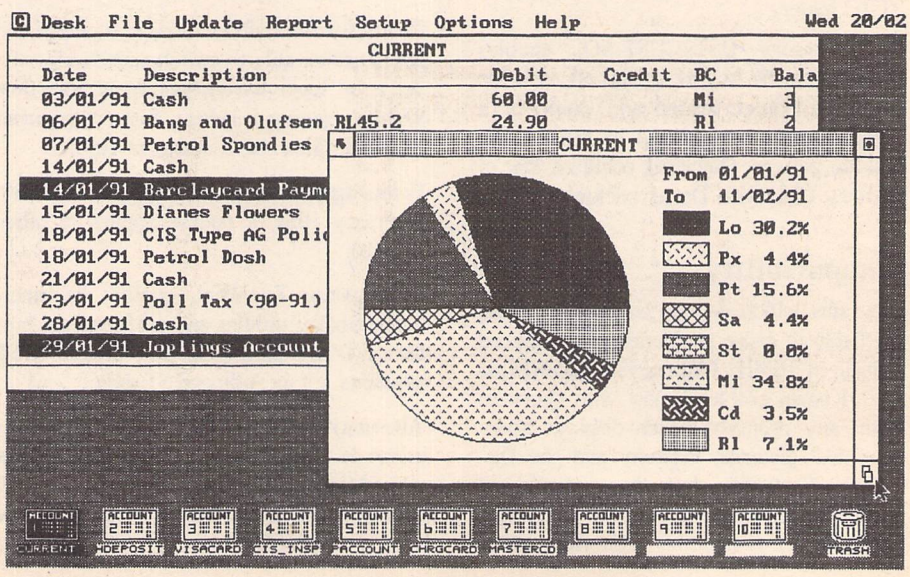
Professional accounting programs tend to be prohibitively expensive. Home-based ST owners looking for such a program solely to keep a track on personal spending have a fairly limited choice without lashing out the kind of capital that would obliterate their bank balances anyway. Until recently, the only two contenders worth a mention were "Home Accounts" and "Personal Finance Manager". Unfortunately, the former is showing its age with a shabby GEM front end and poor graphing facilities. The original Personal Finance Manager fell down on its price/performance ratio - many prospective users were simply not prepared to fork out £30 for a program which offered little more than a basic database facility with a few graphing options.

This time around, Michtron obviously feel they have got it right with their follow up to PFM, called - wait for it - PFM Plus. After all, "The World's most sophisticated personal finance program" is not a claim many people would make about a less-than-excellent product unless they enjoyed being destroyed by critical reviewers.

PFM+ is supplied in the traditionally tatty Microdeal style packaging, comprising one flimsy and unattractive cardboard box, a single-sided disk with PFM painted sloppily on the plastic case, and a 74-page manual, which, to be fair, is well written and pleasantly set out. The manual has a helpful tutorial section for people new to accounting programs, and each feature of the program is explained in detail, with examples where necessary. Fortunately, the software on the disk is of a much higher quality than the packaging, and has an impressive specification. It's completely GEM based, with its own custom desktop, it can handle multiple accounts, plot four different types of graph, has full printer report formatting, and has an extensive list of user-configurable options.

In its simplest form, PFM+ could be described as a database designed to hold records of your financial transactions in up to ten different accounts. Where PFM differs from a normal database, however, is its ability to analyse this information and compare it with a predefined budget, and then warn you if you are going off the rails using an impressive range of graphing facilities.

The first and most time-consuming requirement of PFM+ is to set budgets. Budgets are simply areas of expenditure such as savings, petrol, clothes, gas, mortgage, etc. The program allows up to twenty-eight different budget categories - you 'simply' decide how much you can safely afford to spend on each different category in a given period, either annually, six monthly, quarterly, monthly, four weekly or weekly, and then assign a two letter budget code to each one. This is actually more difficult than it seems and it's wise to spend time making sure you set realistic budgets, otherwise the program will not report a true reflection of your financial situation.



Once that's out of the way, standing orders can be set up for each separate account. Simply define the start and end payment dates, the amount and frequency of payment, and PFM+ automatically handles each payment on the due date - the system time and date is requested each time PFM+ is loaded.

As with any program of this type, however, PFM+ needs a steady supply of information to serve any real purpose. This means keeping account transactions constantly up to date - miss a few transactions, and not only will your bank statement fail to balance with PFM+'s account, the accuracy of your budget targets go flying out of the window. Fortunately, the program has a useful facility called "Automatic Entry Posting" which allows any transactions made on one account to be sent to another account which greatly reduces the amount of work needed to maintain accurate account records. For example, my main PFM+ record file contains six different accounts: Current, Higher Rate Deposit, Visa Card, CIS Insurance Plan, Personal Account and Mastercard. By using the posting facility, any debits from one account can automatically be credited to another account, and vice versa. This makes it very easy to keep tabs on how much you have paid into a savings account, or exactly how much you have left to pay on a credit card. For example, if you entered a cheque transaction in your current account to pay for a pair of shoes you originally bought using your Visa card, the Visa account record and balance would be adjusted accordingly. This is a very powerful feature and greatly reduces the amount of time and effort required to use the program effectively. One nice feature which could have been included (and which is really an extension of the standing order facility) is the ability to automatically add interest to an account on given dates.

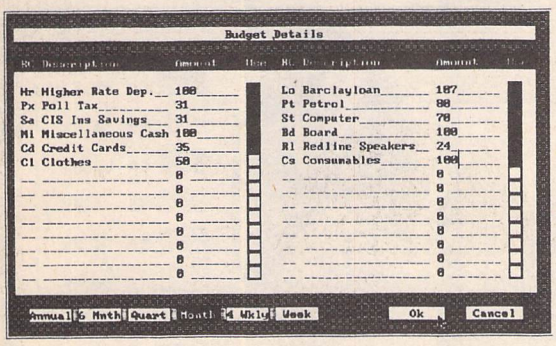
Account entries can be checked and deferred, which is simply an organisational facility for making your account records match an official bank statement. If your records still don't balance, an auto-balance facility will remove entries which prevent your account records matching your bank statement.

Home Accounts/PFM+ Comparison Table

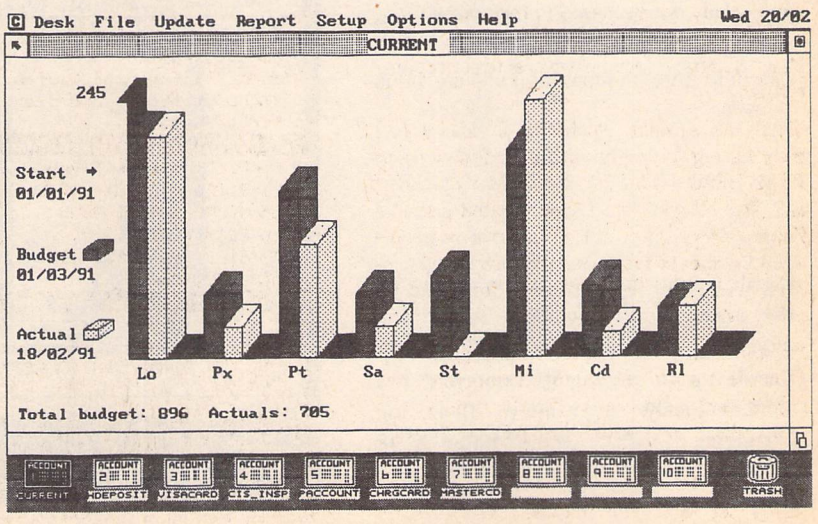
	Home Accounts	PFM+
Price	£24.95	£39.95
Publisher	Digita International	Microdeal
Minimum Memory	512k	512k
Max. Number of Accounts	13	10
Standing Orders per Account	100	Free Ram
Max. Transactions per Account	360	Free Ram
Max. Budget Allocations	60	28
Search Facilities	Yes	Yes
Automatic Entry Posting	No	Yes
Auto Balance	No	Yes
Entry Checking	Yes	Yes
Reconciliation	Yes	Yes
Calculator	No	Yes
Max/Min Balance Warnings	Yes	No
Account Roll Up	No	Yes
Graphing Facilities		
Pie	Yes	Yes
Bar	Yes	Yes
Trend	No	Yes
Balance	No	Yes
Numerical List	Yes	Yes
Multiple Views	No	Yes

As I mentioned earlier, PFM+ has a good range of graphing options, including balance plot (self explanatory), budget pie chart (ditto), budget comparison bar chart and trend plot. The latter two graphs show how well you are sticking to your budget targets. The comparison bar chart plots budget targets against actual expenditure for any given period. If the target bars are consistently taller than the actual spending bars, especially over the long term, then things are looking rosy, otherwise it's time to tighten the old belt. The trend graph can show how spending in a particular field has varied over a set period of time, and can help give an indication of long term trends. All the graphs are drawn clearly and quickly, and are made to fit the available window area. It would be nice, however, to have a few more values on the vertical scale of the balance, comparison and trend graphs. Currently, only the minimum and maximum values are printed, which makes judging the values in between less easy than it should be.

There is another way to examine your spending against your budget, via a comparison table dialogue, which shows numerically the difference between your targets and



PFM+ can handle 28 different fixed budget classes, but has no facility to handle periodical variations in budget. The picture above shows the Budget Dialogue Box, and the one on the right is a Budget comparison graph.



reality. This also allows a date range to be specified, as well as a list of accounts to be included in the calculation.

The program has a reasonable amount of dedicated database features such as search (with wild cards), find/delete entry, account roll up (deleting of entries before a given date), and account statistics. It would have been nice, however, to have a filter system incorporated, which would make it possible to display, for example, all cheques paid within a given date range.

PFM+ allows good control over the printing of statements, account transactions and standing orders. A comprehensive print format dialogue controls titles, text effects, printer features and report start/end dates.

PFM+'s GEM interface has a nice uncluttered feel to it. It has its own desktop with movable account icons, a trash basket, and a snap-to-grid feature. A nice touch is the inclusion of an analogue clock and a standard accountants calculator, which can even be used when it is not the top window. All of the frequently used menu entries have keyboard shortcuts, and many configuration options such as default path and filename, icon positions and column display order can be saved to disk. There is also a "Help" menu which could get newcomers to the program out of trouble.

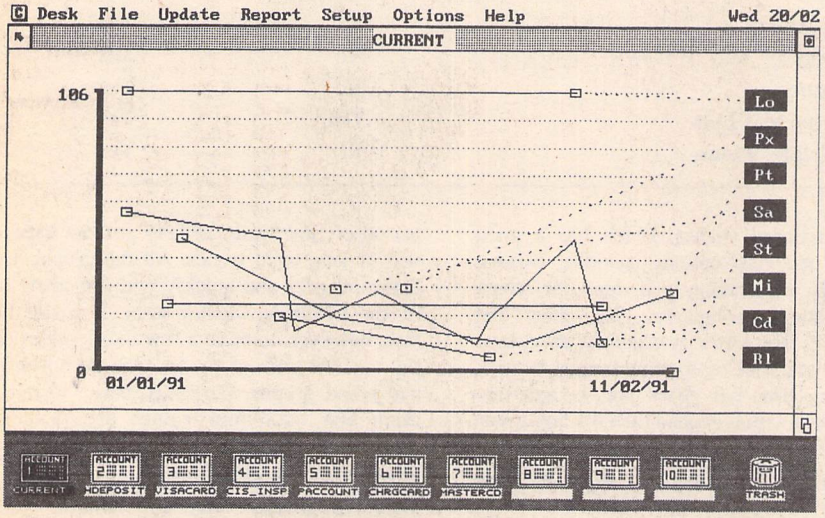
Summary

Points For: Easy to use: the program has a nice feel to it with plenty of thought having gone into its operation. Account size is limited only by available RAM. Powerful "Entry Posting" facility cuts account maintenance workload. Good manual.

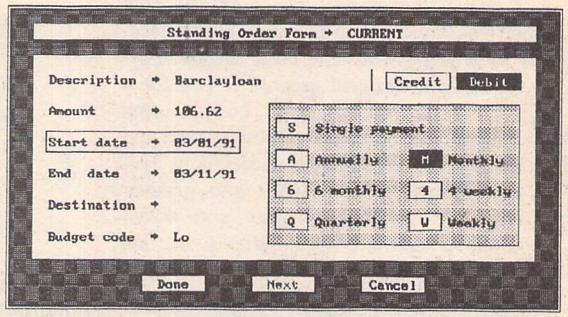
Points Against: The budget facility is limited in that it allows no provision for monthly variations in expenditure - Digita's Home Accounts does have this facility, and requests separate budgets to be set for each month of the year. Also, with the exception of the custom input dialogues, PFM+ does nothing that a competent spreadsheet with good graphing facilities couldn't handle - although such a package could cost three times as much as PFM+. Apart from that, nothing major. The account window text display is a little slow updating, and some of the graphs could do with more detail.

Conclusion: PFM+ is an undoubted improvement on the original incarnation. It can do everything it claims to do, assuming account records are kept bang up to date, failing which PFM+ becomes nothing more than a simple database with pretty graphing facilities. At this price, PFM+ must be considered by anyone looking for a program tho knock their finances into shape.

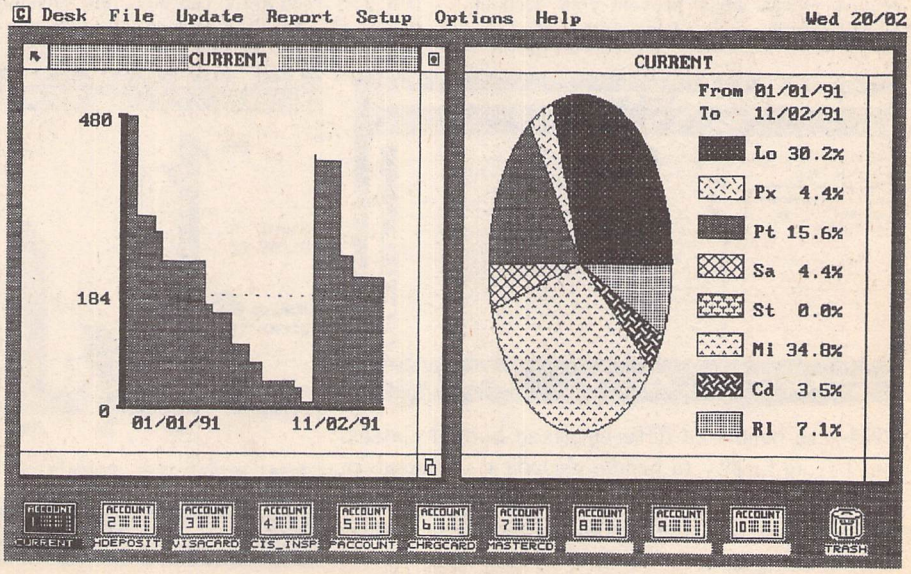
Product:	Personal Finance Manager Plus
Version:	1.04
Price:	£39.95
Publisher:	Michtron
Supplier:	Microdeal PO Box 68 St Austell Cornwall PL25 4YB
Tel:	(0726) 68020
System:	Atari ST 512k upwards; Mono and Medium Res.
Manifest:	One s/s disk, 74p manual.



Above: Trend Graphs show how spending in a particular field has varied over a set period of time, and can help give an indication of long-term trends.



Above: Standing orders are handled automatically in PFM+. Simply type in the relevant details and the program will act accordingly on the given date. Now there's a good excuse to buy a clock card!

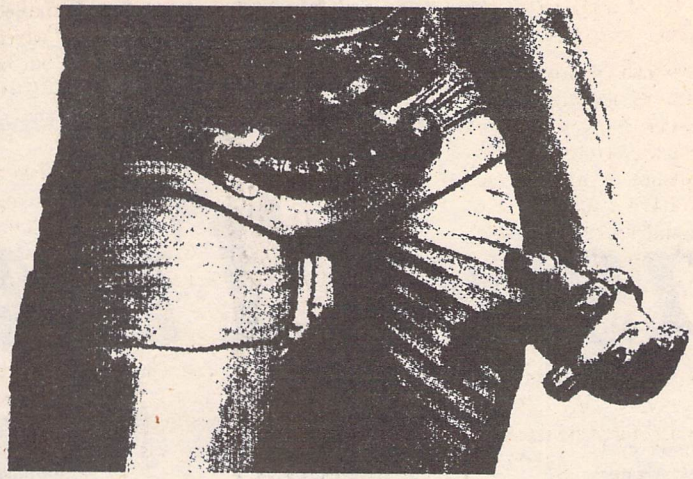


Right: Graph displays automatically fit the size of the window when the window is re-sized. Since PFM+ can handle up to seven different windows simultaneously, a window tiling or arranging facility would have been helpful.

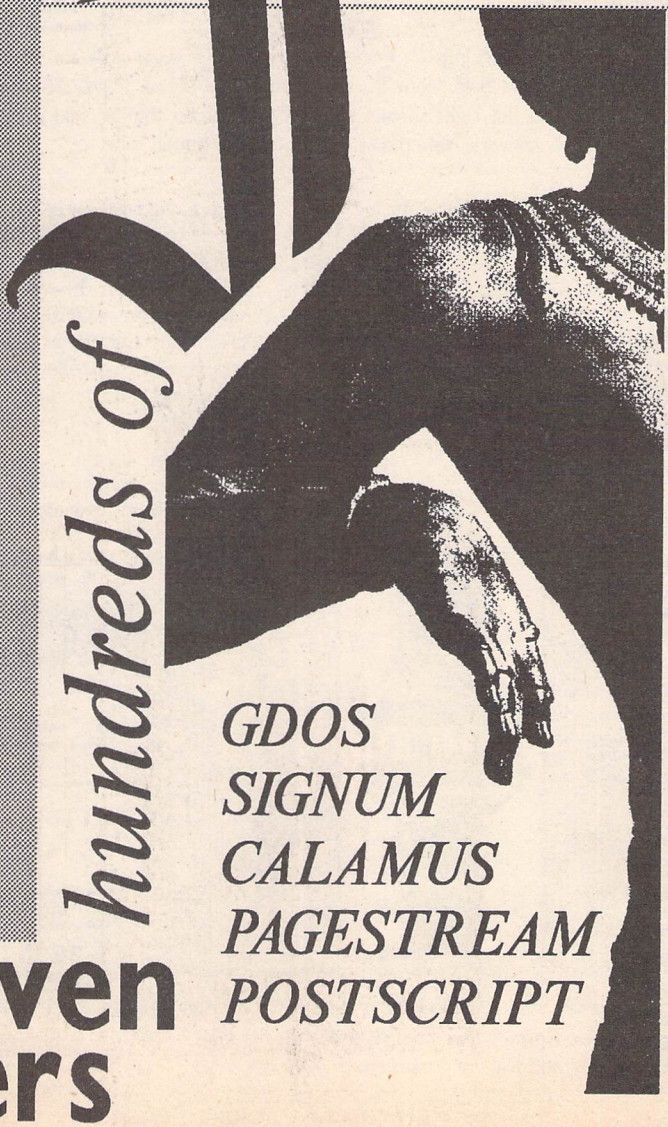
ONE STOP DTP

...not just a pretty face

Albanian Afrikaans Amharic Armenian Arabic Assamese Azerbaijani Bihari Byelorussian Chinese Chuang Czech Danish Dzongkha English Esperanto Estonian Farsi Finnish French Georgian German Greek Gujarati Hebrew Hindi Hiragana Hungarian Icelandic Irish Italian Kanji Kashmiri Katekana Kazakh Khasi Kirghiz Kurdish Ladakhi Latvian Lithuanian Malaysian Manipuri Marathi Mizo Moldavian Mongolian Naga Nepali Norwegian Old Cyrillic Polish Portuguese Punjabi Pushto Rajasthani Russian Sanskrit Serbian Serbo-Croat Sindhi Slovene Slovak Spanish Swedish Tajik Tamil Tibetan Tigrinia Turkmen Uighur Ukranian Urdu Uzbek Vedic Vietnamese



hundreds of Fonts



GDOS
SIGNUM
CALAMUS
PAGESTREAM
POSTSCRIPT

CALAMUS OUTLINE ART FSP 3 PAGESTREAM TIMEWORKS SIGNUM 2
SDO MERGE/INDEX/PREVIEW/GRAPH HEADLINE CONVERT
SCRIPT PCG FONT DESIGNERS FONTVERTOR FONTKIT+ 3
WORD PERFECT CALLIGRAPHER ANY OTHER SOFTWARE
DIGITISERS SCANNERS OCR EMULATORS DMC RIP DESKTOP
TYPESETTERS STs TTs LASERS TRAINING INSTALLATION SUPPORT

Gate Seven Computers Ltd 6A Gwendwr Road London W14 9BG ☎ 071-602 5186

Paul Bocij, with some help from Mark Butler, reviews B.Ware's latest educational release. As the title suggests, the program is primarily designed to teach children aged between 3 and 11 how to tell both digital and analogue times. However, two other sections have been included to make the package offer even more value for money.

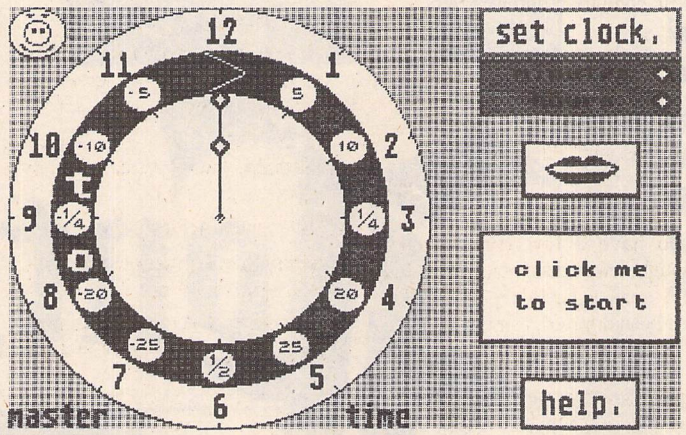
Master Time

The program departs from B.Ware's normal methods in a number of ways. Firstly, Master Time was written by a newcomer to the team, Kevin Watson, and not by B.Ware's usual programmer, Mark Butler. Another change to note is that the program was written in STOS and not in GFA Basic, which is B.Ware's usual choice of development language.

Finally, this is probably the first time that B.Ware has implemented any significant price increase to cover the cost of improved packaging. B.Ware has always stressed the importance of keeping production costs as low as possible, so that their customers can benefit from low retail prices. In the past, this has meant providing stapled manuals as opposed to bound ones, and despatching programs without fancy plastic cases. This is how B.Ware has been able to supply programs at a cost as much as £10 below a competitor's price. But at £17.95 Master Time still remains well below the psychological £20 price limit for educational software.

Master Time loads to present a main menu which allows access to an options screen by clicking on the title bar. The options screen controls three main functions: the way in which the time is spoken, the way in which the clock's hands are displayed, and a method of selecting different difficulty levels.

The time may be spoken in Digital, Analogue or Normal modes. Digital means that a time will be expressed as say, "Ten-Fifteen". Analogue means that the time will be spoken in the more conventional way we are used to, for example, "Quarter past ten". Normal means that times will be spoken as digital when referring to a digital display, and as analogue times when referring to a clock face.

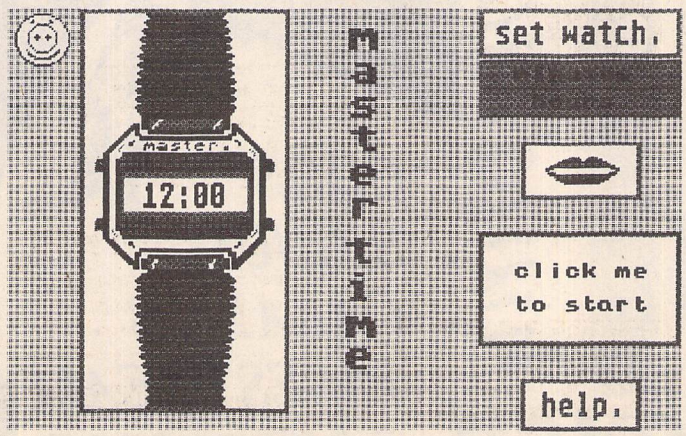


The clear markings on the clock face are an invaluable aid to younger children and help them to learn to identify digital times. The animated mouth on the right speaks the current time so that a child may check his/her answers. Note the inclusion of a help button.

The way in which the clock's hands are displayed is also handled ingeniously. Again, the user has several options which allow the time to be displayed in the way that is most suitable for a particular child. For example, the hour hand can be made to point directly at the hour numeral at all times and prevented from moving between the hours.

Finally, the range of questions which a child will be asked can be altered to suit the child's rate of learning. The levels vary from full hours to random times which are chosen at five minute intervals. This means that the child's progress can be controlled by carefully selecting the number of questions that s/he will be asked at each level.

From the main menu, five separate activities can be chosen.



Master Watch is identical in operation to Master Clock and teaches digital times. Keeping the modules apart means that a child can progress more easily and without confusion.

The first, Master Clock, allows a child to familiarise him/herself with the way in which the hands of a clock operate. Clicking on a box marked "click me to start" will activate a voice which asks the child to set the clock's hands to a specific time. This is achieved by clicking the mouse on hour and minute boxes; the left button advances the relevant hand, the right moves it backwards. Once the hands have been set, clicking on the now re-titled question box will allow the computer to check the answer. If the answer is correct, this is confirmed by speech and the child is rewarded with a nursery tune and a brief animation.

Incidentally, a child can use this part of the program to simply move the clock's hands around, without having to answer questions. This allows a child to familiarise him/herself with both the program and a standard clock face.

This section of the program incorporates three important design features which should be noted. Firstly, a help option is available, which allows the child to view the correct answer before trying to set the hands him/herself. Secondly, the clock face is clearly marked with the segments of the hour. Thirdly, a correct answer is confirmed in more than one way, making full use of reinforcement techniques.

The second section of the program is called Master Watch. This operates in basically the same way as Master Clock, but with the child being required to set the time on a digital watch instead of a clock face. The third section of the program presents the child with both a clock face and a digital watch, so that the child can set one of the displays to equal the other.

The remaining sections of the program have absolutely nothing to do with telling the time but are

useful additions in their own right. One of the routines is called Play House and is a simple version of Simon. I quote from the Master Time manual to describe the game: "A house is displayed and the child has to remember and repeat a sequence of up to nine pigs as they appear in either of the four windows or the door of the house." This aims to teach sequencing to children and to provide a little light relief from the activities of the time tutor sections. The child's interest in the game is maintained by a skillful use of STOS animation. Clouds, planes, fish, ducks and even curtains are animated throughout the activity.

Finally, the last section is worth the price of the package alone. This is a doodle program that is strongly reminiscent of the Etch-a-Sketch gadgets that most children will already be familiar with. It can be used in a vast number of ways, from simply providing a little light relief to helping a child improve co-ordination and shape recognition. Of course, the primary school is also where most children first learn about turtle graphics, so this can serve as a basic introduction for them.

The accompanying manual is almost as impressive as the program itself. It is short but fully illustrated, clear and comprehensive. Explanations are given for why particular features have been included and how they may be used to help children with particular problems. Perhaps the manual's greatest strength is that it has been written in a plain style which is easily understandable by even the most computer-illiterate amongst us.

The strengths of this package are immense. It has been designed with such care and attention to detail that it is very difficult to find any criticisms at all without becoming pedantic.

I do have a few minor gripes, though. I was disappointed to find that even a basic report facility had been omitted. I would also like to see the reward animation in the time tutor games improved a little, so that it is a little more impressive for the child.

Summary

Points For:

- ✓ Suitable for children of mixed abilities and ages.
- ✓ Good manual.
- ✓ Excellent use of sampled sound, music and animation.
- ✓ Wide range of features. Good all-round design that incorporates much of the theory of CAL.

Points Against:

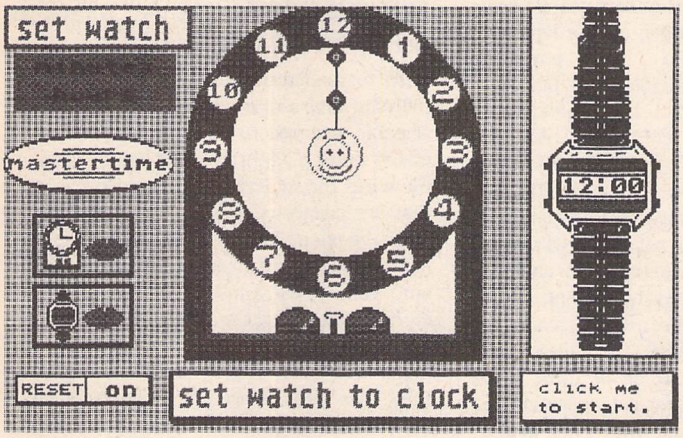
- × Possibly a little too much crammed onto the screen at one time during some activities.
- × Sampled sound quality not as good as it could be.
- × No report facility.

System Requirements: Any colour ST system.

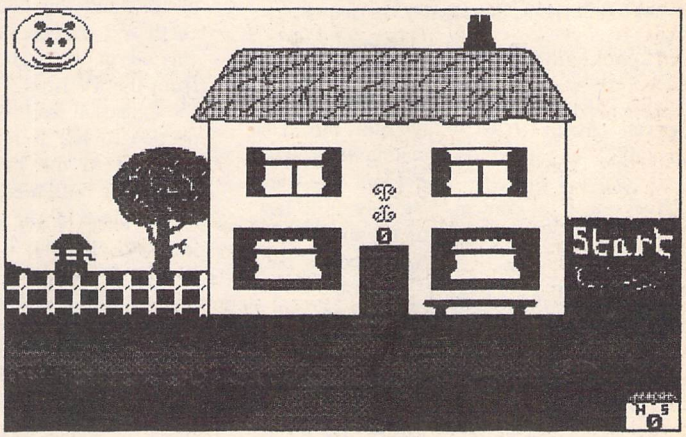
Conclusion: Certainly the best possible buy in terms of a time tutor. If the game and doodle programs also appeal, they add to the value for money of the package.

Alternatives: No other program, commercial or otherwise, includes quite the same features. The only real commercial alternative which includes a time tutor module is Fun School (5 to 7s) at £24.99. Alternatives to the drawing section of the program can be found in almost any PD library, although none are quite as good. Kid Graph and Kid Sketch are possible PD alternatives.

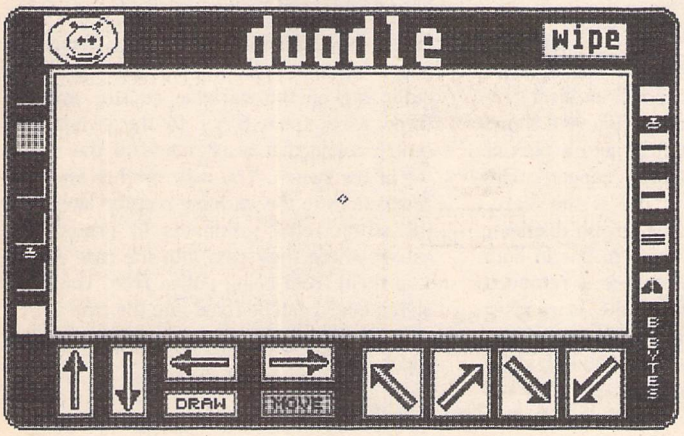
Product:.....Master Time
Version:.....1.62
Price:.....£17.95 inclusive
Publisher:.....B.Ware Software
19 Southfield Rd
Hinckley
Leics.
LE10 1UA
Tel:.....(0455) 613377
Manifest:.....1 s/s disk,
1 manual



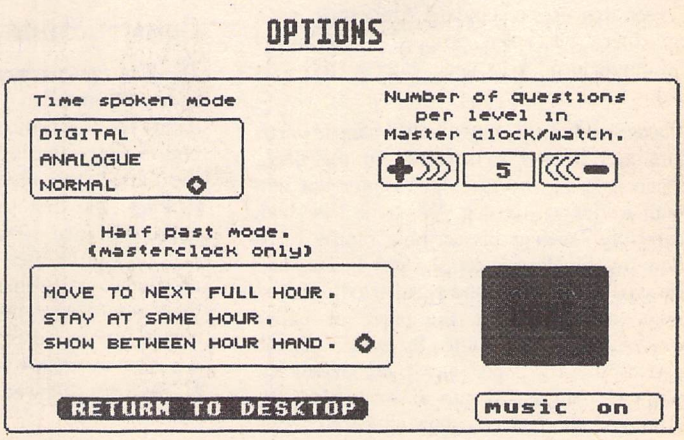
The small boxes on the left may be used to make the computer speak the time displayed on the clock or watch. The reset button is used to reset the time display after each question.



A sign of the 90's: clicking on the graffiti-covered wall starts the game. Colour, sound and heaps of animation help to keep the child interested. The pig's face is used to exit back to the main menu.



A clear screen design and simple controls make this module easy to use for younger children, but also allows older ones to create more complex pictures.



Used in conjunction with the options available during each game, the simple features shown here allow the program to be tailored to an individual child's needs.

FastFire

by Derryck Croker

It was just another day in the life of the UniFed battleship Statari as the last Xenon invader went down in flames over their latest would-be conquest. As we switched our cupola guns to "safe" I couldn't help but notice that my oppo "Blaster" Bates was still using his favourite single-shot joystick that had come with him since the old days when our target screens were driven by 8-bit technology. And his score was double that of the rest of us who had been issued with auto-fire sticks....

"Yes," he said later in the canteen. "the trouble with those new-fangled sticks is that they are rarely faster than the best trigger finger, and when you want to select from the screen's option table, the stick's still sending out phaser trigger pulses." At this point I tried to interrupt, but Blaster carried on.

"Not only do those pulses interfere with menu selection, they can also cause all sorts of problems when you try to boot up the target screen." Again I tried to interrupt, but "This module," he forged on, pointing to a small box plugged into the lead from his stick, "gives me total control. Not only is it fast, you can control the fire rate, it's powered by the screen, and it fires trigger pulses only when you press the trigger." This time I tried coughing loudly but still he carried on.

"And not only that, it consumes only a small amount of current and that only when the trigger's being pushed. And you can switch it back to normal use very easily." He leaned back beaming, but before I could say anything he leant forward, and looked around carefully before he leaned even closer and whispered, "And you can use it on any target screen that uses a standard Atari stick, even a.." (here his voice dropped even lower) "..Commodore." I gasped. "Interested?" You bet.

Blaster pulled the day's battle plan towards him and started to scribble on the back, again ignoring my attempt to interrupt him with a kick on the leg. "Now this," he said, carefully heading his scribble figure 1, "is how my FastFire looks...." Once Blaster had finished his drawing and I had tried to interrupt again, he cast the piece of paper towards the waste chute. By some Galactic cast of fate, the paper wasn't vapourised but was cast "sideways" into a worm hole, the other end of which somehow appeared above the pages of this august journal. It fell to me to interpret the advanced technology that Blaster described. Now you too can build Blaster's FastFire module.

The FastFire...

...is built around a simple oscillator consisting of a 551 timer IC1 with C1 and VR1 acting as timing elements. VR1 allows the oscillation period and hence the firing rate to be varied. The output of the oscillator drives TR1 through current limiter R1, and TR1 drives reed relay RLY1. The whole is built into a small plastic box which simply plugs in between the stick and the micro using a joystick extender lead to provide the necessary connectors and the take off points for power, earth and trigger. All other connections are carried on through. The 'Fire is powered from the 5V supply available from pin 7 of the extension lead's socket. The ground connection to IC1 is made only when SW1 is switched to the FastFire position and the stick's fire button is pressed - the fire button earths pin 6 of the extension's plug to pin 8 (ground) and thus IC1 is not powered unless both these conditions are true. C2 and C3 remove any noise that may be present on the 5V supply from the micro. RLY1's contacts take the place of the stick's fire button and the rapid opening and closing of these give the FastFire its name. Normal operation of the stick can be obtained with SW1 in the normal position where IC1 never receives its ground and therefore doesn't oscillate, and the stick's trigger pulses are allowed through direct.

Construction

The few components involved makes stripboard (often called Veroboard) an ideal candidate for this project, and so figure 2 shows both a suggested layout (top) and a plan of the cuts to be made in the copper strips (below). The best tool to use is the Veroboard spot face cutter, or a largish diameter drill bit can be used at a pinch, but in both cases make sure that all copper is removed without cutting right through the board after cutting the board to size. Probably the best sequence to employ is to solder the DIL sockets in first, followed by the capacitors and resistor.

You can then use the offcuts for the links before installing TR1. Take care to orientate the DIL sockets correctly with the notches facing the same way shown in figure 2. TR1 has a tab which should face in the direction shown, and C3's -ve end is marked by arrows. The remainder of the components can be connected either way round. Connect some hook up wire to the points marked SW1 and VR1 before checking your work carefully. My FastFire had three construction faults, a copper strip not cut right through, a link in the wrong place and one that was missing! You may also find solder splashes shorting strips together.

Now plug in IC1 and RLY1 into their respective sockets checking that their notches line up with those on the sockets.

Turn to the joystick extension lead and cut the plug and socket off, leaving around 12" of cable attached to each. Strip off about 3" of the outer sheath and prepare the ends of the wires for soldering. Now locate the wires that are connected to pins 6, 7 and 8 of the plug, the pin numbers are probably engraved next to them, and make a note of their colours-you can use a multimeter or other form of continuity checker, even a battery and bulb for this job. As a guide only, on my lead pin 6 was blue, 7 grey and 8 white. Feed these two cables through prepared holes in whatever case you have chosen for this project before connecting the wires to their respective locations numbered in figure 2. The remainder of the wires are connected together colour for colour, using sleeving to insulate.

Finish by connecting the wires from the points marked VR1 to the inner and one outer tag on the variable resistor and the three wires from SW1 to the switch, the centre connection being made to the centre tag of the switch. You may need to alter the connections to the variable resistor later. Use the strain relief grommets to protect the cables where they pass into the case and to stop them from being pulled free. The completed board can be fixed into the case with a piece of double sided foam tape after a final check.

Testing

Plug a joystick into the 'Fire's plug and the 'Fire's socket into the micro and fire it up - you don't need to boot a game at this point. Press the stick's fire button and you should

be able to hear RLY1's contacts clicking as they open and close. If not, try SW1 in the other position. You should be able to increase the speed of the clicking by rotating VR1 clockwise.

Should it slow down instead, then you will need to swap the connection from the outside tag to the other. The clicking should stop when the trigger is released. And now the 'Fire is ready to help you attain some really high scores - but note that not all games allow you to benefit from this or any auto-fire joystick.

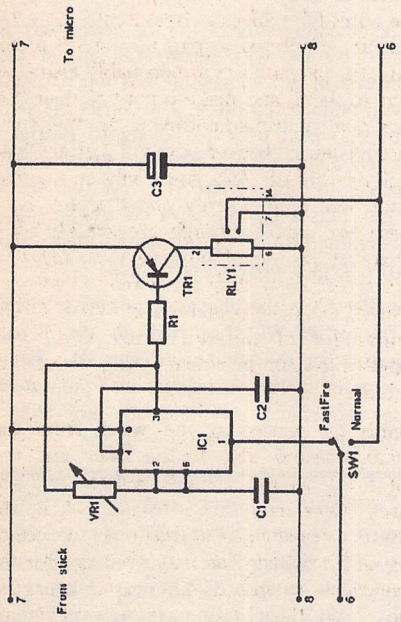
Components

All of the components should be readily available (with the possible exception of the strain relief grommets) from most electronics stores. I suggest, however, that they are purchased from Maplins, who operate a fast mail order with credit card sales on 0702 554161. In particular, the relay suggested has a protection diode built in. If you purchase elsewhere, then connect an IN914 diode across the coil, cathode (black band) to TR1 collector. The joystick extension lead is available from Tandy shops (nationwide). The case and control knob are up to your taste. And finally, why was I trying to interrupt Blaster? Well, all I wanted was the salt. What of the battle plans? Now that would be telling!

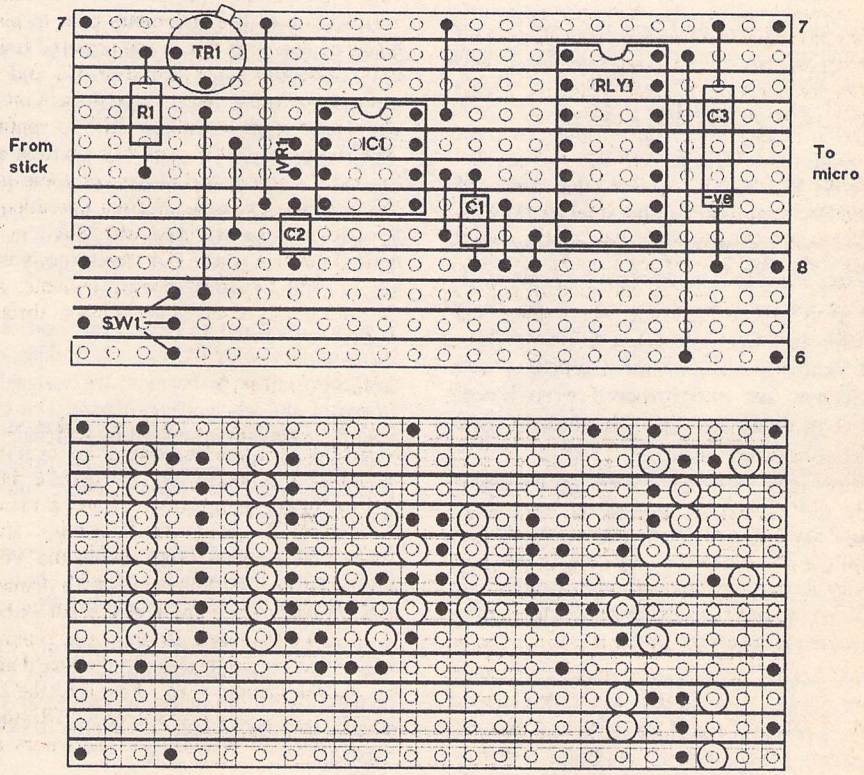
List of Parts

Qty	Circuit	Description	Catalogue	Price
1	TR1	BC178 transistor	QB53H	0.32
1	IC1	NE555 timer	QH66W	0.32
1	RLY1	SPST 5V reed	FX88V	1.98
1		8-pin DIL socket	BL17T	0.06
1		14-pin DIL socket	BL18U	0.10
1	C1	0.22uF mylar cap.	WW83E	0.12
1	C2	0.01uF mylar cap.	WW18U	0.10
1	C3	10uF 25v cap.	FB22Y	0.10
1	R1	470R m.res.	M470R	0.03
1	VR1	2M2 lin. pot.	FW09K	0.60
1	SW1	SPDT switch	FH00A	0.86
2		S.R. grommets	LR49D	0.18
1		stripboard	JP47B	1.20
		postage and packing		1.00
1	Joystick extension lead (Tandy)		270-1705	3.99

Hook-up wire, solder, etc., are assumed to be normal constructors' aids.

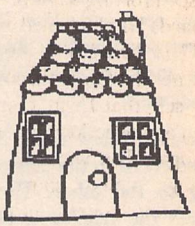


Above: this is the FastFire circuit as scribbled by Blaster, minus the battle plan!



Opposite: component view (above) and copper side (below). Orientate the board carefully before cutting the tracks and take care to place the components and links correctly.

Some of the problems that arise in installing DIY memory upgrades are foreseeable, but some of them aren't. Bertha turned out to be a special case in more ways than one, but the tips her owner Dennis Douglas acquired from trying to upgrade her are worth passing on to other ST Applications readers. You will weep with Pity and tremble with Fear, you will gasp at the cliff-hanging melodrama, as you read the soul-searing saga of:



BERTHA

and the Fabulous Memory Expansion System

The basic problem

I'm not a memory-hog. It was just that I'd run into a difficulty.

Small-scale theatre companies like mine need graphics for publicity letters. When we get posters designed for particular shows, we take the A4 poster design to the local Presto Print branch and reduce it to about one-third linear. Then we use a Colibri hand scanner to take out the most prominent single image as a .PI3 picture file.

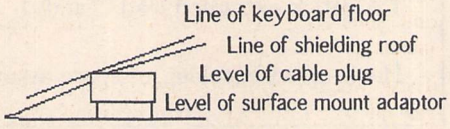
Loading the file into Degas Elite, we tidy the frame up and home in on the image, making it a "Block", which we reduce to about one-eighth screen size using Degas Elite's Block-stretch facility. The reduced image is transferred to a workscreen and saved as a second .PI3 file. Then we load that second file into Degasnap and snapshot it as an .IMG file.

> The SIMMS expansion boards sell out as fast as they come in. They sell out so fast that some of the Evesham sales staff won't even accept an order, for fear of not being able to fill it, unless you absolutely insist.

The .IMG file is just perfect for loading into publicity letters written on First Word Plus, and the .PI3 file loads very happily into publicity layouts composed with PageStream. They both print off as icons about four times the area of a postage stamp.

This process results for us in publicity which the client recognises instantly as linked with the particular production he or she has booked. It took a bit of working out at first, but it's now a routine operation for us. Whenever publicity designs get their final approval they are run through the scanner.

Or they were until we lent "the office ST", a 520 upgraded to 2½MB, to the company's composer, so as to get production scores of hitherto-undreamed-of sophistication.



The Great MMU Surface Mount Adaptor Conundrum

The replacement was a 1040 STE. You will have gathered by now, with all this talk of upgrades and Colibri hand-scanners, that my theatre company doesn't make as much as Sir Peter Hall's. We are not the kind of client who chooses Apples for pride of possession, or Big Blue screens for prestige. If we upgrade ST's instead of buying Megas, it is not to bring the Tramiel Empire to its knees, but to stave off bankruptcy. We upgraded the 1040 STE to 2MB.

It then turned out to have some kind of incompatibility with the Colibri. Nothing else, just the Colibri. Whenever we scanned an image in, the whole system froze. The scanning light stayed on instead of switching off. The bee on the screen went all paralytic. Nothing happened. No-one came, no-one went. Just like Godot.

Neither Signa nor Silica Shop seemed to know why this should happen, but our routine scanning operation was suffering.

I didn't like to disturb the company musician's relationship with his machine, on which he makes beautiful music fairly regularly. Instead, I decided to upgrade Bertha to Colibri capacity.

A chequered past

Bertha has a history. She's a 520 ST that came from Evesham Micros on a special offer when Evesham's special offers were £50 cheaper than everybody else's.

Her keyboard and top cover are older than the rest of her. The idea was to transfer to her all the slightly worn bits from "the office ST" when "the office ST" had its memory enlarged, and then keep Bertha for games, so that the larger-memory machine didn't one day lose its usefulness by virtue of having cast too many fireballs at Diabolical Demons in the deeper recesses of Chaos's kingdom.

The changing over of the top cover was dictated by the way screws fall out of their threads in top covers of ST's when they've been undone too often. The "office ST's" top cover, which used to belong to Bertha, is fastened quite firmly. Bertha's, which used to belong to "the office ST", has two screws loose. Plus a big bit sawn off at the side to accommodate a double-sided disk drive when singles went out of fashion.

So Bertha is the classic second-class citizen. "The office ST" has had all the breaks. Bertha got the hand-me-downs. But Bertha seems to thrive on neglect and punishment. Her keyboard isn't showing any sign of giving up. She deserved promotion.

> Evesham Micros and Silica Shop now cover strategic screwholes with suggestively captioned paper tabs. "Breaking this tab invalidates your guarantee," says the sign. Lasciate ogni speranza, voi ch' entrate...

There was also an element of conceit in the decision to upgrade her. The upgrading of the 1040 STE had brought me into contact with SIMMS modules, and I was impressed both by their ease of installation and by my success at putting them in.

Which small triumph compensated for the

discomforting saga of the Frontier expansion board. I'd chickened out and sent "the office ST" to Frontier to be done when it dawned on me, halfway through installing the board myself, that I was supposed to cut a wire and run a connection back using a hook-on plastic gadget. The wire end left to attach to those things is very short, and I have visions of spending hours getting them attached. Unconsciously, too, I'm sure my castration complex is stirred at the thought of disabling resident memory. One snip, and the chips are sitting there for the rest of their lives with nothing to talk about but their operation.

I rang Evesham and said I'd once had an embarrassing experience with an expansion board. "I'm sure it wasn't one of ours, sir," said a comforting voice at the other end of the line, just like General Havelock observing during the Indian Mutiny that British soldiers hardly ever went in for rape.

There were four half-megabyte SIMMS modules left over from the STE's little op, so I ordered the SIMMS board unpopulated - at the third try. They sell out as fast as they come in. They sell out so fast that some of the Evesham sales staff won't even accept an order, for fear of not being able to fill it, unless you absolutely insist.

The first attempt

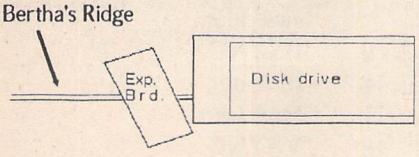
"Please read these instructions carefully before attempting the upgrade procedure!" said the manual. I read it three times. There were two of those hook-up plastic gadgets in the box, and I wanted to be sure I wouldn't have to use them. They were, the manual said, for use when disabling resident memory in cases other than the one I had in mind. Oh joy, oh bliss.

The murky symbolism of unscrewing top covers, now that Evesham Micros and Silica Shop cover strategic screwholes with suggestively captioned paper tabs, doesn't bear investigation. "Breaking this tab invalidates your guarantee," says the sign. Abandon hope, all ye who enter here...

There's no thrill quite like that of getting an ST to shed its plastic cover and its metal shielding and seeing the works laid out in front of you - all that intelligence, as we are so often told, and when you get inside it looks about as vital and imaginative as bits from an obsolescent electric toaster.

It is at this point that the complications start.

What the manual doesn't tell you is that in cases like Bertha's the power supply won't come out until you've undone the shielding, instead of the reverse order which the manual recommends.



Skewed placing of expansion board in relation to disk-drive

> It's not a good idea to install an expansion system at the weekend. Technical Support people like you to have the whole catastrophe in sight when you ring them, just in case they need a serial number you haven't thought to jot down.

But it's still a relatively straightforward job to get into an ST. Putting it back together again later will require some tricky balancing of the disk drive to ensure that three long screws and a small brass pillar each find the right seating to support the drive. Sometimes it works first time. Sometimes you end up supporting the box on your hip and jiggling for half an hour or so, dropping the brass pillar every so often, which adds to the fun.

When installing expansion boards you need to recognise small markings which indicate the right way round to place MMU and Shifter Adaptors. Reading glasses may turn out to be necessary for finding the dimple dots and semi-circular cutouts to which the manual refers.

These were only minor complications. The real hitch occurred when Bertha's MMU chip turned out to be unsocketed. A Surface Mount Adaptor was required, according to the manual. "Do not hesitate to ring Technical Support to order one if this is the case."

I re-assembled Bertha, tested her to be sure she worked, and heaved a sigh of relief when she did.

Then, on Monday, I rang Evesham.

> It's a good idea to get a lesson or two in electrical soldering if you're going to tinker with upgrades and the like. And to buy a pair of solid tinsnips.

It's not a good idea to install an expansion system at the weekend. Technical Support people like you to have the whole catastrophe in sight when you ring, just in case they need a serial number you haven't thought to jot down. I seemed to have noted the right details. Double-sided tape, which I also needed, they couldn't guarantee, but a Surface Mount Adaptor would be on its way in no time, and at no extra cost - and had I thought of substituting Blu-Tak for the double-sided tape?

The second attempt

A couple of Saturdays later, there I was, all set up, working under the watchful eyes of my eleven-year-old son, who assured me several times, in the way of eleven-year-old sons, that I had no chance of bringing off the upgrade successfully.

It was all the fault of Bertha's metal shielding that I failed. I secured the MMU adaptor with a great wadge of Blu-Tak underneath, and sticky tape on top - thinking all the time of those Australian outback standbys, chewing gum and fencing wire - but it still rocked off every time I screwed the shielding back on, because the plug that takes the cable out of the MMU adaptor to the disk drive rides higher than the adaptor and fouls the shielding, which comes down over it like a sloping roof.

Bertha also has a little ridge running right across the top of the shielding just along the line on which the expansion board is supposed to sit. The board looks so snug in the diagram in the manual, but in Bertha it's decidedly skewed.

The other tricky bit is routing the cables. They can unseat adaptors if they are too taut or pull in the wrong direction.

And I must confess that I over-reacted to the advice in the manual that says you might have to give a SIMMS module a firm push to locate it. Coming back to diagnose where I'd gone wrong when the upgrade didn't work, I found that I'd hopelessly jammed the module sitting in slot 1.

So there I was on Monday morning sheepishly asking Evesham Micros to rescue me from my incompetence. It was the Frontier Software episode all over again.

They're really very patient, those Technical Support people.

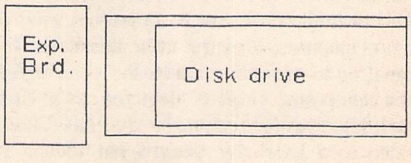
Lessons learnt from the exercise

I think I really ought to get some instruction in electrical soldering if I'm going to keep on tinkering with upgrades and the like. The earth leads looked a little sad held down to the metal shielding with big blobs of Blu-Tak. Bertha didn't have the screws she should have had to fasten them down, and my mini soldering iron wasn't up to the job of giving them a firm metal fixing.

If I knew how to solder connections I'd be able to solder those plastic gadgets too. I'd trust them more soldered than hooked on.

And I must buy a pair of solid tinsnips, for altering the shape and placing of the access holes in the top of the metal shielding. Both the Evesham and the Frontier expansion installations would have been easier if I'd been able to carve extra slots where they were needed.

Bertha came back from Evesham a transformed being by the way. Our scanning routine works a treat. The only thing is, I'm not game to peak under the top cover to find out how they did the final fitting.



Neat placing of expansion board in relation to disk drive

ST Internals

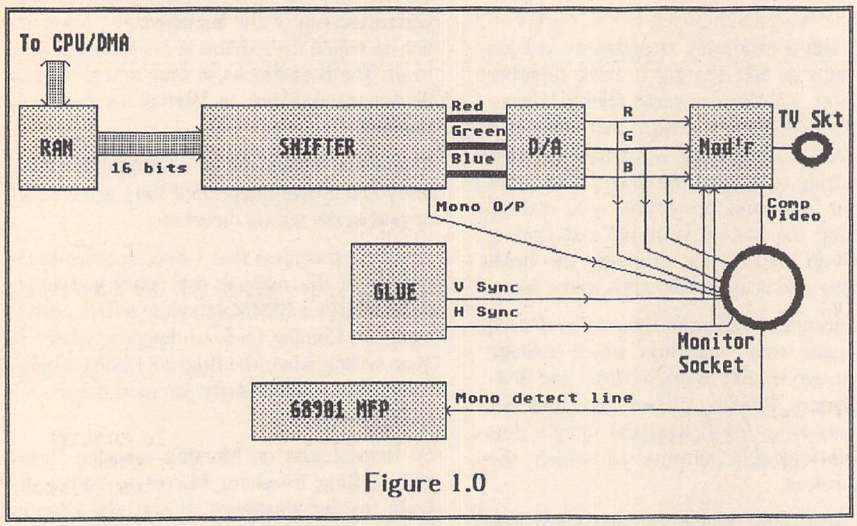


Figure 1.0

The block diagram for the video sub-system may be seen in Figure 1.0 above. The main element of this is the shifter, a full custom-integrated circuit made especially for Atari in a 40-pin 0.6" dual in-line package. It takes in data from the main memory 16 bits at a time and converts it into a serial bit stream to be fed to the monitor or television. The signal DE (display enable) tells the system wether it is scan time or not; 'blank' shuts off the shifter's output when not required, and 'Hsync' and 'Vsync' are the signals for synchronising the monitor to the ST's output.

When the ST was first introduced way back in 1985 its graphics capabilities were excellent, far above the BBC, Spectrum and Amstrads of the day. Now, however, it is beginning to look a bit feeble when compared against IBM VGA or an Archimedes. The ST uses a fixed 32K for its screen and this can be arranged to give three operating modes: 320 by 200 pixels with a selection of 16 colours from a palette of 512 (4096 on the ST-E); 640 by 200 pixels in four colours; or a high resolution 640 by 400 pixels in monochrome.

It is the monochrome mode that still enables the ST to compete with modern computers. It is difficult to get such a clear, stable display on other machines without spending a lot of cash.

When in the colour mode, the data from memory is processed by the shifter and output via the three sets of three weighted outputs; three outputs are for each additive primary colour (Red Green and Blue). The outputs are fed via different value resistors to produce a summed signal; this is an analogue representation of the colour required. As there are three binary levels, each colour can have eight analogue levels of intensity, giving 8x8x8=512 colours on screen. The colour signals go through a discrete transistor amplifier and they are then fed to the monitor socket and also to the input to the modulator unit.

Modulator unit

The modulator unit (see Fig 1.1) uses a Motorola chip called the 1377P. This clever little device takes in the RGB signals and the sync signals and produces a composite or combined video output in European PAL format or American NTSC format. This is fed to the monitor socket and is sometimes used to drive monitors directly as a baseband TV signal or to provide a composite sync signal. The composite video is then fed to a UHF modulator which converts the base band video to a UHF television signal. Owing to the poor quality of most TV sets, however, the signal via a television is quite poor and is only really usable in low resolution. To eliminate colour drifting, the ST also has a 4.433MHz crystal oscillator which phase locks the main 32MHz crystal. The 4.433MHz is to provide the 1377P with its colour sub carrier signal; some very early models did not have this phase locking and their TV signals were noticeably poorer. Note that a +12V line is provided on the monitor socket, which can be used in a TV SCART lead as a source switch line; when the computer is powered up, the 12 volts switches the TV from tuner mode to monitor mode.

Monochrome operation

If pin four on the monitor socket is taken to ground, the 68901 MFP chip in the ST sends an interrupt to the processor to take the ST into high resolution mode via a reboot. This provides an excellent display, but it cannot be used on normal monitors as the 70Hz non-interlaced frame rate would not be usable on normal monitors. The shifter has a separate output for monochrome which is amplified by a transistor emitter follower then fed out

Table 1.0

HSYNC	TTL negative 3k3
VSYNC	TTL negative 3k3
MONO	digital 1V pk-pk 75ohm
RGB	analogue 0-1V pk-pk 75ohm
audio	1V pk-pk 1k

Table 1.1

Socket	Signal
1	Audio Out
2	Composite Video
3	General purpose output
4	Monochrome detect to 68901
5	Audio Input
6	Green out
7	Red out
8	+12Volt pullup, source switching
9	HSYNC
10	Blue out
11	Mono out
12	VSYNC
13	Ground

to the monitor socket. Some other computers allow monochrome operation with analogue levels to give grey scales. The ST only has two levels, black and white, and any grey scales have to be achieved with stipple effects.

Specifications

The outputs for the monitor socket are as shown in Table 1.0 and 1.1. These may be of use to people trying to connect non-standard monitors to the ST. Beware of the SYNC polarity, there are a lot of monitors around that require positive sync.

Screen addressing

The screen's 32KB of memory can be freely moved around in memory. When the ST first boots up, it sizes its available memory and places the screen at the top of free RAM - some very early programs assumed that the screen would always be fixed in place and so 1MB machines could not run these programs. Enhanced graphics adaptors such as the now established 'Reflex' card make good use of this re-location of the screen: it has its own 128KB of fast dual port video RAM which is placed at location hex C00000. This has the advantage of not consuming any of the ST's memory, and by using its own video graphics chip the ST does not have the overhead of servicing the extra memory. Some of the relevant screen locations in memory are shown in Table 1.2.

Common faults

The screen section of the ST does not cause many problems. The areas that do give trouble tend to be the shifter (black bars on screen, no screen display or colours missing), the 1377P (wrong colours or no TV picture) and the UHF modulator unit (no TV picture).

Table 1.2

(Note: NOT ST-E)

Screen memory	$FF8201/$FF8203
Video address for shifter	$FF8205/7/9
Sync mode	$FF820A
Palette regs	$FF8240-5E (16 of)
Resolution	$FF8260

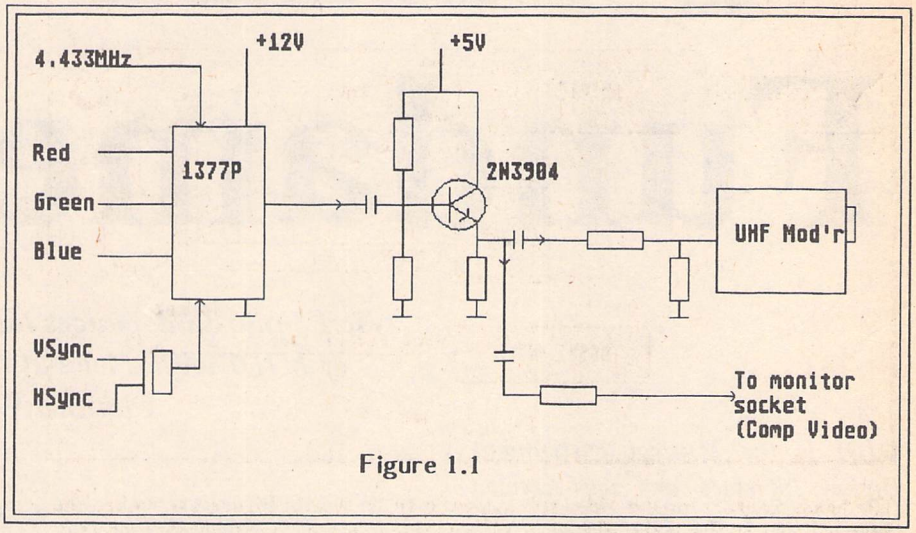
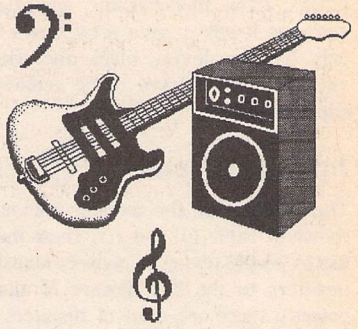


Figure 1.1



MIDI Fundamentals

Vic Lennard introduces his mini-series on the fundamentals of MIDI with a look at the basic theory of data exchange, Channel Voice and Channel Mode messages.

MIDI is the Musical Instrument Digital Interface and was created between 1981 and 1983 in response to the call for a standard interface. The original intention was for keyboard players to be able to play multiple set-ups from a single device, but additions to the initial specification included a MIDI Mode for use with guitar synths, while a major revision in 1986 included MIDI Time Code, additional MIDI Controllers and the MIDI Sample Dump Standard. Consequently, MIDI is now a well-behaved digital protocol

Original 1983 Specification

Various discussions occurred in 1980 and 1981 between SCI, Oberheim Electronics and Roland, and at the Audio Engineering Society convention in Autumn 1981 a 'Universal Synthesizer Interface' (USI) was put forward by SCI. Information would only be sent when an event actually occurred, like a note on or off. USI was proposed to be serial - one byte at a time - and to run at a speed of 19,200 bits per second, the standard for the RS-232 computer interface. Levels were to be TTL and connections via standard jack plugs.

In an ensuing questionnaire, some manufacturers felt that a serial interface would be too slow and that a parallel interface should be used, while others considered that home computers of the day would have problems running at such a high speed.

The NAMM convention in Anaheim, January 1982, was attended by representatives from most of the manufacturers and it was here that the optoisolators were added to prevent earth loops. The serial speed was also increased to 31,250 bits per second.

Following this, some of the Japanese companies presented an alternative with a different data structure. This incorporated the idea of using the eighth bit to decide whether a byte was one for Data or Status and so simplified the protocol significantly as no other checking was necessary to determine the nature of a byte. With this bit defined as a 'flag', data was limited to 7 bits - 128 steps - but this was felt to be sufficient for most needs. There was always the possibility of breaking down more bits into multiple 4-bit nibbles.

Bits & Bytes

All MIDI messages start with a STATUS byte followed by a number of DATA bytes as necessary. The only exception is SYSTEM EXCLUSIVE which still has a Status byte but follows it by a Manufacturer ID code and Data bytes finished with an End of Exclusive. As the MSB of a Status byte is always set, Status Bytes take values between 80H and FFH while Data bytes vary between 00H and 7FH.

There are two types of MIDI message: CHANNEL and SYSTEM. Channel messages incorporate a MIDI channel and occur in one of two types: VOICE messages control a device's voices while MODE defines a device's response to Voice messages. Both are sent on the basic MIDI channel for the instrument. System messages do not have a MIDI channel included and occur in one of three forms: SYSTEM COMMON for reception by all devices in a MIDI system; SYSTEM REAL-TIME for synchronising the various devices in a system and containing only a single Status byte so that they can be transmitted at any time; SYSTEM EXCLUSIVE can contain any number of Data bytes and is mainly used for the transfer of blocks of parameters.

Channel Voice Messages

Certain MIDI messages have been given unique Status bytes. All numbers are in hexadecimal and 'n' is the MIDI channel (0 - FH).

Note On: 9n NN VV - NN = Note Number; VV = Velocity.

Note Off: 9n NN 00 or 8n NN VV

Second message allows for Note Off Velocity; the speed of note release can be used to control an aspect of a device.

Key Pressure: An NN VV - NN = Note Number; VV = Value.

Channel Pressure: Dn VV - VV = value.

Pressure is the additional pressing down of a note after the Note On has been transmitted. This can again be used to control another parameter - perhaps modulation or pitch bend. Key Pressure sends out a different value per key (serious clogging of MIDI stream!) while Channel Pressure will usually take the highest value from all pressed keys.

Program Change: Cn PP - PP = Program Number.

Pitch Bend: En LL MM - LL = LSB; MM = MSB.

Pitch Bend is a 14-bit controller. Both bytes have to be sent but as 16,384 values is a little excessive, pitch bend wheels tend to work to a 'resolution'. For instance, 9-bit resolution gives 256 positions around the centre value of 40 00H. These are not usually evenly spaced; the actual resolution and values are proprietary per manufacturer.

Control Change: Bn CC VV - CC = Controller Number; VV = Value.

Out of 128 possible Controllers, 0-31 and 32-63 are paired, with the former giving the LSB and the latter the MSB for 32 Controllers. These are termed 'Continuous Controllers' and so have 14 bits available. Fortunately, only the LSB has to be sent. 64-120 are 7 bit Controllers, originally used for switches. 121127 are reserved for Mode messages. Controllers include Modulation (#1), Volume (#7) and Sustain Pedal (#64).

Channel Mode Messages

These are Control Change messages 121 - 127:

Reset All Controllers: Bn 79 00

Default values for MIDI Controllers are reset. Exactly which Controllers and their values will vary per device.

Local Control:
Bn 7A VV - VV = 0, Off; VV = 7F, On.

Local Control allows for the divorcing of a sound module from its own keyboard which then functions as a Master Keyboard.

All Notes Off: Bn 7B 00

This is sent by certain manufacturers when all keys have been released and acts as a safeguard for hanging notes.

The final four Mode messages define the relationship between the 16 MIDI channels and the voice assignment. 'Omni' can be on or off either for sending all notes to all channels or for restricting them to a single channel (more useful). 'Poly/Mono' sets control for multiple/one note(s) per voice. The modes are numbered 1-4, with #4 being Omni Off/Mono mode which is primarily used for guitar synths - a base MIDI channel is set and all voices then increment this channel by one giving a MIDI channel per string on a guitar. This allows for multiple string pitch bends.

System Messages

System messages have Status bytes between F0H and FFH. System Common and Real-Time will be looked at next month within 'Synchronisation'. System Exclusive takes the following format:

F0 ID DD.....F7

where F0 is the Start of Sysex, ID is the manufacturer's unique ID number, DD are data bytes and F7 is the End Of Exclusive (EOX). The ID may be 0 and then followed by two further numbers as the number of manufacturers > 127!

Gajits Music Software

This month's column contains a hint for Sequencer One owners, and an answer to a question concerning our Sound Development Programs, which is sometimes asked by users of the Helpline.

Sequencer One

Track Merge

Merging of two tracks can be achieved easily on Sequencer One using the "Block" operations menu (see page 27 of the User Guide). The idea in a nut shell is to "Cut" one of the tracks out, and then "Paste" it on top of the other.

The first thing to do is set the record mode to "Overdub", as this also applies to the block operations. Selecting overdub mode will mean that paste operations are not destructive to MIDI data already on the track which you paste on to.

Next, you should ensure that "limit" mode is not on, so that operations apply to the whole length of the song. Click on the "Limit" button above the MIDI meters in the tape deck controls panel. This button is white with black writing when limit mode is off. Then, make one of the two tracks to be merged the current track. This is done by clicking on the track number (or in the space to the right of it if you are on the track list screen). Move the mouse up to the "Block" menu heading, and select "Cut". The current track will then be cut out and placed in the clipboard. You should then make the other track to be merged the current track by clicking on its number. Check that the song position counter is set to beat one of bar one (you can do this by double clicking on the "Rewind" icon in the controls window), and go to "Paste" on the "Block" menu. The contents of the clipboard will then be merged with the current track.

CMpanion/4D Companion

Screen Mismatch

In CMpanion and 4D Companion, the tone displayed on the Tone Edit screen may sometimes seem to be at odds with the information given on the Multi Config Edit screen. This has puzzled several people calling our Helpline this month. Do not panic! The display mismatch is intentional, and is because of a built-in safeguard, designed to prevent you losing a tone which you may have just created.

Alterations made on the Multi Config screen which change the tone in the current part do not automatically cause the tone on the Tone Edit screen to be changed. Imagine if you had just designed a tone (forgetting to save it to the library or to disk), and then you accidentally selected a new tone for the current timbre on the Config Edit screen. If this edit resulted in the tone on the Tone Edit screen being switched too, then you would have lost your work.

To carry on editing in this situation, all you need to do is dump the current tone back to the instrument (use the "MIDI" button on the Tone screen). If, however, you wish to edit the newly selected tone, you can fetch it from the instrument (use the "MIDI" button), or read the same tone from the computer's memory using the "Mem" button. See page 27 of the User Guide for a full explanation.

The Game Makers' Manual

Back in the days of the Spectrum, hundreds of games were hand-written using very basic Basic. These games were written by hobbyists, often novices, many of whom had no intention of ever publishing their work, and certainly never dreamed of making their fortunes. As computers became more sophisticated, and the sixteen-bit Amigas and ST's became popular, so programming became more difficult. In the world of sixteen-bit computers the back bedroom programmer is often conspicuously absent.

Reviewed by
Sandra Vogel

Many ST owners still secretly yearn to produce an entire, intact, bug-free game. Programming utilities intending to make the job just that little bit easier began to arrive about a year ago. One of the best of these was STOS.

Since it first appeared, STOS has led to the production of some very good commercial standard games, and, probably, countless back bedroom ones as well. However, as with all software, getting to grips with STOS has proved too big a task for many would be programmers. Add to this general problem the difficulty of taking on something as large as the production of an entire game, and many must have fallen by the wayside.

Stephen Hill, games writer and author of the original STOS manual, is all too aware of this problem. He has gone a long way towards rectifying it with his book "The Game Makers' Manual".

Contents

The Game Makers' Manual is one of the best 'second manuals' that I have ever seen. Using it, even the complete novice should be able to produce a simple game quite quickly, and with a little dedication it ought to be easy to build the original game into something quite unique. The book is choc-a-block with programmed examples which can be lifted directly from the text, modified, and inserted into your own programmes.

The book is organised into eleven chapters. These cover both specific genres of game and general topics with which the programmer should become familiar. There are chapters on all of the following:

* first steps
* shoot-em-ups
* rebound games
* simulations
* role playing games
* adventure games
* 3D techniques
* animation techniques
* scrolling techniques
* sampled sound
* assembly language programming

Each chapter is divided into many sub-sections, which enable the reader to trace help on a particular problem with ease. This feature, more by accident than design, compensates for the rather less than adequate general index. I suspect that the six-page table of contents will offer better access to the book than the four-page index does. (Poor indexes appear to be an almost standard feature of books in the computing field. I wonder why?)

Preparation

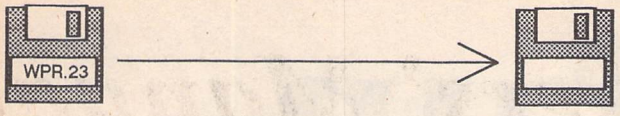
The first chapter of the Game Makers' Manual covers that all-important element of creating any complete programme - the planning stage. Hill correctly points out that it is the planning stage of any game which is both the most important and the most difficult. Actually programming is easy by comparison. A lot of effort has to go into the pen and paper stages before any kind of keyboarded input can begin.

The chapter discusses the various stages of planning, from having the idea through to writing a 'pseudo code' version of things - that is a series of simple one line statements which can be converted to programming language.

The chapters on particular genres of game contain a lot of useful tips on implementaion of specific features. The chapter on rebound games, for example, shows you via programmed examples how to calculate angles of rebound for a ball, and how to detect collisions between the ball and other objects. The chapter on adventure games takes you through scenery, map creation, text handling, graphics, objects, and managing movement between locations.

The chapters on general subjects complement these specific sections nicely, to produce a well-rounded book which should give even the absolute beginner a fighting chance to turn the dream of creating a fully working programme into a reality.

Title:	The Game Makers' Manual
Author:	Stephen Hill
Pages:	280
Publisher:	Sigma Press 1 South Oak Lane Wilmslow Cheshire SK9 6AR
Price:	£12.95
ISBN:	1-85058-158-4



Fast Copy III

Formatters and copiers are widespread in the Public Domain Libraries, and it's a vast jungle out there when you're choosing the one you want. James Beswick recently came across a formatter/copier called Fast Copy III, written by German programmer Martin Backschat, and it stood out from the crowd.

The built-in GEM copy and formatting program, DISKCOPY, as you've probably discovered, takes far too long to complete the operation, and there are some bugs in the program. It's also unable to work on disks which have "unusual formats" (i.e. in excess of 9 sectors and 80 tracks), which can also present a problem.

Quick Run-Down

FastCopy III squeezes nicely into a 35K PRG file. There's a multitude of selections available from the main menu. It even has "Help" in the menu, but unfortunately this is no use unless you can read German! The menu screen (see screenshot) is laid out extremely well, making it easy to use for beginners on the ST. But it also has enough options and configurations to make it powerful enough for experienced users.

But what really separates it from other accessories of this nature, is the speed at which it works. The table below shows the approximate timings of FastCopy III, Megaform and GEM's Diskcopy program.

One option available, "Streamer", should be of interest to hard drive owners. It asks you which partition you want to back-up, and then copies its contents to blank floppy disks, and all you have to do is swap the disks every so often. It's great! Then, if you have a major disaster with your hard drive, FastCopy can then copy the back-up data back to its rightful partition.

FastCopy also has its own built-in virus killer. I don't know how many viruses it's effective against, as I can't read the German instructions, but it does seem to work quite efficiently. However, it seems to think that the immunisation code laid down by CRL's Virus Killer is a virus, so you shouldn't really use this if you already have CRL's product.

There's also a variety of ways to format and copy disks in FastCopy, as with many copiers. However, you'll be hard pressed to find one which can format and copy disks up to 11 sectors, 86 tracks! You can also pick and choose which tracks you don't want to format or copy.

There are some other little features, such as "Directory", which gives you not only the directory of a specified drive, but how much space is used up and how much is still free, in bytes and as a percentage; and "Scan disk", which checks for errors.

Overall

FastCopy is oozing with power and user-friendliness - two factors that aren't usually found together in most software. It's got all the features that an ST expert would want, and also the features that a beginner who wants an alternative to GEM's DiskCopy would want.

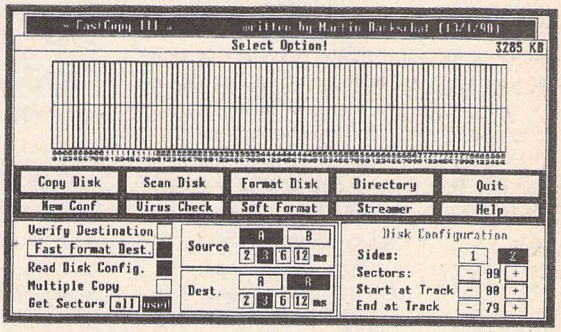
Formatting

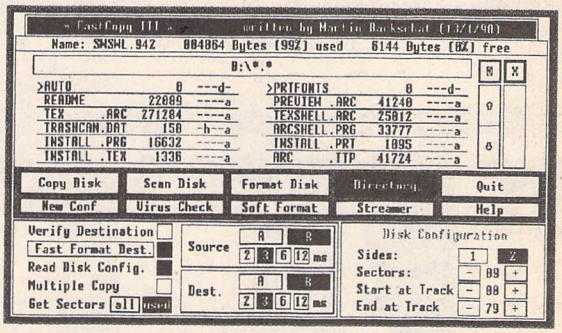
Program	Verified	Not-Verified	Sectors	Tracks	Sides
FastCopy III	65	35	9	80	2
	80	51	10	81	2
	133	67	11	82	2
	35	18	9	80	1
	51	34	10	81	1
	67	34	11	82	1
GEM Diskcopy	96	--	9	80	2
	50	--	9	81	1
Megaform	100	68	9	80	2
	135	67	10	81	2
	133	66	11	82	2
	55	34	9	80	1
	66	34	11	82	1
	109	34	11	82	1

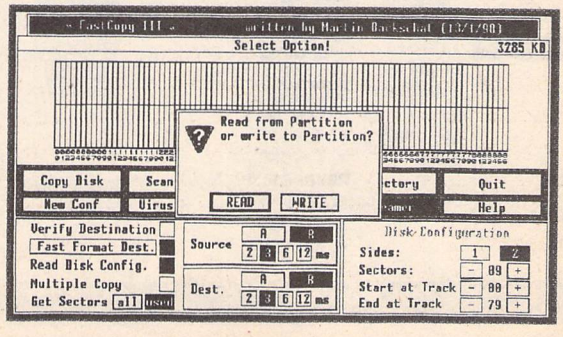
Copying

Program	1 Side	2 Sides
FastCopy III	50	139
GEM Diskcopy	80	139
Megaform	60	113

All timings are measured in seconds. Bold type indicates fastest time.

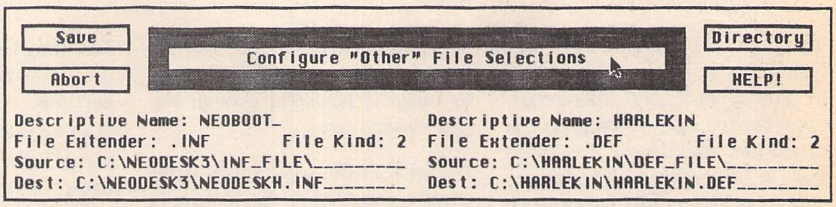






Auto-Run

Frank Hollis shows how programmes may be run automatically using NeoDesk 3 and the shareware utility Superboot 6.



Part of the Superboot configuration utility

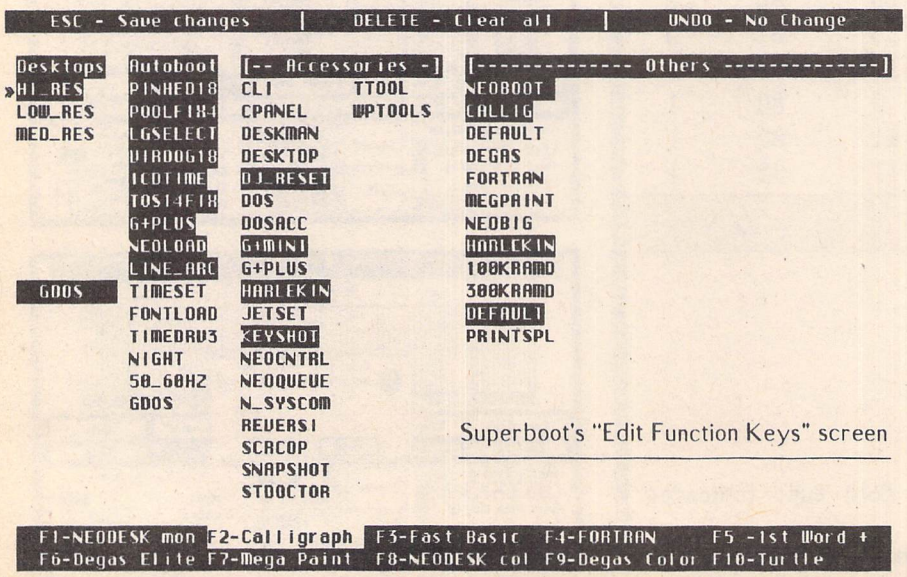
NeoDesk 3 has the ability to run an application automatically when you first boot up. The name of the auto-running program is entered into the "paths" dialogue box and then saved to a NEODESKH.INF file (for mono users). This is all very well if you always want to run the same program. If you use many different programs you are forced to launch them yourself. Using the PD program SuperBoot 6 will allow you to boot one of a selection of your favourite programs from cold with just a single keypress.

SuperBoot is a very comprehensive AUTO folder program for configuring your system when you boot up. It is aimed at hard disk users and allows you to pick which AUTO programs and desk accessories will be loaded. In addition it comes with options to choose which of several DESKTOP.INF and ASSIGN.SYS files will be active. It is also possible to tell it which program should be automatically run using one of Startgem, Headstart or the TOS 1.4 auto-loader. Each of the 10 function keys (in combination with Control and Alternate keys) can be set to a frequently used set of these options. This gives a choice of 30 different set-ups available.

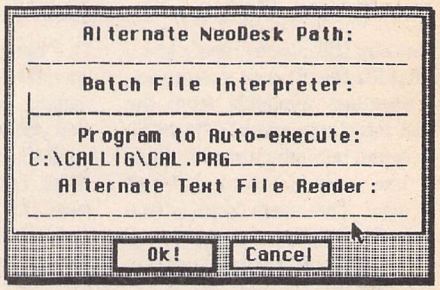
Now we come to the important bit. Superboot also has the option for user-defined "Other" files to be included in the selection process. This makes it possible to assign different NEODESK.INF files to the function keys. I shall follow this process through to show how Calligrapher Professional is installed to be run with a single keypress when you switch on.

First, the path for the program is entered into NeoDesk's "Paths" dialogue. Then the "Save Configuration" option is selected, the Desktop configuration file name edited to read CALLIG.INF and the file saved. The CALLIG.INF file should be moved to a folder (INF_FILE) inside the NEODESK3 folder.

Next, SUPER_CS.PRG (the Superboot configuration utility) is run. Select "Configure 'Other' File Selection". You are presented with the set-up screen. Enter the required data into the first of the free sets of options as shown in the screen dump. (You will need to replace C:\NEODESK3\INF_FILE\ in the source and destination lines for your own path for the NeoDesk INF files). You need only do this step once, not for each application.



Superboot's "Edit Function Keys" screen



NeoDesk's Path Dialogue

Save this information and exit to the main menu. Choose the "Edit Function Keys" option and select the key you want to use to launch this application. Use the cursor keys to move about the screen and the space bar to select/deselect the Auto Progs and DA's you require. Over to the right of the screen you will see a column headed by "NEOBOOT". Under here should be a file called CALLIG. Select this file. Exit from the set-up page and give the key a name (Calligraph in this case) and tell it that NeoDesk is to be your Auto-booting program.

Now it's just a matter of repeating the saving of NeoDesk INF files and configuring Superboot function keys. When it's all done you should be able to switch on your machine, wait a few seconds, press a single key and you're taken straight into the application you want.

As you can see from the picture of the function key set-up screen, I am also using this method to select different .DEF files for Harlekin. It should be possible to use Superboot with any program that uses a configuration file. It works by copying your selected .INF file to the NEODESKH.INF file used by NeoDesk when it first runs.

Superboot is Shareware. The registration fee is $15. I do urge you to register your copy if you find it useful. The author, Gordon Moore, has spent a great deal of time and effort to create it.

SOFTWARE DOCUMENTATION

Günter Minnerup's article in Issue 3 on the above subject started me thinking that, whilst as an individual I cannot do much about the standard of software documentation in commercial software, readers might be interested in a few pointers to writing operating instructions for any of their own programs which they intend to issue as shareware or public domain. I hasten to add that some programs I have received over the years have been accompanied by some very detailed and well-written documentation. At the other end of the scale, however, some very good programs and utilities have been spoiled by either a total lack of help notes or by documentation which is not geared to what the user really needs.

I appreciate that most, if not all of these programs, are written by enthusiasts in their spare time and that their talents lie in juggling bits and bytes rather than spending precious programming time trying to write suitable documentation to accompany their programs. The hard facts are that the value of their output is diluted if the recipients cannot make full use of their programs simply because they do not understand them sufficiently. One of the objects of making programs available as public domain software is to assist other enthusiasts, who may not be as talented as the writers of the programs, to increase their knowledge and ability and to get the best out of their computers. The best written utility is useless if it falls into the hands of a novice who cannot work out how to set it up and use it to its full potential.

This leads me directly to my first two points regarding the writing of software instructions. Firstly, the documentation should be a means of communication. Communication means that not only does information have to be transmitted, in this case in writing, but it must also be understood by the recipient. If the recipient fails to understand the instructions fully, the sender has failed to communicate the point(s) he/she has been trying to put across in writing his/her program. For this communication to succeed, the sender must understand the needs of his/her audience. In the context we are looking at, this means making an accurate assessment of the level of knowledge or understanding of the person who is likely to make use of the program. In the world of software documentation, whether it is for commercial purposes or for use within a user group or public domain library, it may be reasonably assumed that the majority of programs are liable to be used by anyone from the complete novice to the experienced programmer. Lack of appreciation of this fact is one of the major faults with software documentation in both the commercial and public domain sectors, especially when it has been written by the programmer himself/herself. Too often, the programmer assumes a level of knowledge on the part of his/her audience based on his/her own knowledge of the subject and he/she omits facts which they regard as being obvious and not worthy of explanation.

The golden rule should be to include everything, no matter how trivial it may seem to you, the programmer, at the time. One small seemingly unimportant detail might be the vital link some inexperienced user needs to derive the full benefit from your hard work as a programmer. I realise that this approach is time-consuming, but it is necessary for your work to receive the recognition it deserves. If it is your opinion that your work would only be of use to experienced programmers and that this is the audience your program and documentation are directed at, say so clearly at the outset.

Have a plan in mind before you start to write your documentation. Know what you are going to say and the order in which you are going to present it. I am sure that most of you will have some plan of work in mind when you start work on a piece of programming. The same technique applies to writing documentation. User requirements will vary somewhat for different programs and utilities but a reasonable general starting point is to state what the program or utility does (in brief terms) and how it should be loaded up - especially if this involves some previous setting up.

At this point, we have taken care of the "shove it in and let's try it brigade" of user. Whatever else he/she does, it should not cause any permanent damage to their machine!

Like Günter, I like to spend some time on the manual before I put the disk in the machine. At the same time, I haven't the time to spare reading the development history of the program and how clever the author was in writing a certain routine within the program. I want to be able to find the information that I need to have an initial look at the program and try it out. Provide a good contents list at the beginning. Ideally, this contents list should roughly follow the plan you had in mind before you started to write the documentation.

There are several acceptable ways of structuring the documentation to reflect the nature of the program you are writing about, but a general "rule of thumb" would be to structure it in the way the user would need the information, starting with the complete novice and carrying on upwards to the minutiae of technical details which your peers will find interesting at the end of the document. If in the course of your work, you have made use of other PD programs or routines, don't forget to give them an honourable mention - but ensure that you haven't infringed anyone's copyright. If another programmer had found some of your work useful, I am sure you would welcome your efforts being recognised!

A regular cause for complaint which I have with PD documentation is the strange formatting which some people use on their READ_ME files. I find it irritating when I start to print out a thirty-odd page manual on my printer only to find out the page lengths and widths have been set at some obscure figure. If you have used a non-standard set of parameters for this, please include a note at the start so that the user can set up his/her own printer to conform to them. A note as to whether it is in A4 format or 8.5" x 11" would also be helpful.

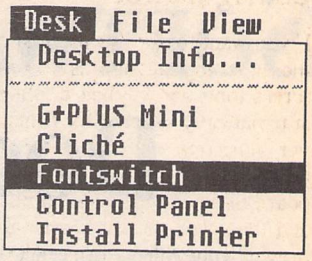
As most PD and shareware documentation is normally provided on disk, the value to be gained by the use of illustrations is largely negated. However, we should remember that on the Atari, we have 1st Word Plus and Snapshot.ACC which are quite widely used by many users and that the inclusion of screenshots in the documentation is a relatively painless process. Certainly for anyone intending to develop their programs for commercial purposes it would be a worthwhile exercise to produce documentation with illustrations included.

On the subject of programs from overseas and the standard of documentation which accompanies them, I appreciate the courtesy which is shown by having an English "translation" included on the disk despite the limitations of some of them. Having had some translation experience over the years, I can appreciate the problems in trying to translate specialist terminology into a foreign language. Normally, most professional translators would only work from the foreign language into their own native tongue as this method provides much more accurate and fluent translations. The answer to me is for our foreign friends to include the original foreign text as well as the translation on the disk (if space permits) and then ambiguities and "guesswork" can be checked out and verified by anyone who feels strongly about it and who has either the skills or the resources to do it.

In conclusion, I know that many readers will probably feel that whilst they would probably like to produce better documentation to accompany their programs, they haven't really the time to spend on the subject or that they are unsure of their skill at writing to the level they would like. I would be prepared to collaborate in any way with any who are interested to help them improve their standards. Depending on their needs, I could give assistance from merely proofreading, editing or checking work they have done to preparing a text file for them from their own notes.

Bill Hadden Lincoln

Fontswitch 3



In the second part of the tutorial on Fontswitch 3, Jeremy Hughes explains the use of the Key Tables option: how to install different language keyboards so that non-Roman scripts such as Greek, Cyrillic and Hebrew may be used from within your word processor and/or desktop publisher.

Foreign and Scientific Fonts

Fontswitch was originally written to make it possible to use Greek and Hebrew (and other non-European languages) on the ST. Once you have a way of loading new screen and printer fonts, it is obviously possible to work with a wide variety of different languages and scripts, and the same principles that are used for foreign fonts can also be used to work with specialist scientific fonts. Predefined screen and printer fonts are currently available for Akkadian, Armenian, Cyrillic, Greek, Hebrew, Syriac, and Slavonic, and it would not be difficult to use Fontkit Plus to design new fonts for other languages (such as Arabic).

The rest of this section contains instructions on how you could configure Fontswitch in order to be able to type and print Cyrillic (Russian), but the same basic process may easily be adapted to other languages. The latest versions of Fontswitch and Fontkit Plus contain a CYRILLIC folder with a full set of Cyrillic fonts and tables. These comprise: (1) 8x16 and 8x8 screen fonts (A1_CYRIL.FON and A2_CYRIL.FON), (2) a high-resolution 9-pin font (J1LCYRIL.FON), (3) a standard-resolution 9-pin font (S1I.CYRIL.FON), (4) a monospaced 24-pin font (Q2LCYRIL.FON), and (5) a keyboard table (CYRIL.KBD). If you look at one of the Cyrillic screen fonts in Fontkit Plus, or in the font table in First Word or First Word Plus, you will see that Cyrillic characters are located towards the end of the ST character set (at the bottom of the First Word font table). The rest of the font is identical to the standard ST screen font, so English and most other European languages can be typed and printed in the normal way. If you have followed previous sections on loading new screen and printer fonts, you will have no difficulty in loading the appropriate screen and printer fonts for your system. The main problem is how to type Cyrillic from the keyboard.

One possible method of 'typing' Cyrillic characters is to click on these characters in First Word's font table. This works, but it is painfully slow if you want to type more than the odd word or so. A better method is to use Fontswitch's 'key tables' option to load the keyboard table CYRIL.KBD. This does not affect the standard keyboard layout, but it provides a set of alternative keyboards which can be used to type Cyrillic characters and other foreign characters. In the 'key tables' dialog, these alternative keyboards are labelled 'Greek', 'Hebrew', and 'Mshift'.

The Cyrillic keyboard file uses the 'Greek' keyboard for Cyrillic characters and the 'Mshift' keyboard for other foreign or scientific characters. (The 'Hebrew' keyboard is not used in this instance.) You can click on the 'Greek' button to see how Cyrillic characters are mapped onto the keyboard, and you can alter this arrangement to any other arrangement which you might prefer: in the present arrangement Cyrillic characters are generally equated with similar English characters, but you might prefer to have them laid out in a standard Cyrillic typewriter layout. The way to alter the keyboard layout is to click on a key square; this causes a key-editing box to be displayed, with arrows that can be used to change the ASCII code of the key you just clicked on. If you do alter the keyboard layout, you should then save the new layout for future use by clicking on the 'save' button.

Once the Cyrillic keyboard has been loaded, you can switch your ST's keyboard into Cyrillic mode by typing Alternate-9 (or a different Alternate keystroke which you have specified by clicking on the 'Altkeys' button in the Key tables dialog). This causes a Greek Alpha to be displayed in the top right corner of the screen, to remind you that you are currently in 'Greek' (= Cyrillic) mode. From this point on your ST will type Cyrillic characters instead of English characters until you get out of Cyrillic mode by retyping Alternate-9. You can also type Alternate-0 to access other foreign or scientific characters. This causes a Greek Mu to be displayed in the top right corner of the screen to indicate that you are in Mshift (metashift) mode. In this case the next character you type will be taken from the Mshift keyboard, but the ST will then revert automatically to its previous keyboard mode. This mode is useful for typing single foreign characters, such as accented characters, as opposed to foreign scripts such as Cyrillic. For example, if you type Alternate-0 followed by an 'a' with CYRIL.KBD (or the standard ATARI.KBD) installed, Fontswitch will cause an umlauted 'ä' to appear on screen. This is useful if you want to type German on a UK keyboard.

Fontswitch's keyboard option can be used with most programs that accept keyboard input, including GEM-font programs such as Timeworks DTP. Unfortunately, there are difficulties with a small number of programs which use their own keyboard handler in place of the standard ST keyboard handler. Protext is one program which falls into this category: if you use Protext in its normal mode, Fontswitch's keyboard facilities are completely ineffective. With Protext, you can get around this problem by using a special control sequence which causes Protext to switch from its own keyboard handler to the standard ST keyboard handler (see Appendix B.1 of the Fontswitch/Fontkit manual for further details).

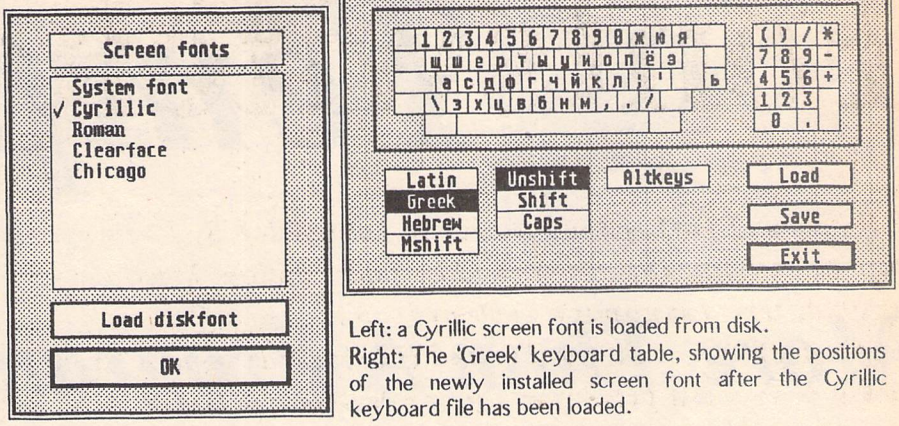
Another problem which can occur is if your wordprocessor contains character translation tables which cause characters in the second half of the screen font to be replaced by different printer characters (or a sequence of printer characters). First Word (Plus) usually has a character translation table built into its printer driver. This can be corrected by editing the HEX file for your printer driver: look for any lines which provide translation equivalents for characters over 127, and disable these lines by deleting them or putting an asterisk in front of them; then use the First Word (Plus) INSTALL.PRG to create a new printer driver.

Configuration

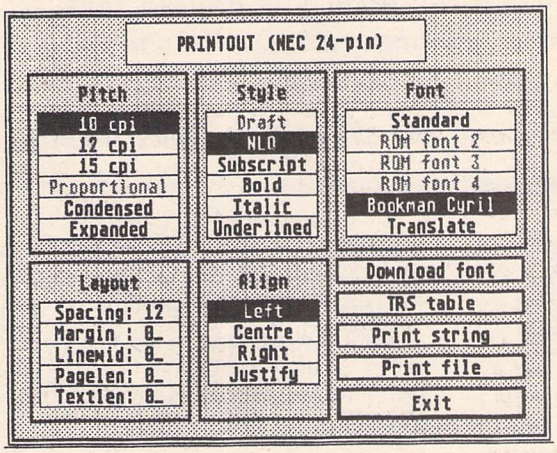
If you want to use Cyrillic on a regular basis, the next logical step is to install Cyrillic screen fonts and keyboard tables so they are automatically selected by Fontswitch whenever you start your computer. This involves using FCONFIG3.PRG. To install a new keyboard table, double-click on FCONFIG3.PRG and then click on 'keyboard table'. This will present you with a dialog box that asks you if you wish to install a new keyboard table; click on OK and select CYRIL.KBD from the GEM file-selector. CYRIL.KBD is now installed in Fontswitch as a built-in keyboard table which is automatically used until you load a new table from the Key tables dialog or install a different table with FCONFIG3.PRG. Installing a Cyrillic screen font can be done in a similar manner. Fontswitch contains a built-in Chicago font which is normally selected as the default screen font. If you click on the 'screen fonts' button in FCONFIG3.PRG, you will be presented with a dialog box which allows you to change this font for a different font (click on 'replace font 2' and select a new font from the GEM file selector). Alternatively, you may prefer to keep the built-in Chicago font. In this case you can copy the Cyrillic screen font into a FONTS folder (as described above), and then count down in the Screen fonts dialog to see which slot it is occupying. If there are no other screen fonts in the FONTS folder, it will occupy the third slot, beneath the standard system font and the Chicago font: double-click on FCONFIG3.PRG, select 'screen fonts', and click on 'Font 3' followed by 'OK'. From now on Fontswitch will automatically select this font as the default font whenever you restart your computer. Now all you need to do is to download and select a matching printer font whenever you want to print out a font containing Cyrillic characters.

(You can take the installation process one stage further by copying a Cyrillic printer font into your FONTS folder, in which case it will be downloaded automatically whenever you restart your computer. I personally prefer not to do this, since it wastes time on occasions when I don't wish to download a printer font. In any case, you still need to select the font from Printout after it has been downloaded.)

Fontswitch can be used in a similar fashion for typing a variety of more or less exotic languages. For example, Fontswitch's Mshift keyboard mode provides an easy way of typing French and German accented characters (some wordprocessors also provide their own system for typing accented characters). More exotic languages include languages that are typed from right to left, such as Hebrew and Arabic, and Fontswitch incorporates a right-to-left typing facility which can be used with these languages (see the Fontswitch/Fontkit manual for further details). Sadly, you cannot use Fontswitch to type Hieroglyphics or Chinese: these scripts contain more characters than will fit in an ST screen font!

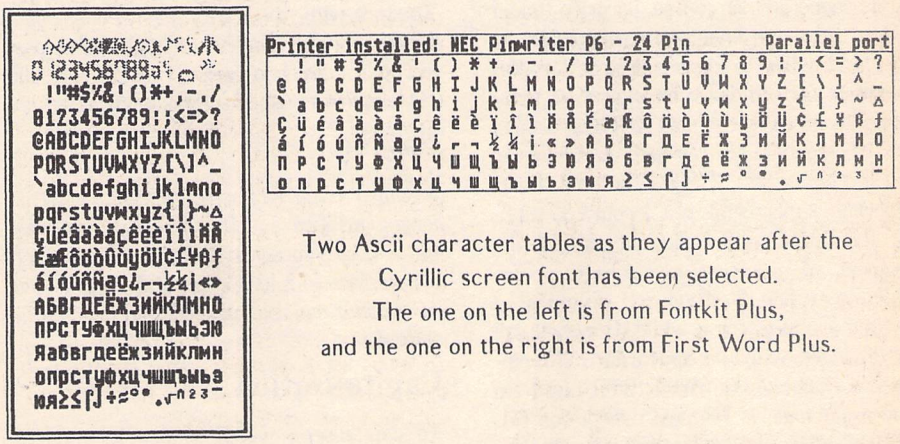


Left: a Cyrillic screen font is loaded from disk.
Right: The 'Greek' keyboard table, showing the positions of the newly installed screen font after the Cyrillic keyboard file has been loaded.

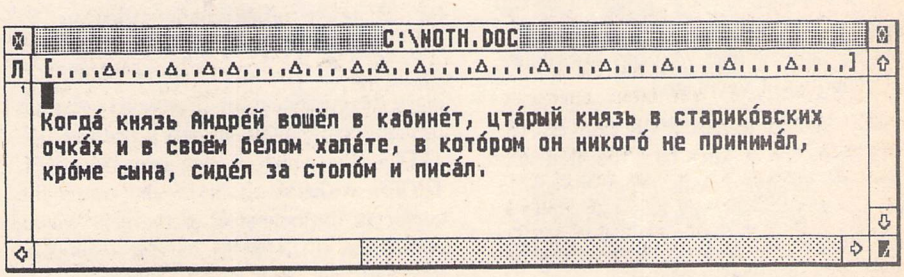


The Printout dialogue box:

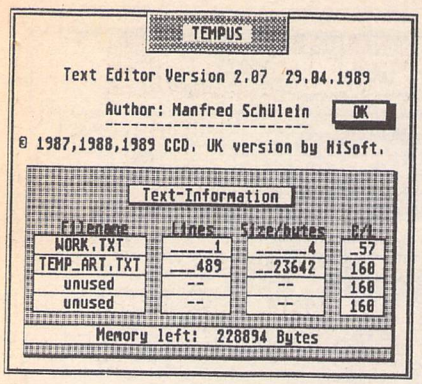
A printer font ("Bookman Cyrillic") has been selected and downloaded to the printer ready for the next printout.



Two Ascii character tables as they appear after the Cyrillic screen font has been selected.
The one on the left is from Fontkit Plus,
and the one on the right is from First Word Plus.



The first sentence of War and Peace has been typed into First Word Plus using the Cyrillic keyboard and the Cyrillic screen font.



Tempus ~

More Than A Programmers' Tool

Hugh Beyer shows how a text editor such as Tempus may, with a little imagination and re-configuration, be used as a fully-fledged word processor.

The article is in two parts, and will be concluded next month.

Three years ago - in the distant past, when I was still blissfully unaware of the difference between a wordprocessor and a text editor - I fell for good advertising and ordered a copy of Tempus (version 1). Predictably, I was terribly disappointed when I discovered that it did none of the things I regarded as essential for my day-to-day wordcrunching. At the time I was attracted by its speed and, of course, its price (under £20 at the time). Imagine the expression on my face when I loaded in a Wordplus document only to discover all sorts of extra squiggles on the screen, as well as a distinct lack of essential features such as wordwrap and of course WYSIWYG for bold, italic, underline, superscript, etc. I could do without the latter, but I did not savour the prospect of inserting a carriage return after every line. So Tempus 1 disappeared into the archives for a while. However, all this changed with the appearance of Tempus 2 a year later (in April 1989), and I am now using mainly Tempus, except for fiddly jobs where layout is important. (Aside: I'm a translator, but the program should also be of interest to authors, clergy, students and anyone else who has to produce vast quantities of verbiage.)

So why should a Pascal-illiterate wordsmith like me be so keen on a tool that was apparently designed with programmers in mind and is generally marketed as such? A brief glance through program adverts shows that software salesmen think of Tempus as a programmers' tool. Undoubtedly this is because it very humbly calls itself a 'text editor', as opposed to a word processor, i.e. it lacks quite a few features commonly regarded as essential while at the same time allowing the full range of all 256 ASCII characters, rather than reserving 31 of them as control characters. But before we get on to the bits it doesn't have, let's see what it actually offers.

Speed

To start with, there's its main selling point: speed. Having waded through Wordplus syrup for over a year, Tempus felt like exchanging a pushbike for a motorbike.

Saving

Saving - even longer documents - now no longer justifies a coffee break. (This may be a disadvantage!) And a global search and replace in a long document (e.g. 'isation' → 'ization') can be handled within about a second.

Capitalisation

To capitalise a word, simply go over it with the cursor pressing ‹CONTROL› ‹G› (or whatever other configuration you've set instead) until you come to the end. To capitalise All The First Letters Of A Title, place the cursor on the first word (which is probably in capitals already), press ‹CONTROL› ‹F› (which is the same as ‹CONTROL› ‹ARROW RIGHT› and sends the cursor to the beginning of the next word), then press ‹CONTROL› ‹G› for capitalisation, and hop along happily, alternating ‹F› and ‹G› with your left index finger, while keeping your left little finger on ‹CONTROL›.

Files in memory; text windows

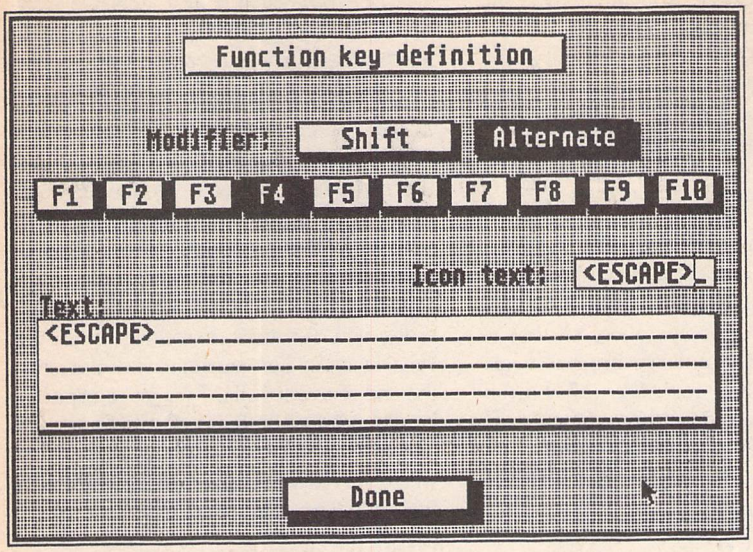
If you have more than one text file in memory, you need not have all your windows open (thus preventing cold draughts down your neck). But you can call up each file via the keys above the numeric pad: (,), / and * for windows 1, 2, 3 and 4: ‹CONTROL› plus one of these keys to open a window, ‹ALTERNATE› plus one of them to shut it again, and ‹CONTROL› ‹ALTERNATE› to open it wide, i.e. occupying the whole screen. When I translate a book into English, I often have to have four files in memory: one for the main text, one for the margin texts, another for footnotes and another for queries, and it's a great relief to be able to switch between them at the flick of a button.

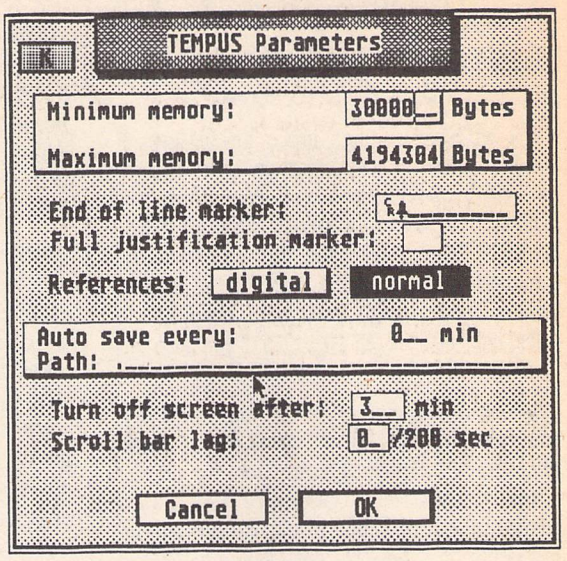
Text parameters

But what about those text parameters, such as bold, italics, underline, superscript and subscript? Well, unless you're a WYSIWYG fanatic, this should be no problem at all. There are three ways to implement them:

(1) If you're intending to process the text further under Wordplus at a later stage (which will be the case if you need right-justified text, decent page breaks, headers or footers), you should use Wordplus codes in your Tempus document, i.e. ‹ESCAPE› ‹ü› for Bold, ‹ESCAPE› ‹ê› for Underlined, ‹ESCAPE› ‹ä› for Italics and ‹ESCAPE› ‹Ç› for Undo Last Parameter. This looks a bit fiddly, but the speed of Tempus makes up for it, and you soon get used to it. (Pressing ‹ESCAPE›, incidentally, generates ASCII 27 - a screen character represented by a superscript E followed by a subscript S within one space: E_S.)

(2) The second option is to use the codes for your own printer. For EPSON and NEC-compatibles this means, for instance,





<ESCAPE> <4> for Bold, <ESCAPE> <5> for Undo Bold. You'll find a list of all of these in your printer handbook.

(3) For an even neater solution, you may like to define your own control codes, which involves changing the keyboard driver (in the KEYSYS.INS file) as well as the printer driver (in PRINTER.INS). For instance, you may want to have <I> for Italics and <i> for Undo Italics. Call up PRINTER.INS and add the following lines:

"{":= "<ESCAPE>" "4"

"}":= "<ESCAPE>" "5"

or whatever your printer handbook may demand. Save the file, and then click on 'Save settings' under Parameters/Installations. If you've made a mistake, then the program will flash up 'Syntax error' and the cursor will stop at the appropriate place in the PRINTER.INS file. If everything is OK, save the file, then go to 'Save Settings', where you click on 'Install printer'. A tick will appear next to it. Then click on 'OK', and the new parameters will be saved into your own customised version of the Tempus program.

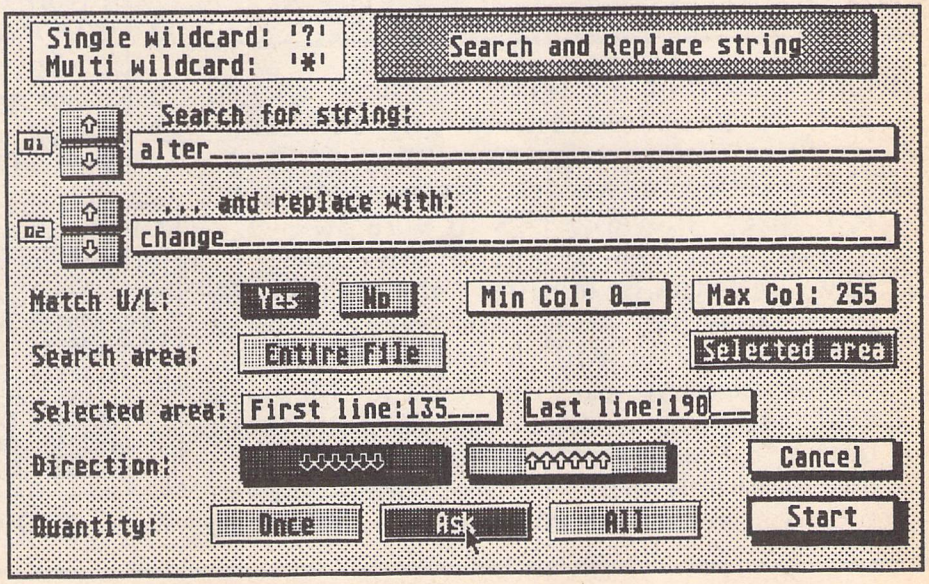
Special configurations

This takes us to another point: Tempus 2 can be configured to your own requirements in all sorts of ways. Let's start with the keyboard. Tempus is a bit of an arrogant program: keyboard configurations from outside, e.g. from Fontkit or Mobzkey, are ignored, and if you want odd accented characters accessible straight from the keyboard, you'll have to define them again in the keyboard driver, regardless of your Mobzkey or Fontkit set up. The default keyboard driver file KEYSYS.INS may be OK for your purposes. But when I first bought Tempus 2, I had to make some substantial changes. The English version of the program is geared towards a U.K. keyboard, so I had to spend some time changing it to my own modified Anglo-German keyboard (e.g. ä, Ä, ö, Ö, Ü, ü, β, ç, é, è, ê). But this may be totally unnecessary for you. On the other hand, if you're used to Wordplus version 3, you may want to change quite a few of the keyboard shortcuts, so that they're the same as under Wordplus, e.g. <CONTROL> <V> for 'Save with Backup'. I changed nearly all of the function keys so that I now have: 'Start Block' (F1), 'End Block' (F2), 'Copy Block' (F3), 'Move Block' (F4), 'Replace' (F5), 'Find' (F6), 'Rep. Find' (F7), 'Del Line' (F8), 'Last Position' (F9) and 'Goto End' (F10). I altered the 'Copy Block' operation in such a way that the Block markers are removed immediately after the move, and the 'Goto End' operation - not implemented directly under Tempus - also involves several steps. If you'd like to use my configuration, here it is:

```
T451 :=   16470 *[F1] Block start
T452 :=   16472 *[F2] Block end
T453 :=   16394,16388 *[F3] Copy bl
          w/out markers
T454 :=   16392,16388 *[F4] Move block
T455 :=   16448 *[F5] Search & replace
T456 :=   16444 *[F6] Search
T457 :=   16446 *[F7] Search again
T458 :=   16576 *[F8] Delete line
T459 :=   16416 *[F9] Goto to last pos.
T460 :=   16566,16410,16568 *[F10]
          Goto end of file
```

The next step is to find the so-called System Installation in the same file and to change it as follows:

```
s0 :=  "START BL.",0 * Function key F1 text
s10 := " END BL.. ",0 * Function key F2 text
s20 := " COPY BL.",0 * Function key F3 text
s30 := " MOVE BL.",0 * Function key F4 text
s40 := " REPLACE ",0 * Function key F5 text
s50 := " FIND ",0 * Function key F6 text
s60 := "REP. FIND",0 * Function key F7 text
s70 := " DEL LINE",0 * Function key F8 text
s80 := " LAST POS",0 * Function key F9 text
```



s90 := "GO TO END",0 * Function key F10 text
s100:=$0d

This is important for a correct function key display at the bottom of the screen.

Click on 'Save settings' under installations. If you've made a mistake, then the program will flash up 'Syntax error' and the cursor will stop at the appropriate place in KEYSYS.INS. Next, save the file and then the Installation parameters under the appropriate menu: though this time, remember to click not only 'Install Keyboard' but also 'Install System'.

Another useful change in the keyboard driver you may wish to install is a 'Swap characters' function: a handy tool for editing a text. If you're a reasonably fast typist, you're probably prone to typos such as 'rat' instead of 'art'. So why not place a 're-swapping function' on, say, <ALTERNATE> <\> - an extremely finger-friendly position? Here's the listing:

```
T233 :=     16598,16470,16598,16472,
            16600,16600,16392,16388
```

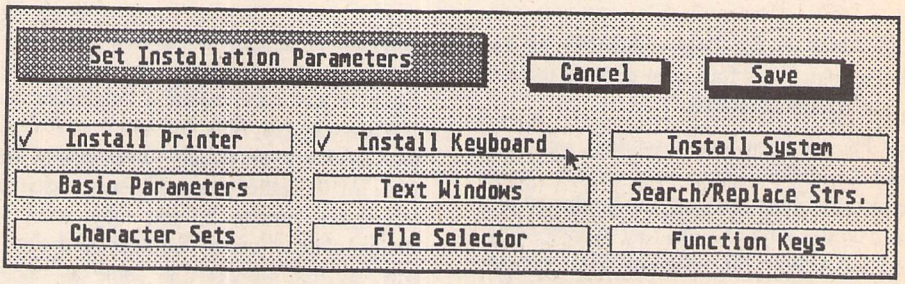
What happens is that as the cursor is sent to the second letter (16598), where a block is started (16470), then the cursor is sent to the right of the second letter (16598) where the end of the block is defined (16472), the cursor is then sent back to the left of letter number one (16600,16600). Finally, the 'block' (i.e. letter number two) is moved to its new position (16392) and the block marks are deleted (16388). All this takes place within less than a second and is extremely convenient.

Another function I changed was that of the Delete button. The original default regards each space or punctuation mark as worthy of a separate Delete operation, so that it takes quite a while to delete longer strings. 'The quick brown fox' takes 7 button presses to kill. To reduce this to four (i.e. to get a double delete), simply change the appropriate line in the keyboard driver to:

```
>T40 :=     16574,16574 *[Control][Delete]
            Delete 2x
```

The Delete function is also available under <CONTROL> <T>, which you may want to leave as it is, so that you've still got both option: a simple delete and a double delete.

If you either belong to the anti-rodent league or you are just lazy (like me), you'll be keen enough to learn as many keyboard shutcuts as possible and indeed configure your own. This is certainly one of the main assets of Tempus. And with a bit of imagination you can invent all sorts of interesting new functions, consisting of several existing ones. For example, if I realise at the end of a word that I forgot to capitalise it, all I need to do is press <HELP> and the cursor hops back to the beginning of the word, corrects my error and goes back to the end. (Can you work out how this is done?)



Jeremiah's Journal

Splinterbone

In the future, some things will be very different. Others will remain the same. One man, however, may still be able to swing the balance. Jeremiah joins Tex Murphy in a walk down those

Mean Streets

The year is 2033 AD, and the world has moved on. Nowhere has changed more than the state of California. Once upon a time, it was considered the home of peace and love, but that was long before the Nuclear Holocaust occurred. Now, following on from decades of urban decay, political corruption, and genetic mutation, the population live in an atmosphere of crushed hope and acute frustration. Tension runs high, and tempers are as taut as bowstrings. Into this emotional arena strides the Law And Order Party, a grouping of neo-fascist fanatics willing to promise a gullible public anything they desire in order to gain political power. They blame the mutant minority for all of humanity's ills and direct an unremitting campaign of hate against them. Their support increases, their power grows, and it can only be a matter of time before they take over completely.

On top of all this, it's been a very long, very hot, energy-sapping summer. Some things never change.

Tex Murphy, Private Investigator, sits in his office. The hour is getting late. It's been the kind of day when time has just crawled by at a painfully slow pace. Why is it that, as the temperature rises, everything else slows down? Murphy is ready to pack it in. There's nothing stirring today. Perhaps he should take a couple of days off. Get out of the city for a while, find a place where breezes still blow. But then the office door swings open and Sylvia Linsky walks into his life.

She's looking for help. Her father took a dive off the Golden Gate Bridge. The cops think it was suicide. She thinks they're wrong, but they won't listen to her. She wants somebody to prove that her suspicions are correct, and she's got ten thousand bucks in her bag for the guy willing to take the job on.

It does appear strange. Professor Carl Linsky, eminent neuro-psychologist, had an intense hatred of water (a legacy from a near-drowning accident that occurred in his childhood). Why then would he choose to kill himself by jumping into the Bay from a great height? It didn't add up.

Sylvia Linsky was appealing to look at. She had the kind of eyes that, when a man looked into them, his temperature still rose a few degrees, despite the fact that, outside, it was over ninety in the shade! The case was intriguing. The money would be welcome (even in long, slow summers bills have got to get paid). Murphy nodded his head, and took the job. Later, there would be times when he wished he hadn't.

Movin' and Groovin'

Mean Streets is a new detective mystery adventure which gets off to a good, very Chandleresque start. It boasts a cynical, laconic, world-weary leading man; a gorgeous, breathless, helpless heroine; an enigmatic yet brilliant scientist (albeit deceased); and throws in a heavy dose of political intrigue, corruption and suspected cover-up as well. Ideal ingredients for a good whodunnit.

Taking the part of Tex Murphy (how somebody called "Tex" comes to be living in San Francisco is never really explained), it is the player's task to conduct the investigation into Professor Linsky's death in a bid to find, and take possession of, the evidence which will prove that he did not commit suicide.

In order to do this, the player will need to travel widely throughout the western United States, tracking down suspects and following leads. They will need to locate and question, carefully and thoroughly, a large number of different people. They will need to gain access to a number of buildings and offices which belong to the various characters in the game. By searching these locations, they will find items and clues which will allow them to progress even further in unravelling the mystery of Linsky's demise. The task is not simple. Nor will it be completed quickly.

It won't take too long to discover that the good professor was only the latest victim in a succession of suicides involving prestigious scientists. A little further digging will reveal that all these scientists had lately taken part in a secret project sponsored by the MTC Corporation. There is also evidence to suggest that each of them had expressed reservations concerning the overall objective of the project, shortly before they met their premature ends.

MTC Corporation turns out to be a wholly owned subsidiary of a company called Gideon Enterprises, and Gideon Enterprises is a staunch organisational supporter of the Law And Order Party. Slowly, the plot begins to thicken as Murphy uncovers details of a scheme involving computer controlled satellite systems, mass brainwashing and electronic surveillance, and a conspiracy to destroy forever the existing mutant factions. The scenario moves beyond the investigation into the death of Carl Linsky, and becomes a desperate race against time to acquire the means of aborting a satellite launch, and thwarting a carefully laid plan aimed at

bringing political domination into the hands of the Law And Order Party. The search becomes ever more frantic as the clock continues to tick down. While, somewhere in the city, a ruthless hired assassin hunts his next victim. Could that be Murphy?

In order to reach the large number of widely separated locations (some are many hundreds of miles apart) that you need to visit, you are equipped with a Lotus Speeder vehicle. This is a 21st century "flying car", with which you can zoom up and down the coast at will. This "travelling " part of the game is actually a fully functional 3D solid filled, vector graphic, flight simulator. Learning to handle this craft, according to the game manual, only takes a few minutes. However, flight simulators are not my forte and I quickly became confused in trying to handle throttle, hover, thrust, lift, pitch, bank and direction in a sufficiently co-ordinated fashion to allow for successful navigation from point to point. After a few minutes' practice, all I had managed to do was to fly in circles while upside down for a short time! I am told, however, by those more acquainted with these things than I, that this is a fairly adequate flight simulator and the Speeder craft handles very well once you get used to it. I'll take their word for it.

Fortunately, there is an autopilot built into the craft which makes flying an absolute cinch, even for someone as mechanistically inept as I. All you have to do is feed the navigation code for your destination into the on-board computer and, once it has locked on, activate the autopilot and you will be taken to your destination and landed safely without having to touch another dial, switch or lever. Absolutely painless transportation!

Navigation codes are a vital part of the game. Consider them as serving the same purpose as addresses in the present day. They give you a four digit co-ordinate at which you will find a particular person or place. You won't be able to contact anybody, or visit anywhere, until you have the correct navigation code to target on. A lot of the questioning of other characters will therefore revolve around attempts to extract the navigation codes for other persons or places for whom names have been discovered, but the means of locating them has not yet been obtained.

Wheelin' and Dealin'

Murphy is not, however, all on his own in this investigation. His faithful secretary, Vanessa, is just a short videophone call away (the Lotus Speeder comes equipped with built-in communication facilities), and she will willingly delve through the various archives and files which she has at her fingertips in order to discover pieces of information which may be required. She will provide valuable feedback on several occasions. However, Vanessa does not possess all the answers. Sometimes, it will pay off if Murphy talks to someone who operates a little closer to "street level" than Vanessa can manage. This is where having a personal informant like Lee Chin proves invaluable. This lady is also only a short videophone call away, and she has widespread contacts throughout the underworld and amongst the "street people". She hears information which would never reach the ears of any "official source". This information she will gladly pass on.

But Lee Chin is not an informant out of love for Murphy's boyish good looks and gentle good humour. The lady is a canny businesswoman and her information is only available at a price. Murphy will need to negotiate with her and strike a bargain over money before she will reveal anything at all.

Unfortunately, there is not an endless supply of money in the game. Murphy starts out with Sylvia Linsky's ten thousand dollars in his possession, but Lee Chin's information does not come cheap, so this amount will not last for long. In addition, some of the people to be interrogated during the game will only give up the knowledge they possess once their palms have been crossed with sufficient silver to loosen their tongues. This too can become very expensive. More money can be found in various places throughout the game, if Murphy searches thoroughly enough to discover its hiding places (people do not tend to leave money just lying around). He can also pawn some of the other objects he finds in return for cash. Be careful

Dramatis Personae

A brief guide to some of the main characters in the cast of Mean Streets:

CARL LINSKY: the recently departed professor of neuropsychology. As well as his teaching duties at San Francisco University, he had also recently conducted some research for an unknown project. He'd also been employing a private eye of his own for quite some time. Now, why would he do that?

TEX MURPHY: world-weary and street-wise private eye. Honest, dependable and tough. It's his job to probe the secrets surrounding the death of Professor Carl Linsky.

SYLVIA LINSKY: daughter of the late professor. She's the only one who believes that the death of her father was not suicide. She hires Murphy to prove it. Unfortunately, she forgets to tell him that she stands to gain one million dollars from an insurance policy payout if he is successful.

DELORES LIGHTBODY: Linsky's fiancée. A woman with the face of a saint - a St. Bernard! God alone knows what Linsky ever saw in this woman. Rumour has it that he was on the verge of throwing her over in favour of someone else.

SANDRA LARSEN: this could be the 'someone else' involved. Sandra is as pretty as a picture and Linsky had dated her a few times. However, in the brains department she is a little lacking. So why are MTC picking up her bills?

MTC CORPORATION: ostensibly a management training centre for Gideon Enterprises. So why are they conducting secret research projects? And why do they employ a good-time girl like Sandra?

STEVE CLEMENTS: a detective in the West Precinct. He's a steady guy, but he doesn't intend to pursue the Linsky case. For him, the suicide verdict is sufficient. He has enough "honest to goodness" murders to keep him busy. He hasn't got the time to look into "might have been" cases.

BASH DAGOT: apparently the only witness to Linsky's last minutes. He swears the Professor leapt of his own accord. But Dash is a good friend of Blaze Weiner, a student studying under Linsky at San Francisco University. Linsky had recently given Weiner some really low grades, and Blaze was none too happy about it.

WANDA PECK: crime reporter for the San Francisco Chronicle. Wanda's a strongly independent, intelligent woman with some terrific information sources. She could fall for Murphy in a big way, if the stupid sap would just give her a little encouragement!

concerning what is pawned however, as it costs twice as much to get an item back from the pawnshop as is actually given for it in the first place. The final method of obtaining cash, and extra ammunition too, is to go bounty hunting.

There are certain areas in the States where the rule of law has broken down completely, and gangs of thugs and murderers control the streets. In order to bring these miscreants to justice, the Government has placed a bounty on the heads of the ringleaders. Murphy can earn this bounty by flying to one of these lawless areas and completing successfully a short arcade sequence.

This arcade sequence takes the form of a gun battle with some underworld goons. Murphy enters the screen from the left hand side and is faced with an unending supply of trigger-happy thugs approaching from the right hand side. The aim of the sequence is for Murphy to work his way across the screen, shooting the enemy and dodging their bullets, until he reaches the far side. If he manages to accomplish this before enemy bullets bring him down, he wins the bounty. This would appear to be a fairly straightforward task and, mostly, it is. The only difficulty I found was that in certain screens, where the background picture was composed of fairly dark colours, it became very frustrating trying to pick out the bullets against the backdrop as these were also of a dark colour. Dodging bullets you can see is one thing, attempting to keep out of the way of bullets you don't even know are there, is something else again.

This "gun battle" arcade sequence is repeated at other points in the game apart from the bounty hunting areas. It is always likely that when Murphy enters a particularly seedy location, he may find that the local inhabitants take an immediate and potentially lethal dislike to him. These encounters are resolved in exactly the same way as the bounty hunting confrontations, but the number and viciousness of the opponents faced is not as great.

Guidin' and Jivin'

Control of the game is exercised entirely by using the joystick and the keyboard. (It is strange to see mouse control so completely excluded - it doesn't even appear as an option.) Murphy can only move around on screen when he is in rooms or locations which need to be searched, homes and laboratories for example. During this time, there is access to all the standard adventure commands, such as LOOK, OPEN, GET, ON/OFF, etc., which appear as a small menu list. The objects and features contained in the various parts of the location will appear as a small submenu below the main screen when Murphy approaches close to them. It is then simply a matter of "mix and matching" a command from the commands menu with an object from the objects menu in order to conduct the search. Other submenus may appear as the search progresses, depending on what Murphy succeeds in finding. These new menus will bring further objects and features to his attention. There is no need for any commands to be typed during a search sequence.

Conversely, when in an interviewing sequence, there is a fair bit of typing involved. During these stages, Murphy is not represented at all on screen. Instead, there is a picture of the location in which he finds himself, plus a picture of the person he is talking to. Underneath these pictures is a menu line. At first, this menu line will only allow Tex to QUESTION or to EXIT back to the Speeder. Once QUESTION is selected, however, a small prompt will appear. This will usually be "Tell Me About", and it is then required that a name or an article or a place be typed in after this prompt. If Tex has asked a question to which the interviewee possesses pertinent information, he may be told what he needs to know immediately, or the interviewee may decide to prevaricate. At this point, two further options appear on the menu line - BRIBE and THREATEN. This allows Tex to pursue his interrogation using other methods. Beware, however: some people take violent exception to being threatened and are not adverse to unceremoniously tossing Tex out on his ear!

Apart from using the cursor keys (as an alternative to the joystick) when moving Tex around on-screen, there are a number of other keyboard commands also. Pressing "V" will automatically dial Vanessa on the videophone. Pressing "L" will establish similar contact with Lee Chin. The "I" key calls up the Inventory screen, and "N" allows access to the Navigation Computer in order to input the necessary transportation codes.

Lookin' and Listenin'

Graphics and sonics are used to good effect throughout the game. As already mentioned, when travelling around, you pass through a filled 3D vector environment which appears to be a fair representation of California (the Golden Gate Bridge passes by quite regularly as you travel about). There are also controls inside the Speeder which allow you to monitor the landscape passing by on all sides of the craft as you fly along. The rooms that you can search are full screen graphic representations which allow you to pass freely both behind and in front of the furniture, but not through it. The interview sequences feature digitised pictures of all the people and places involved, and these come across very well.

The sonics are more sparsely spread - engine noise in your Speeder, gun shots in the battle scenes, drawers and doors opening and closing. There are a few sampled effects included also, and these are particularly well done in the screens featuring both Vanessa and Lee Chin. Owing to a clever use of animated graphics synchronised with sampled speech, it appears that both these ladies actually talk to you. Obviously. they are pretty limited in what they have to say (although Lee Chin can pass some cruelly cutting comments at times), but it remains a nice effect all the same.

Conclusion

Mean Streets is a game that slipped out of the U. S. Gold stable with little fuss or fanfare, received a few good notices, and is now in danger of slipping quietly off into the sunset without having caused a ripple in the pond of adventure gaming. It would be a great pity if that were to happen. This is a pretty good little game after all. It starts off in a fairly small way - a routine investigation for a routine private eye - and then it builds nicely all the way along the line, expanding the original premise into something much bigger and more sinister than you ever suspected it might be. It successfully extracts elements from different genres and game styles, and makes them fit into itself in a way that works well, and adds to the overall gameplay. It also introduces some new twists of its own, such as heavy use of digitised graphics, and the mixing of animated pictures with sampled speech. On top of all that, the game really does possess some very addicitive properties. The scope of the investigation is huge, the number of people to be traced and met is large, and yet you keep on going, pulled into following up just one more lead, carrying out just one more interview, travelling to just one more navigation code location. Just to see what you might find out. Games that do this to you are all too rare. Pick up on this one before it disappears for good.

Product:	MEAN STREETS
Game Design:	Access Software Inc.
Programming:	The Code Monkeys
Published By:	U. S. Gold
Price:	£24.99

STICKS AND STONES

Undeterred by the saying that those in glass houses should not throw sticks and stones, Günter Minnerup casts more than a critical eye over the ST magazines scene.

Should I ever suffer the misfortune of my employers deciding to dispense with my services, I know what I am not going to do with the redundancy money: set up as a newsagent. A friend of mine, who has the misfortune of being one, is seriously considering replacing his magazine shelves with heavy-duty industrial shelving, and suffers from a chronic back brought about by the strain of shifting glossy mags attached by sticky tape to increasingly outrageous "free gifts". Not for me, I'm afraid: judging by current trends, the day cannot be far when 'Practical Gardening' comes dangling off the branches of a three-foot sapling, and 'What Motor?' affixed to a free spare wheel.

Computer magazines are no different, of course, although so far their generosity seems to be confined to floppy disks and the odd pen. The news that Computer Shopper have launched a competition for readers' ideas about future giveaways fills me with some foreboding, though. As a general computer mag it cannot use disks, but parallel printer cables and anglepoise desklamps are fairly machine-independent, so who knows? I have enough problems storing all the accumulated magazines in my room without having to find somewhere to dump loads of unwanted freebies.

Disks, of course, go straight into the disk box. I have stopped checking them for useful software long ago: games demos leave me even colder than the actual games themselves, and the PD utilities are usually old enough to raise compatibility problems with TOS 1.0. Then there is always the risk of viruses (no, I won't mention names, at least not yet...), so the first thing I usually do with cover disks is to reformat them.

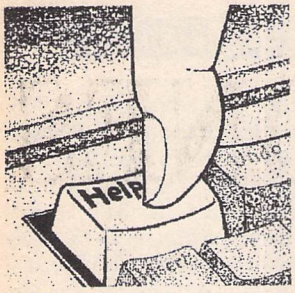
This is how ST Format acquired its nickname ST Reformat. The only pity is that the same cannot be done to the paper it is printed on, although I am working on it. For quite frankly, there is so little for the serious ST user in those pages that I often wonder why I bother buying it, and what's worse, the little there is on serious applications tends to defy all known descriptions of knowledgeable journalism. Over the years we've had "scoop" previews of buggy grey imports (Calamus), ridiculously uncritical celebrations of unusable beta test versions that never made the marketplace (PageStream 1.5), scanner reviews that didn't mention the word "resolution", and now in the latest issue more involuntary humour in a news item on UltraScript and a "free buyer's guide" discovering PostScript support in Calamus.

Perhaps the ST market is getting the press it deserves. Considerations of tact prevent me from saying too much about ST Format's main rival, ST User, except to observe that a new issue rarely engages my attention for longer than it takes to check that my monthly payment has been calculated correctly. The ST-specific sections in the general computing press are little better: the decline of PCW is reflected in its decision to abandon the ST altogether, Computer Shopper - the best of the bunch - is better served in its Mac and Amiga columns, while our friends in the West Country once again take the biscuit for inanity with their New Computer Express. The latter's only useful contribution to the history of British computer journalism was to finally kill off that old bore, Popular Computing Weekly.

There are, of course, persistent rumours that ST World may be revived. Even conceding that it could have been a better magazine without my own rantings, the old STW showed what could be done in journalistic terms. Its problems, of course, were related to matters economic. We shall probably never know whether it was reluctant advertisers (I remember it being referred to as "Mike Dale World" for its numerous pages of Signa advertising each issue, then their disappearance preceding the journal's demise), the small size of the "serious" ST market, or simple mismanagement which was to blame, but all that is history now anyway. Will we ever again see something like ST World, a glossy, commercial, yet reasonably readable and informative magazine for the serious ST user, on the overloaded shelves of British newsagents?

Perhaps STW will indeed come back, perhaps ST Applications can fill the gap. But a gap there most certainly is, and nobody can be more acutely aware of this than Atari. The ST may have sold itself on the back of its appeal as a games machine, but the new Mega STE, let alone the TT, cannot be flogged with special Christmas promotion packs, tacky TV advertising and a few lorries despatched to the chain stores and Tottenham Court Road. If Atari really want DTP bureaux, businesses and education to invest in their grey plastic wedding cakes - and the quality of the new software, as well as the growing range of powerful peripherals, make this a more serious proposition today than it perhaps was at the time of the ST's launch - they had better do their utmost to create a climate of confidence around the new products. Advertising, documentation, developer and user support, a proper dealer network - all these necessary elements of an overall strategy have been mentioned in this column before and will no doubt be returned to whenever its author feels the urge to bash the boys in Slough. The importance of a decent machine-specific press, however, is all too easily forgotten. What is a prospective investor in the TT, browsing about beneath the rows of boobs at his local Dillon's, to make of ST Format and ST User? Drive to the nearest AppleCentre, I reckon.

Following the gloom, doom and (often overdone) criticism so rife in the Atari scene recently, I think I am not alone at detecting signs of a new confidence. The world's largest computer show, CeBIT, saw software developers and hardware merchants equally buoyant about the prospects of the new product range. New releases like Calligrapher, Retouche Professional, Calamus SL and Didot LineArt are impressive demonstrations of what the ST series is capable of. With Alwin Stumpf, who masterminded Atari's success in Germany, now at the helm as President Worldwide Sales in Sunnyvale, we may just be in for a few pleasant surprises in the coming months. Only the sight of a new ST magazine with serious intent down at the newsagent's will persuade me that the tide has finally turned. If and when it appears, I won't even mind any freebies attached to the front cover.



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 condiderable use to other readers!

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

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

Proportional Printing with First Word Plus

A G Price - Forum 31
James Cruise - Forum STA2

A There is a German program which can do this, together with some other features like proportional printing with justified right and left margin, mixed printing of single and line-and-a-half spacing in the same document, and you can download fonts (e.g. Signum fonts). It is called First Proportional Plus and costs DM119 (£40). There are quite a lot of printer drivers available. The new version supports the HP Laserjet, Deskjet and other HP-compatible printers, but costs DM250 (£85). But be warned: without any knowledge of German it might be difficult to use. The German manual is very good. Both products are available from: Kniss Soft, Adalbertstr. 44, 5100 Aachen, Germany; Tel: 01049-241-24252.

Till May

I Having used First Word and your excellent Users' Guide to First Word, here are some comments and feedback:

It should be stressed that in a file name '_' is allowable, '-' is not allowable. I spent a long time working out why my files with titles such as LETTER-I would not print! Such a small mistake has such a large effect.

It might be useful to indicate that there can be a problem (or is it me and/or my STE?) with characters not appearing on screen if a key is not pressed 'correctly'.

Dr. J W Drozd

● First Word will only print file-names that contain characters that may be typed from within the Item Selector; using the Save As facility it is possible to introduce characters (-, , :, ;, etc.) that will prevent First Word from printing. There is an intermittent problem with CAPS.ACC (on disk WPR.10) and the STE; this accessory occasionally interferes with key-presses and so is best not used with an STE.

Epson LQ @ 360dpi

Q I may just be writing in with something that everyone knows, but it came as a very pleasant surprise to me to discover that my Star LC24-10 is capable of printing graphics at 360dpi! I use both WordUp and Timeworks DTP and have been faithfully selecting the 'Epson LQ' printer options in the configuration, which gives 180dpi output. However, when re-reading the ReadMe file which came with WordUp, it said that, apart from some of the older models, Epson LQ (and compatible) printers should be able to use the NEC P-series driver at 360dpi. Hey presto - vastly improved print quality! The only drawback is that it now takes four times as long to print; about 20 minutes a page for WordUp and 40 minutes a page for Timeworks! If only I had come across this vital tip earlier!

Following on from this discovery, I have two burning questions. Firstly, the fonts that Timeworks supplies when selecting the NEC 360dpi driver during the installation are not the same size as the screen fonts, so I no longer have WYSIWYG. Have I done anything wrong, or is this just a limitation of the fonts supplied with Timeworks? Secondly, is the print speed limited by the driver or the printer, and if the former, can one buy faster printer drivers, or for example use my WordUp driver with Timeworks?

● Your problem with WYSIWYG going out of the window after installing Timeworks almost certainly stems from a lack of RAM when printing. If Timeworks hasn't enough memory available when a file is printed it will either substitute smaller point size or Swiss printers fonts. Try removing all unnecessary Accessories and Auto-folder programs before printing DTP files.

To confirm that the Timeworks installation routine has not gone astray, you can check that all screen fonts in the Assign.Sys file have corresponding printer fonts, and that all of the files listed in the Assign.Sys file are actually in the Gemsys folder.

The speed of printing under GDOS is limited by the speed of the application software and the GDOS printer driver. There are no better 360dpi drivers available that we know of, but it would certainly be worth trying out the WordUp printer driver with Timeworks. (Ed.)

● Some Timeworks screen fonts do not exactly match the installed printer fonts, and in addition may not be at 80dpi which gives the best WYSIWYGness. For 9-pin installations, the printer Dutch 12-point is represented

on screen by a Dutch 10-point font, and this may apply to other installations.(DFS)

DeskJet Matters

(TurboJet)

Keith Baines - Forum STA1
Andrew Barclay - Forum STA3

I In his article 'Working in Tandem' in the February 1991 issue of 'ST Applications', Jon Ellis says that the DeskJet language is a subset of that used by the HP LaserJet. This is fundamentally true. PCL, the Hewlett-Packard printer language, is hierarchically organised, and the DeskJet is a PCL Level 3 device. Being a printer that prints line by line rather than page by page like a laser printer, the DeskJet cannot implement the page-formatting commands, which are at Level 4. However, the DeskJet has special commands of its own, which laser printers do not know, and which are especially useful for graphics. A decent DeskJet driver should be able to make use of these commands in preference to the standard LaserJet ones, so that the printer will perform much more efficiently.

For those who do not find sufficient information in the manual supplied with the printer there is 'Your HP LaserJet Handbook' by Alan R. Neibauer, published by SYBEX. This book contains general information on how to use and program the LaserJet family of printers, and has numerous references on how the DeskJets differ from the LaserJets. In addition, there is a short appendix dedicated to the DeskJet. Unfortunately, a large part of the book is devoted to using the printers with various items of PC software, and many Atari users may not find it worth the £23.95 asking price.

Jon Ellis mentions the Neocept TurboJet driver, which is apparently unusable these days without a copy of WordUp. There is also Migraph's 'DeskJet Driver ST pack' available from Electric Distribution at £19.95 (or £13.95 to Softline members). This comes on two disks, which include fonts that are much better than those supplied with Timeworks.

As for the notorious Atari parallel port interfacing problem, I have been lucky enough only to have read and heard about it. I would imagine it is very much a matter of luck what precise electrical characteristics the relevant circuits in your particular computer and printer happen to have. I should also think that it helps to have the right software in the computer to drive the printer.

David Alwyn Thomas

I Unfortunately, neither the Migraph nor TurboJet driver works perfectly with everything. The Migraph driver uses OUTPRINT.PRG to set its page lengths and if used with anything else defaults to American Quarto - try printing with Timeworks using Legal size paper and it cuts off the bottom! TurboJet ignores OUTPRINT settings of course...

The solution seems to be that if you want to use the DeskJet with Easydraw or Hyperdraw, then the Migraph driver is best, otherwise go for TurboJet. Incidentally, the Migraph package also includes a 150dpi driver intended for drafts, along with some 150dpi fonts and three screen dump utilities that intercept ALT+HELP. The supplied version of OUTPRINT can switch between drivers.

I was puzzled by the references to having to switch the DeskJet on first: my system doesn't suffer from this - unless the hard disk isn't switched on! Certain bits of software also seem to prevent the ST from acknowledging the DeskJet. Very odd.

H H Patterson

I In response to Andrew Barclay's comments about TurboJet (the HP Laser and DeskJet GDOS driver set from Neocept): I have been trying to clarify the situation somewhat for my own satisfaction. The major problem is that Neocept seem to have gone to ground and HB Marketing have been no more successful than anyone else in tracking them down. The result of this is that HBM can no longer import WordUp or TurboJet though they still may have copies of both available: I am told that the TurboJet disks contain both the old and the new versions of the drivers.

Migraph is the other source of DeskJet/LaserJet GDOS drivers and both HiSoft and Electric Distribution supply them over here.

Presumably WordUp 3 will not now be released - a shame as it has good features (multi-columns, speller, thesaurus, page preview, etc.). The last version was sent to HBM in the autumn but had some fatal flaws, and quite rightly they declined to distribute it.

An unrelated point of interest to DeskJet users is that HP have finally released the long-awaited waterproof ink cartridges (the ink is waterproof anyway), so spilling coffee over print-outs should not be quite such a messy business as before.

John Mallinson
CIX F#10

Missing Drive c

Q Can anyone help with a problem I have encountered on connecting a Supra Drive hard drive to my ST? The hard disk uses "drive C" to boot and so this is no longer available to the cartridge port. Since I use a Fast Basic cartridge and have lost the icon, I would be grateful to know if I can retrieve it.

C L Jones

● Drive C (upper case c) is reserved for hard disks and RAM disks; drive c (lower case c) is reserved for the cartridge port. Use Install Disk Drive on the GEM desktop to install Drive c and you will have access to your Fast Basic cartridge. Is this not explained in the Atari ST manual?

Forget-Me-Clock

I I have just bought a Frontier Forget-Me-Clock II. The cartridge is slightly smaller than I expected - it only protrudes about 4cm from the side of my 520 STFM. It comes with an auto-run program to set the ST's internal clocks (both of them!) on boot up and a utility which allows you to change the clock's setting or even switch it off to conserve battery life. Frontier guarantee the clock for one year, and the battery for two. In practice it should last much longer. I haven't any other cartridges at present, so I can't confirm that the pass-through facility works, but I can't see any reason why it shouldn't. However, the slot on the clock is slightly higher than the ST's port, so some cartridges might need to be propped up to avoid undue strain on the connectors. Recommended to anyone who gets sick of typing in the date and time every time they do a cold boot!

Les Bessant

AUTO Conflicts

I Owners of Frontier Software's Forget-me-Clock II must run the clock's Auto-folder program after QUICK ST version 2.21. By the way, QUICKST and BIGCOLOR co-exist happily; I use both with SIM CITY when the TV is 'occupied'.

John Watkins

Fortran to C

Q Is there a Fortran to C converter available for the ST?

Stephen Salmon

FSP3/Timeworks DTP

Mike Kneen - STA2
John Wilkinson - Forum STA3
Dyfrig Davies - Forum STA3
Eric Fox - Forum STA4

I Thanks for another highly readable issue of ST Applications. I've just time before my lunch hour ends to make a few quick comments on Fleet Street Publisher:

Firstly, harking back to the review in issue 2, anyone who seriously thinks the DeskJet output on Timeworks is better than FSP3 for small font sizes should visit an optician. How about letting the readers compare directly by laying out a few "normal" pages of ST Applications (i.e. ones containing articles, etc., in small type) using FSP3?

As for GEM font installation on FSP3: Unfortunately, things go adrift if you're using the DeskJet for output. Because the LaserJet driver is a "language" rather than "bit-image" driver in FSP terms, FSP won't let you install separate GEM fonts for printout. Putting in

extra fonts for screen display, and printing these out on the DeskJet at 72dpi (yeugh), is no problem. Getting 300dpi GEM fonts to come out on the DeskJet has defeated me so far. If there is a way round this, I'd love to know.

I'm coming to the conclusion that what the world really needs is (peace, harmony, understanding, an end to oppression and...) a Fleet Street Publisher User Group. Does anyone know if one exists? If not, would anyone like to start one? (Preferably not me.)

Andy Key

● Whilst the fonts supplied with Timeworks DTP may be inferior to FSP3 fonts, the point is that you can readily tweek bit-mapped fonts for optimum output at a set size, something that is much more difficult with outline fonts. In the ST Applications Assign.Sys file the only survivors of the original Timeworks fonts are the small sizes of Swiss used in the classified advert listings (page 54).

It is possible to install 300-dpi GEM fonts into FSP3: follow the steps in the manual, pp396-399.

● At least four screen fonts and four printer fonts of the same point size need to be installed using Set Defaults. I've done this with Castleton Roman and it works well. Both the screen and printer fonts are contained in the FNT folder with different prefixes. I used FS for screen and L2 for printer fonts. The fonts are installed in two stages, using the item selector to display the relevant font files. Thus, when installing the screen versions, it is possible to display all "FS****.FNT" in the item selector, and then for the printer fonts all "L2****.FNT". In use, both sets of fonts are scaled automatically by FSP3 for screen and printer output, and the results are good.

We did a few trial runs of ST Apllications articles laid out with FSP3 using either 8.5 on 10 or 9 on 11 Times, and didn't care too much for them: some of the letters were very spidery and the character spacing not very consistent. (DFS)

Fontswitch

I Purchasers of your excellent Fontswitch program may conclude that the Pitch options for 10 and 12cpi contained in PRINTOUT do not work within First Word Plus. This is because the protocol for determining the pitch setting is as follows: first, printer control panel settings override everything, if set; second, FWP ruler settings dictate if the printer control panel is set to Program; and third, Fontswitch Printout settings will only act if the FWP ruler instructions are disabled. I find it much more convenient to use the Fontswitch Printout method of selection than the FWP ruler method, and this is achieved by simply commenting out lines 28, 29, 2A, and 2B in the printer driver, in addition to operating the printer in Program mode for pitch control.

Should mixed Pica and Elite pitches be required in the same document, the killing of FWP ruler settings can be overcome by allocating pitch controls to, say, some of the number keypad keys, using Fontswitch's very useful KEYTABLES feature.

Note that Fontswitch Printout control of the 15cpi and Proportional pitches operate without attention to the printer driver, since FWP does not provide any ruler settings for these.

Geoffrey M Brown

Gulam

I I'd like to pass on a few thoughts about getting the most out of the Gulam shell, which I use with Sozobon C. One of the best points about Gulam is that it incorporates a version of the ubiquitous MicroEmacs editor. Like most versions of Emacs, it can be configured quite easily by the user. Gulam provides a command, kb, for this purpose. All you need to do is to add a few lines to your gulam.g start up file to make the editor behave the way you want. One change that most users would probably want to implement is to make the Delete key work properly. As supplied, it duplicates the function of the Backspace key (in Emacs terms, that's backward-delete-char). What it should do, of course, is delete the current character (delete-char). This function is left to Control-D in the standard version. To make the change, in all buffers (including the command line) you need to add these lines to your gulam.g file:

```
kb -r 07f 1d
kb -g 07f 1d
kb -m 07f 1d
```

If you want to make any other changes, refer to the kb entry in the Gulam manual - all the information you need is there.

Gulam is an excellent shell - in many ways superior to the dreaded MS-DOS (which kills all known germs..). It certainly has more flexibility, and once you get used to the syntax, is quite simple to use.

Les Bessant

A Case for Superboot

I I have recently transformed my 1040 STFM with the purchase of a Power Computing 40MB Slimline hard disk and Neo-Desk 3. This has enabled me use GDOS with Microsoft Write for the first time. However, with GDOS installed VIP Professional suffers from a corrupted and almost unreadable menu bar and the drop-down menus do not properly disappear, leaving box outlines on the worksheet. I get this effect with or without Neo-Desk. The only way I have found to cure the problem is to re-name GDOS.PRG to .PRX and re-boot. Is there a more elegant solution to this, or must I learn to live with it? Can anyone tell me why it happens? I tried AMC GDOS instead, but still had the problem. Does AMC differ from the Atari version?

Here is a tip for anyone with a hard disk using the ICD host adaptor and utilities: This otherwise excellent kit does not like some Desktop Accessories. I installed KEYSHOT and MELT from disk DES.05 and was then presented with a 2-bomb crash before reaching the desktop from both warm and cold boots, i.e. a total lock-out! This un-nerving possibility is not mentioned in the ICD manual, but the problem, and its solution (using the ICD boot program to gain access to drive C to remove the offending DA's), is covered on the last page of a 17-sided README on the ICD utilities disk. Luckily, I had the good sense to print this out before installing the drive! Moral: always check the README.

Bob Osola

● If I remember correctly, VIP was written before GDOS was released, so the incompatibility is probably only solved by disabling GDOS before running VIP. VIP Professional is no longer supported in the UK, so there is little hope of a GDOS-compatible upgrade.

On a hard disk, accessories and Auto-folder programs that crash and force a re-boot can be a nightmare; even when you know that the problem can be solved there is always that un-nerving doubt that you will never again see the contents of your hard disk! As you have discovered, the trick is to re-boot so that the hard disk auto-boot is disabled (see the hard disk manual) and then remove the offending files.

Both problems can be readily overcome with SuperBoot on PD disk UTI.156: this package will give you the option to enable/disable Auto-folder programs and accessories every time you re-boot.

Gem_Calc

Q Gem_Calc on DMG.21 will not work when double clicked - I get the title screen and an instruction to 'click', but doing so just produces an error box - error number 8. I have a 520 STFM; any ideas?

S Garnett

● Yes, apologies for the cataloguing error. Gem_Calc needs 1MByte of RAM. If you disable all accessories and Auto-folder programs you should be able to get the program up and running, but it still has a tendency to crash out on a 520ST.

Integrex 132

Paul Davenport - Forum STA2

A As Paul Davenport is having problems locating software to drive his Integrex 132 colour printer, I have enclosed 5 colour printer drivers which should be of use. The Integrex is able to emulate 2 other colour printers, including the Canon PJ1080A colour ink-jet printer for which there is a Degas (Alt-Help) printer diver.

As a teacher, I have used the Integrex on the Archimedes and also with my STE at home. It

took a bit of experimentation but the PJ1080A driver did the trick. You need to refer to the Integrex manual to set the dip switches to get the emulation up and running.

● PD Disk DRG.21 now includes colour printer drivers for: Radio Shack CGP-220 colour ink-jet printer, Epson JX-80 colour printer (Star LC10 colour compatible), NEC Colour Pinwriter P2/P3 (should be compatible with the new 24-pin colour printers), Canon PJ1080A colour ink-jet printer and the Okimate 20 colour printer.

Mac Emulators

Franco Turra - Forum STA1
Ian Fogg - Forum STA1
C Singleton - Forum STA4

A My experience in obtaining Mac System/Finder disks is quite different from that of your correspondents. I 'phoned Sams at Motspur Park, London, explaining I had an Atari Mega ST with a Spectre GCR emulator and needed version 6.03 System/Finder. They had one in stock and I went along to pick it up. Apart from offering me a coffee (OK, I know they can afford to at the prices they charge) when I stepped into the reception, they knocked a few pounds off because the box was slightly grubby - it had been in their stock for some time - and insisted on my waiting while they virus-checked the disks!

Peter Fitzsimons

● It seems that whilst the Mac System/Finder are not PD they may be freely distributed between users, and BBS may make the files available for downloading after obtaining a licence from Apple.

Spectre GCR v3.0

Q Is anyone having trouble printing with v3.0? Version 2.65 prints perfectly at 144dpi on my laser. However, configuring the set up exactly as before with the latest software results in the dreaded blank sheets of paper printing out. I have faxed the problem to Dave Small and am awaiting a reply but in the meantime wondered if anyone can throw any light on why this should occur.

Peter Fitzsimons

Minority Interest Group?

I How long will it be before serious Atari users become a sort of 'special interest group' with the Tatung Einstein-ers? I've spent a lot of time and money on my ST over the last few years, but the way things are going I have to say my resistance to writing it all off and buying a Mac LC is wearing thin; at least then, despite the extra expense, I would know it was well spent. Why, for example, should I be thinking reluctantly about buying Calamus for my new HP Deskjet when FSP3 is what I would enthusiastically be going for if it had any support? Based on the initial hype, I would have said I'd be getting a TT; now we've seen the reality - a 32MHz processor on a 16MHz bus with a 16-colour high res mode and a 20Mb hard disk for £2000 - are Atari serious? (It sounds like an IBM creation!) Atari should give someone like Dave Small a free hand and an open cheque to start again from scratch.

David Martin

Printer Problems

Q I have got a Diablo 630 daisywheel printer but no manual. Can anyone help with a printer driver or dipswitch settings, leads, etc.? All help will be gratefully received.

Keith Winstanley

Q I would be very grateful if you could help me obtain a Printer Driver suitable for connecting an Atari 520 STFM to a National Panasonic electronic daisy wheel typewriter KX-R193.

David J Cuthbertson

Protext 5

Paul Rossiter and Piper - STA2.
Dr J M Bowsher - Forum STA4
Mark Tilley - Forum STA4

I A few comments on the review in Issue 2:

1. Price. You quoted £150. It is available for £99.95 from MJC on 0462 481166. I have no connection with them other than being a satisfied customer. They are cheap, quick, and know their products. (The price quoted in all reviews is the publisher's RRP; with a few infamous exceptions you can get anything at below RRP - Ed.)

2. Spell Checker. This is usually much better than the original if the wrong word is phonetically similar to the correct one. However, miss a letter out that changes the phonetics of the word and it is a dead loss on anything but the simplest words.

3. Proportional printing. I can't get it to print proportionally with an Epson LQ1500, despite the LQ1000 printer driver being apparently compatible. The program prints the Protext text file correctly in the main, but messes up normal text.

4. Printing boxes. There is no need to change to IBM mode to print boxes round text. The Epson LQ1500 prints boxes with no bother and is definitely not IBM-compatible. I think the driver uses downloaded characters to achieve box printing. Change the line spacing to 1/8" with a stored command defining a control code to avoid gaps in the vertical box lines. For example, use stored command >CC "Z",27,48;27,50 and then you can use Icontroll-X,Z to embed the line space command. The command toggles 1/8" line spacing on and off with most Epson printers.

5. Visible control codes. You made a point that visible control codes destroy WYSIWIGness. With Protext you can hide them, using the style menu for example, if you want to. It is a small price to pay for the speed of the program.

6. Spell Checking again. If you spell check a word with a control code on the end of it, the spell checker ignores the last letter of the word!

Some of the above peculiarities are irritating; the lack of proportional printing is annoying; but generally Protext is a joy to work with.

Fred Fee

I It is certainly not necessary to use IBM input to print boxes with my STAR LC-10 printer. This has a DIP switch to set mode and another to set the character set to be used. I always set these to Epson mode (i.e. input), and IBM Character Set *2. It is pointless to set the character set to "Epson"; this merely gives italic meta-characters which can be obtained just as well by using control codes. Incidentally, I use the SYMBOL command in a Prodata EXEC file to make the screen characters agree with what the printer produces.

I wonder whether your reviewer has failed to notice the "IB" stored command (Insert Binary file)? It is said to be for printing graphics in the middle of a document and downloading fonts to a printer. Unfortunately, it is very poorly documented, and so I have not tried it.

Leslie W Dewhurst

PageStream v1.82

Q I am having trouble printing via my Atari SLM804 laser with or without the Epson Emulator installed. The only way I am able to print is by installing the Diablo Emulator and using the SLM804 driver.

With the Epson Emulator installed I have tried both the SLM804.PRT and the DMA804.PRT drivers, but with no luck. The printer either prints blank sheets or does not print at all. I 'phoned the technical department at Silica Shop and they said I should disengage the Epson Emulator, but this did not work either. Any suggestions?

Peter Fitzsimons

● PageStream is a little lazy in the way that it controls the Atari Laser printer: it uses the Diablo 630 driver to control the printer rather than having its own routines. PageStream doesn't use any of the Diablo 630 fonts, so you can save RAM with a minimal Diablo630.Prg.

Theory says that PageStream should work with the Epson emulator, but you will need to use the Epson LQ PageStream printer driver. The quality of the output may not be quite what you expect!

Ribbon Ink

Q Printer ribbons drive me 'up the wall' and beyond! Using a proprietory ribbon usually guarantees good results initially but the inevitable gradual fall-off in print density quickly becomes apparent. My dot matrix printer is used for printing technical articles with graphics that may run to fifty or more A4 pages.

I have been experimenting with adding an inking roller/reservoir to a standard ribbon cassette with reasonable success, but I am not sure which type of ink should be used to reduce the possibility of gumming up the dot matrix pins. Have you or any of your readers any suggestions? I accept that ribbon re-inking kits are available, but they will not prevent the gradual reduction in print density.

R L Tufft

Serial Numbers

I This is probably old hat, but it was news to me! With reference to the Atari serial numbers on their hardware, the following applies:

The first two characters are usually 'A1' and these represent the factory (only one at present in Taiwan). The next digit is the year; for example, '6' would be 1986 whilst '1' would be 1991. The next digit represents the month; for example, '1' to '9' are January to September, whilst 'A', 'B' and 'C' are October, November and December. The remaining digits are simply serial numbers.

Martin Walsh

● A quick scout around the office reveals that the factory codes for different pieces of Atari hardware include: Mice: A2 (Hong Kong) and X5; SM124: N1 and N2; SM125: T1; SLM804: W1 (Japan?); and V1 for the SLM804 controller.

DMA Faults on a Mega?

Q I imagine most people are aware of the problem with the STE and hard drives, leading to possible data corruption. I understood that this was an STE-specific problem, but I wonder if this is really the case.

Late last year I purchased from Evesham Micros a Mega2, which came with TOS 1.4, to link to my Megafile 60 hard drive (which had previously worked very well with a 1040ST with TOS 1.2). After 2-3 hours' continuous use I began to get problems with corrupted files and lost data. I returned the Mega2 to the supplier who could not find any fault and so returned the machine to me. However, the problem persisted and despite returning it to Evesham Micros twice more, the problem was not resolved until they replaced the motherboard to give a TOS 1.2 system rather than the TOS 1.4 it originally had. This problem sounds so similar to the STE affair that I wonder if a batch of faulty chips also found its way into the Mega series? Has anyone any further information on this?

Steve Pedler

● The STE hard disk problem was not caused by problems with TOS 1.6 on the STE, but rather with a batch of sub-standard DMA chips. (The phrase sub-standard needs to be used with a little caution; the chips were, reportedly, within the tolerances required for Atari Megafile hard disks but not good enough for some third party and Atari SH205 drives.) All current ST's should have the new DMA chips and should not cause problems with any hard disk.

It seems certain that you were unfortunate to have one of the few Mega ST's with 'sub-standard' DMA chips, even though it is a little surprising to hear that the problem occurred with a Megafile 60 drive. You should be able to upgrade your ST to TOS 1.4 without seeing a return of the data corruption problems evident with the old mother board. It's worth it as TOS 1.4 considerably speeds up hard disk operations.

TOS 1.6 bug

I I have experienced a rather puzzling problem with my 1040 STE (with TOS 1.6). On some apparently random occasions, when I double click on a PRG file, the 'print file' dialogue box appears, preventing the programme from running. When this happens, I cancel the dialogue box and double click on the PRG file again, and the programme invariably runs normally. I cannot recall hearing other users complaining about this 'feature' but, should there be other sufferers out there, I can report that since Christmas I have used NeoDesk 3, the desktop replacement programme, and have only experienced the problem from the resident desktop.

Peter T Wilson

● This is a known buglet in TOS1.6 that strikes with boring regularity on our office STE. Does anyone know of a fix?

Mar 2 or Feb 3?

Q UIS III is excellent - it gives me all the features I had taken for granted with DOS 2.5 on my 8-bit drive, and it does even more! The quick path option has made it much easier to use my word processor. It is the best utility I have bought for my ST. But why does it mess the date up? 2/16/91 is obviously 'wrong' but what about 8/6/91? Let's hope the date will be shown correctly on the next update.

Peter Boulter

● The date format used by UIS is a relic of its origins; for reasons that have always evaded me, the standard date format in the United States is month-day-year. So Christmas day will be represented by 12:25:91, not 25:12:91 as we would expect. This should be fixed in the UK versions of UIS III with the next upgrade.

Lea Valley Atari Group

I The Lea Valley Atari Group is now titled the Chestnut Computer Club. All membership enquiries should now be addressed to me:

Derryck Croker
196 Coates Way
Garston
Watford WD2 6PE
Tel: 0923 673719

Derryck Croker

Wish Lists

Q Any chance of an article on Interfacing to the 'DMA' port? (Not just hard disks!)

John Collis

Q I would appreciate some info in 'ST Applications' on ST/STE differences. Also, where/how does the Atari SCSI bus fail to meet ANSI specs? Any hardware articles would be welcome (especially schematics).

Chas Yates

Q I have access to PC Ditto and First Publisher for a PC. Is it possible to convert First Publisher Fonts for use with GDOS?

Q Is it possible to include an article about adding extra RAM (SIMMS) to an Atari 1040 STE? For example, what restrictions are there (should they be paired?), and the cheapest way of doing the upgrade.

Richard McGill

● They must be paired: half, one, two and four meg are the only recommended STE memory capacities.

The cheapest way of upgrading is to shop around, and if at all possible, upgrade direct from 512K to 2Meg; 256K SIMMS are virtually worthless second-hand.

Q A version of TOS 1.4 on disk is mentioned in ST Format issue 20 (page 106). It is a PD beta test version. Can you supply this?

I Jeffery

● The beta test version of TOS 1.4 was only ever available to registered developers and so is not PD, unless Atari want to advise us otherwise! It would be nice if Atari were to release a disk-based version of TOS 1.4 (and TOS 030) so that non-commercial software authors can test their software for compatibility, but it would seem pointless to release the beta version.

GFA Problem Page

GFA Basic is indeed a powerful language. But, as a famous scientist once said, anything that can go wrong, will!

How can I turn off the key-click and the bell? The two lines needed to do this are as follows (version 2 users):

```
Spoke &h484,Peek(&h484) And 1
! Turns off bell.
Spoke &h484,Peek(&h484) And 2
! Turns off key-click.
```

...and for version 3 users:

```
Spoke &h484,Bclr(Peek(&h484),1)
! Turns off bell.
Spoke &h484,Bclr(Peek(&h484),0)
! Turns off key-click.
```

How can I turn my text into inverse video mode? Whilst inverse video may seem pointless, it's very useful for creating menu effects - like those used in the GFA editor. Many business utilities also employ the use of the inverse video facility. To turn it on, you need:

```
Print Chr$(27);"p"
```

...and to turn it off again...

```
Print Chr$(27);"q"
```

Being limited to only 16 colours on my ST is a pain! What's all this about palette switching? Palette switching is a technique often used in the games industry. It switches the palette (hence its name) very quickly, to produce the effect of having up to 512 (4096 on an STE!) colours on screen at once. But it's always done with the use of assembler, or C programming, as it's supposed to be impossible in Basic. But that's no use if you are a GFA programmer. I've found two ways of getting more colours on to the screen, both using the palette switching idea.

The first uses absolutely NO INTERNAL CALLS - just the Setcolor command. It produces a 20 colour scrolly bar, which also uses the border area of the screen. So, in total, you have about 36 colours on screen at once if you loaded a picture before executing the routine.

```
Do
    For T=0 To 7
        Setcolor 0,T,T,T
    Next T
    For T=7 To 0 Step -1
        Setcolor 0,T,T,T
    Next T
Loop
```

Atari UK, at first, said this was impossible without the use of a machine code routine. But when I sent them the listing, they claimed that they only meant it was impossible if I wanted to run other routines at the same time!

The second listing, adapted from a routine in the French "ST Magazine", puts a 42 colour bouncy bar across the screen and also uses the border!

```
Dim Cols&(50)
Data 1,2,3,4,5,6,7,17,27,37,47,57,67,77
Data 177,277,377,477,577,677,777
Data 776,775,774,773,772,771
Data 770,760,750,740,730
Data 720,710,700,600,500,400
Data 300,200,100,0
For I=0 To 41
    Read Z
        Cols&(I)=Val("&H"+Str$(Z))
Next I

Repeat
    Repeat
        Add Pas,0.25
        Add Bar,Pas
        For I=0 To Bar
        Next I
        For I|=0 To 41
            Sdpoke &HFF8240,Cols&(I|)
        Next I|
        Vsync
    Until Bar>160
    Mul Pas,-1
    Bar=160
Until Inkey$<>""
```

How can I access the extra colour palette available on the STE? If you're using a version of GFA Basic lower than V3.5, then forget it! I did conceive using:

```
Setcolor Col,14,11,13
```

...as the scales should be from 0-15 with 4096 colours, but it doesn't seem to work. The latest version of GFA Basic is fully STE compatible, and allows you to do this quite happily.

How can make a self-reliant PRG file out of my source code? To make a PRG file out of your Basic coding, you need a compiler. When you design your programs with GFA Basic, it has to interpret the program line by line into machine code - the only language that the computer can understand. So in order to make your program file run by just double-clicking on it, you need to compile the program into this language and only then will it be completely self-reliant.

How can I make a multi-colour mouse pointer? The only way I'm aware of doing this is by drawing it with an art package, like Degas Elite, and then controlling it with GFA Basic, treating it like an ordinary sprite that just happens to been controlled by the mouse.

```
Hidem
Dim Screen%(32255/4)
Aa%=Xbios(3)
Ab%=(Varptr(Screen%(0))+255) And
                        &HFFFF00
Physadr%=Xbios(3)
Bload "mouse.dat",Xbios(3)
! Load the mouse pointer sprite.
Get 1,1,16,16,Mouse$
Get 19,1,33,16,Mask$
Cls
Sget Sc$

Repeat
    Sput Sc$
    X=Mousex
    Y=Mousey
    If X<>Oldx Or Y<>Oldy
        Put X,Y,Mask$,4
        Put X,Y,Mouse$,6
        Swap Aa%,Ab%
        Void Xbios(5,L:Aa%,L:Ab%,-1)
    Endif
    Oldx=X
    Oldy=Y
Until Inkey$<>""
Void Xbios(5,L:Aa%,L:Aa%,-1)
! Set the screen back to normal.
```

How can I toggle the screen frequency between 50 and 60hz? Unfortunately, I haven't found a way of getting the two lines used to work in version 2 of GFA Basic, so here they are for all the V3 owners:

```
Spoke &hff820a,Bclr(Peek(&hff820a),1)
! To 60 hertz...
Spoke &hff820a,Bset(Peek(&hff820a),1)
! To 50 hertz...
```

If any of you out there know how to do this for V2, drop me a line!

How can I detect whether my printer's ready to receive, or not? As usual with many hardware checks, you need the use of an internal call - Gemdos(17).

```
If Gemdos(17)
    Print "Ready!"
Else
    Print "Not ready!"
Endif
```

Please note - this only checks for the presence of a printer connected to the parellel port. This does not work for printers connected to the serial interface.

Robert Tingey, from Blackheath in London, asks: is it possible to detect the length of a file with one easy command? I had to go back to a manual I had when I first learnt programming, on the Amstrad PCW, and there was a command called LOF in the PCW's Mallard Basic. I tried this on GFA Basic and, low and behold, it actually worked!

Firstly, you must open your file with OPEN:

```
Open "I",#1,"Filename"
```

...and then use:

```
Length=Lof(#1)
```

...to find the length (returned in bytes). Remember to close the file after you've finished, Robert!

If you've got a problem concerning GFA Basic, and you need help, write to **James Beswick, The GFA Problem Page, ST Applications, 49 Stoney Street, Nottingham NG1 1LX.** We would also like to hear from you if you've got any hints or tips for our fellow programmers out there.

Programmers' Forum

ST Applications' regular programming column continues its look at the interrupt system of the S T with some programming examples.

Vertical Blank (VBL) routines

As mentioned last month, the video circuitry generates an interrupt after every frame is written to the monitor (70 times a second for monochrome monitors, 50 or 60 times for colour). The priority level 4 vector with which this interrupt is associated points to a TOS routine which performs some important housekeeping tasks (including checking the floppy drive for a media change). However, this code also includes the facility to call other routines which may be installed by a user program. Let's look at how this facility is implemented.

Basically, the TOS handler maintains a list of routines, each of which it calls on every VBL interrupt (unless prevented from doing so: see later). Each entry in the list is a longword containing the address of the start of the user routine to be executed. The TOS routine simply scans down the list, doing a jsr to each active routine's entry point in turn until the list is exhausted. Inactive slots in the list are set to $0. A little more housekeeping code is executed, then execution returns to the process that was interrupted.

Therefore, to install a routine of our own, all we have to do is to scan down the list and replace the first null entry with the address of our routine. To do this we need to know where the list is. Atari have documented this so we can do it legally. The system variable _vblqueue ($456) points to the list of routines, and the list size is held in a word size variable, nvbls ($454). (See Figure 1.) Under both TOS 1.0 and TOS 1.4, _vblqueue points to another reserved area in the system variables _vbl_list ($4CE) which has space for 8 routines (i.e., nvbls = 8).

However, we cannot rely on these default values as they might not be valid when our program runs. This possibility arises because the system has expandability built in. If all the slots are full when a handler comes to install itself, it can make room by enlarging the list. This is done by reserving some memory, copying the list to the new place, adding its own address and then updating _vblqueue and nvbls to reflect the change. Therefore, our installation code must get the list address from _vblqueue and not assume that the list is at _vbl_list.

As an extra consideration, what would happen if a VBL interrupt was started *between* the instruction that updates _vblqueue and that which updates nvbls? Unlikely, you may say, but it could happen, and would be potentially disastrous if it did. What we need is a way of ensuring that the system does not try to access the list while we update the variables. This facility is provided by a third system variable, vblsem ($452, word size). vblsem is a **semaphore**: a flag which tells the system whether or not it may access the list, rather like a train signal or traffic light. Normally, vblsem is set to 1; clearing it interdicts access. Therefore, to move the list safely, we should set vblsem to 0, update nvbls and _vblqueue, then return vblsem to 1. To round off the list of system variables associated with the vertical blank, there are two counters which TOS maintains. Both are cleared when the machine is cold booted. frclock ($466, longword) counts the total number of VBL interrupts, and _vbclock ($462, longword) counts the number of VBL interrupts that were not blocked by vblsem.

As a further refinement to the installation procedure, the first slot in the queue is reserved for GEM. Therefore a search for a free slot should start at the second position. If this is not done, the resulting program will work quite happily when run from the Desktop (as GEM's slot will be occupied), but will fail when run from the AUTO folder - GEM is not initialised at this stage of the boot, so its slot is free. The program installs into the first slot, and its entry is overwritten by GEM when the Desktop is brought up.

OK, now we know how to install a VBL routine. What sort of tasks can it do? As explained last month, calling the operating system routines is not really on, so if, for example, you wanted to put a clock display in the top right of the screen, you would need to write your own routines to display the characters. In the example code, I have used the VBL to change the background colour of the screen every second: an effect used by some screen-saver programs. Basically, you can do almost anything, as long as you write all the support code yourself.

Don't forget, if the program containing the VBL code ever terminates, we must restore the list to its previous condition before quitting. This should be done for abnormal exits as well as for controlled terminations - see later. In many cases, VBL routines are installed by TSR (Terminate and Stay Resident) programs, which never really quit. Obviously, there is no need to write removal code for such programs.

Example: VBL from C

Listing 1 contains the C source code for a simple program which installs a VBL routine, pauses for a keypress, and then removes it. While the program is waiting, the VBL routine changes the background colour every second. You should be able to re-use the installation and removal code for your own purposes.

Firstly, a word about languages. C is not really ideal to write this sort of program in, because you need to know the details of and be able to exert control over the code that the compiler produces. For interrupt code in general, one needs to preserve all registers and return from the interrupt routine using *rte*, as described last month. C compilers cannot be expected to generate code which complies with these requirements: in particular, functions will probably not stack all registers, and will return using *rts*. However, we can get away with using C (just!), for VBL routines, as the TOS routine which manages

the VBL list does all the register preservation, etc., for us. VBL routines may alter any register except the user stack pointer (no problem) and should return with an rts.

One potential snag remains: some compilers generate code which assumes that one of the address registers points to the program data area. This is a good idea normally, as it allows the production of compact fast code, but in this situation we have a problem: the register will not be set. Your compiler should provide a way of disabling this feature or of reloading this register at the beginning of each function. This is what the __saveds keyword does in Lattice C v5 - omit it or replace it if you are using a different compiler. Also, some compilers generate code to check that there is enough stack space when the program runs. This will fail in the interrupt routine, as the stack in use will be the supervisor stack, rather than the user stack. Therefore, under Lattice C v5, this should be compiled with the -v option. Also, I have been careful to ensure that the variable types are as expected by the system. In Lattice C, ints and longs are 32 bits and shorts are 16 bits.

The last paragraph highlights another problem with writing such code in C, namely that of portability. I suspect it would be a non-trivial matter to transfer the code to another compiler, as one has to rely on so many compiler-specific features. While writing this example, I confess that I disassembled the important parts of the compiled code to check that all was as expected! As a general rule therefore, if your project requires the writing of an interrupt handler, you will be much better off using assembler for that part of the coding.

Dissecting Listing 1 in a little detail: as written, the code is for a monochrome system. Colour users should change the value of INCREMENT and the penultimate line as described in the listing. main uses the XBIOS function Supexec to call the installation code in supervisor mode. This is required because the system variables are protected from user mode access by the memory management of the ST; attempted violations of this protection cause a bus error (2 bombs). The installation function performs the tasks referred to earlier. Notice the search for a free slot starts from slot 1 instead of slot 0, to allow for GEM's routine. If the list is to be expanded, it calls malloc to get a chunk of memory to put the expanded copy of the list in, and then copies it there (the function used is the ANSI memory copying function which has the structure:

```
memcpy(destination, source,
number_of_bytes);
```

replace as appropriate for your compiler). The new list is enlarged by one slot for our

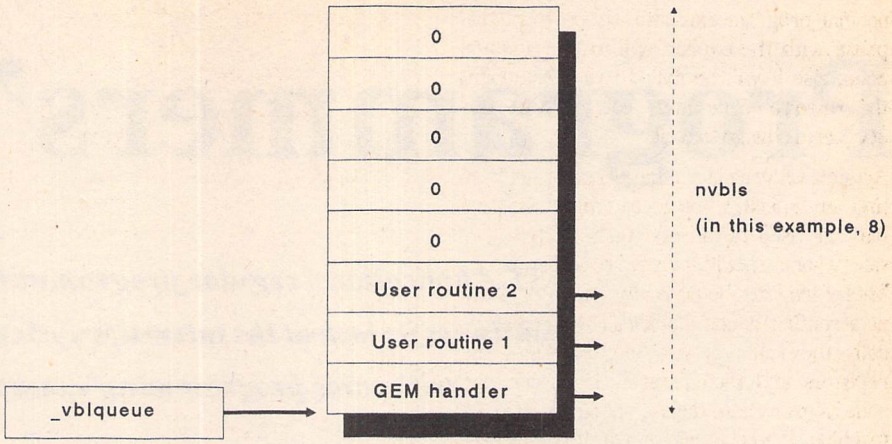


Diagram illustrating the major system variables associated with managing the VBL queue. In this example the queue is 8 slots long, with the first slot occupied by GEM, and with 2 user routines installed. Slots containing 0 are inactive.

VBL routine. If you were using this for real, it would probably be better to add more slots than this, in case any other programs need to install a routine. A record of the actions performed during installation is kept in some global variables to make removal easy.

After installation, an alert box is displayed - any code could go here, but this makes a convenient pause so you can see what is happening. If you really want convincing that the VBL routine is running in the background, you could replace this with a loop to add up all the numbers between 1 and 10000. The trivial routine that I have chosen to demonstrate the operation of a VBL task, simply flips the background colour every second. In monochrome this causes the screen to be inverted, in colour, the background is toggled between white and red (assuming your normal background colour is white).

After clicking on the alert box, the program is removed from the VBL queue using the information stored during installation, and the screen restored. Again, this has to be done in supervisor mode. The removal code given here is rather simplistic and may need to be modified for specific applications.

Abnormal terminations

The safe restoration of normal system function after Listing 1 ends requires that the removal code is called. What happens if the program exits without doing this? This is most likely to happen if an error condition arises - perhaps the user pressed Control-C, or a bus error was generated. An experiment: replace the form_alert call which normally produces the 'VBL demonstration' box with the two lines below:

```
Cconws("\r\nPress RETURN to quit: ");
Cconin();
```

Recompile the source and run the program. The screen should begin the expected antics, and should stop quite happily when you press RETURN. Run the program again, but this time press Control-C instead of RETURN. This will cause TOS to abort the program during the Cconin call; i.e. the removal code will not be invoked. The system will attempt to quit back to the Desktop, with the screen still alternating. What happens next is rather variable: the machine may lock up, or you may get a crash with bombs (I would guess 2 or 4 would be most likely). Sometimes everything seems OK; if so, try to run another program, and something will definitely happen then!

What has happened is that our program has been terminated, and control passed back to the operating system, but with the VBL queue left uncorrected. The routine which we installed is still in memory, but is now in a free block: it can be overwritten by another program at any time. When this happens, the pointer in the VBL queue will point to some indeterminate junk, and sooner or later a crash will occur.

What we need to do is to ensure that any routine we install is removed no matter how the program terminates. This can be done quite easily. Alter Listing 1, removing the commented-out lines (a total of 3), and delete or comment out the Supexec((void *)remove); line in main. Recompile the program and run it. You should now be able to use Control-C or RETURN to end the program safely.

When TOS terminates a process, it picks up a pointer from the system variable etv_term ($408) and jumps to the routine at this address. Normally, this vector just points to an rts somewhere in the TOS ROM, but we can make it point at a routine to do the clearing up. Notice that this will be called on a

normal program exit also, so we must dispense with the explicit call to the removal code, else it will be called twice. Naturally, the removal code must now tidy up our etv_term change as well.

A word of warning: I have been unable to find any specification as to which registers may be used by an etv_term routine. For safety, one should preserve all registers. Therefore, one should really point etv_term at a routine which stacks all the registers, calls the removal function, recovers the registers and then returns. However, the code as given here does work on my TOS 1.4 machine. If you intend to use this in a program which is to be distributed, you must use this more robust method. (If you know the correct method for using this vector, do write in and share the information.)

In order to prevent Programmers' Forum from taking over *all* of ST Applications, the programming example of MFP interrupt handling will appear next month, along with other interesting snippets of code.

Your letters

The column's first letter comes from **Don McEwen** of Nottingham. He correctly points out that in the January Programmers' Forum I did not explain the definition of TPA. TPA stands for Transient Program Area and refers to the area of memory which is available for use by the program, and excludes those areas devoted to system functions (such as the screen area). I will be rather more careful with abbreviations in future.

This raises a more general point: have you found these columns easy to follow or have they been hard work? Feedback to the address below, please. Also, programming problems, successes, etc.; all will be most welcome, no matter how trivial you think they are - your hint could save someone an evening's frustration.

Submissions containing large chunks of text or source code (ASCII only please) should be sent on disk which will be returned if an SAE is included.

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

Listing

VBL Demonstration in C

```
/*
** Listing 1.
** Programmers' Forum April 1991
**
** A quick program to demonstrate VBL handling
** in C. The example is trivial, simply flipping
** the background colour of the screen every second.
**
** Compiler system: Lattice C v5.06
** Compile options: Phase 1: -cafku Phase 2: -ms -v
** Link with C.O, LCG.LIB and LC.LIB
** Written on 10th February 1991
*/

#include <aes.h>
#include <osbind.h>
#include <stdlib.h>
#include <string.h>
/*
** Define some local symbols.
*/

#define UNINSTALLED 0          /* Flags for the variable `status' */
#define USED_OLD 1             /* <- set to this if existing queue used */
#define USED_NEW 2             /* <- set to this if we had to create one */

#define INCREMENT 70           /* is at 70Hz, change to 50 (UK) or 60 (US)*/
                               /* if you have a colour monitor */

#define STOP 0                 /* States for the semaphore */
#define GO 1

#define EMPTY 0L               /* Empty slot value */

/*
** Prototype the functions.
*/

int main(int, char **, char **);
void __saveds install(void);
void __saveds remove(void);
void __saveds VBL_handler(void);

/*
** System variable addresses.
*/
#define etv_term       0x0408
#define vblsem         0x0452
#define nvbls          0x0454
#define _vblqueue      0x0456
#define _vbclock       0x0462
#define vdr_colour_0   0xFF8240

/*
** Global variables.
*/

int status = UNINSTALLED;
unsigned long *old_VBL, *new_VBL, *current;
```

```
unsigned short save_colour;

unsigned long old_etv_term;

int main(argc,argv,env)

int argc;
char **argv, **env;

{
    appl_init();
    Supexec((void *)install);
    if (status == UNINSTALLED)
        {
        form_alert(1,"[3]|VBL vector list expansion|failed.|
        |][Abort]");
        return(1);
        }
    form_alert(1,"[2]|VBL demonstration.|Screen should be
    changing.| |][Quit]");
    Supexec((void *)remove);
    appl_exit();
    return(0);
}

/*
** Function to install the VBL handler: this should
** be called in supervisor mode only. It finds a free
** slot to install the handler vector in. If this is
** not possible the queue area is expanded to make room.
**
** Usage: void install(void);
*/

void __saveds install(void)

{
    register int f;
    register unsigned short count;
    register unsigned short *semaphore;

    old_VBL = *(unsigned long **)_vblqueue;
    current = old_VBL;
    count = *(unsigned short *)nvbls;
    semaphore = (unsigned short *)vblsem;

    /* Scan existing list for a free slot */
    for (f=1,current=old_VBL+1; f<count && *current != EMPTY;
    f++,current++) continue;
    if (f == count)
        {
        /* No free slot - must move the list */
        new_VBL = (unsigned long *)malloc(++count * sizeof
        (void *)); if (new_VBL == NULL)
            return; /* Error in memory allocation: quit now */
        memcpy(new_VBL,old_VBL,--count * sizeof(void *));
        current = new_VBL + count++;
        status = USED_NEW;
        }
    else
        {
        /* Just write our handler's address into the empty slot */
        status = USED_OLD;
        new_VBL = old_VBL;
        }

/* old_etv_term = *(unsigned long *)etv_term;          */
/* *(unsigned long *)etv_term = (unsigned long)remove; */

    *current = (unsigned long)VBL_handler;
    *semaphore = STOP;
    *(unsigned long **)_vblqueue = new_VBL;
    *(unsigned short *)nvbls = count;
    *semaphore = GO;
    save_colour = *(unsigned short *)vdr_colour_0;
}

/*
** Function to remove the VBL handler from the
** queue, restoring the queue area to its old
** position if it had to be moved. Call from
** supervisor mode.
**
** Usage: void remove(void);
*/

void __saveds remove(void)

{
    register unsigned short *semaphore, *wptr;

    semaphore = (unsigned short *)vblsem;
    wptr = (unsigned short *)nvbls;
    *semaphore = STOP;
    *current = EMPTY;

/*      *(unsigned long *)etv_term = old_etv_term;          */

    if (status == USED_NEW)
        {
        /* If list moved, set up the system to use the old list again
*/
        (*wptr)--;
        *(unsigned long **)_vblqueue = old_VBL;
        free(new_VBL);
        }
    *semaphore = GO;
    /* Ensure the screen is restored to the state it was */
    /* before the program */
    *(unsigned short *)vdr_colour_0 = save_colour;
}

/*
** Function to actually do something when invoked
** by an interrupt. In this case it simply flips
** the screen colour periodically. The system
** will call this in supervisor mode, but there
** almost are no restrictions on our register
** usage.
*/

void __saveds VBL_handler(void)

{
    register unsigned short *video;
    register unsigned long ticker;
    static unsigned long next;

    ticker = *(unsigned long *)_vbclock;
    if (ticker < next)
        return;
    next = ticker + INCREMENT;
    video = (unsigned short *)vdr_colour_0;
    *video ^= 0x01; /* For colour, change 0x01 to 0x77 */
}
```

Giving it the WERCS

John Durst shows how Images and Icons may be used and manipulated within GEM dialogue boxes.

Part 3: The Image Machine

One of the points about what used to be called "WIMP"s and are now called "GUI"s is that they encourage you to use pictures, instead of stuffy old words. Leaving aside the question of whether this point of view is true, or even sensible, there is no doubt that pictures do make for a more interesting program and GEM has a quite elaborate system for programming Images and Icons and displaying them. The WERCS resource file kit can help you to produce images and there are various ways you can use them within dialogue boxes.

One has to say that unless you want to include the Images just because they are pretty, there has to be some fairly heavy programming to change them, animate them, or whatever, so that they will reflect some altered parameter in your program. Icons tend to be even more complicated, both to produce and to display, so I'll leave them out for the present.

First, the capturing of images for your Resource file. There are three ways you can set about this. There is a fairly primitive image drawing facility in the WERCS program, which allows you to build up simple images, pixel by pixel: OK for blobs and simple shapes, but long-winded for a more subtle display. Then, WERCS has a program, "WIMAGE", which lets you import Images previously drawn with "DEGAS", or "Neochrome". This is much more satisfactory, although you have to bear in mind that a Resource file Image only uses two colours, foreground and background, so you can't do much with colour facilities of the drawing programs.

Finally, there is included in the Disk Magazine a program, "TRANSFER", which lets you snap Images from a Medium, or High Resolution screen, so that you can use images produced with VDI primitives: circles, ellipses, pies - even print. These would not be available, using the other two methods. There are instructions for their use in the "TRANSFER.DOC" file.

One useful tip I found when drawing Neochrome or DEGAS pictures for use as Images: set up a grid on the drawing screen, outlining in one colour the area you want the Image to use. Then draw the image over it, using another colour. When you come to capture the Image with WIMAGE, blot out the grid lines by making them a background colour, leaving the image standing alone.

While we are on the subject, I have never found a way of importing an Image as a WERCS Free Image tree. Have I missed something, I wonder?

Also on the disk is a demo program, "DEMOBOX.PRG", which illustrates some ways in which you can use images within a Dialogue Box. The box was actually part of a music program and was used to set the volume of the harmonic accompaniment to the melody line. There are two images on it; one is a sort of generalised symbol for "loudness" and the other is a slider in an oblong box. The "loudness" image, which was drawn using "TRANSFER" and exploiting the Atari's graphics to produce a series of elliptical shapes, is there mostly for fun. However, there are also two selectable "Radio buttons" on it; they don't do anything except appear, but see if you can find them. They illustrate one way that you can make an image part of the interactive area. You could, for instance, design a tiger with eyes that lit up when you clicked on them.

Technically, the way it is done is this: you set up your image in your Resource Construction Set. Then, within the area of the image, you put one or more Invisible Boxes (IBOX) of the appropriate size. You flag these in the ob_flags field as SELECTABLE (and also EXIT, if you want to quit the Dialogue box when you click on the image). If you want the IBOXes to be linked as Radio buttons, you also flag them RBUTTON; they must all be within the area of the same image, which will be their parent. Make sure the IBOXes are truly invisible, by setting the border as zero.

The point about an IBOX is that, as well as being invisible, it is also transparent, so that you go on seeing the image through the BOX - whereas other types of object are solid and obscure the parent object lying behind. When you select it, by clicking on the position, the IBOX is inverted (usually turns black) - and so also is that part of the image. When you exit from the Dialogue, your program can check whether the IBOX has the "SELECTED" bit set in the Object States and act on the information.

The second image in the Demo Dialogue box is the slider. This was drawn using the WERCS image facility. In use, you can drag the lider back and forth, within its box, which sets the relative volume between harmony and melody line. As well as judging this by the position of the slider, the program also lets you hear a chord, which thickens in harmony as you move the slider.

The trick here is a variation on one outlined in the previous article (Form Do's and Form Don'ts). As explained there, you use the TOUCHEXIT flag to allow you to loop back and redraw the cursor position, without exiting from the Dialogue.

I'm afraid that at this point the only way of explaining the details of the routine is to show the actual bit of program involved in the Demo. I'm sorry if that brings on a glazed look. The sub-program involved, as written in HiSoft Basic, is shown on page 52.

The routine makes use of two less common AES routines: "objc_offset" and "graf_dragbox". The first of these returns the screen co-ordinates, x & y, of an object in a tree. The second, "graf_dragbox", lets the user drag a box of fixed size within a fixed rectangle,

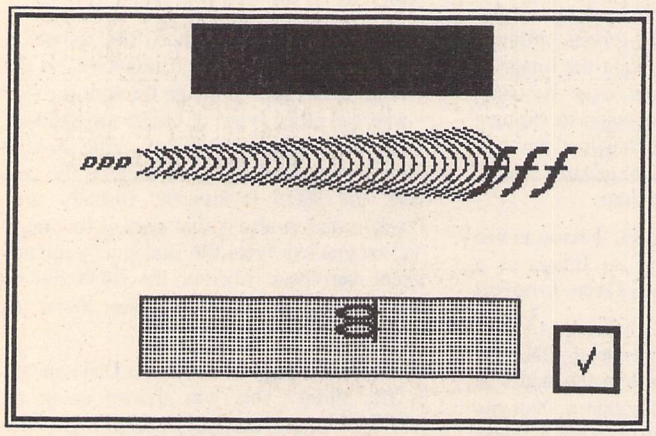
specified in the parameters, and returns its position relative to its start co-ordinates. You will need to consult the textbooks for full details of this rather complicated routine.

Using "FNobjc_offset", the program finds the co_ordinates of the slider box (slx,sly) and the cursor (cx,cy). Actually, "slx","sly" and "cy" never change: the only movement is the cursor's horizontal move.

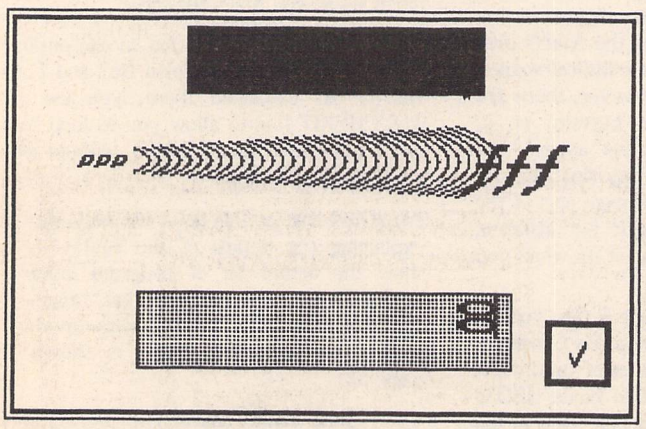
Next the program inserts these values in the parameters for the AES "graf_dragbox" routine, and makes the call. At this point you get the chance to drag the box on the screen. When you finish, "graf_dragbox" returns the new position for the cursor, in the co_ordinates, "outx" and "outy". Once again, "outy" doesn't change, so can be ignored. The new cursor position can be calculated, using the formidable mathematical theorem, "csr_posn=outx-slx", and this is used to re-draw the slide box with the cursor in its new position.

Finally, the routine uses "csr_posn" to calculate a new value for "harm_num" which is returned as the value of the whole function, "FNdrag" when operations are transferred back to the "set_harmony" sub-program, ready to loop back and re-program the sound channels.

There are so many ideas one can exploit in dealing with images in the context of the Atari's graphical system that they could fill a book: they probably have. But the best way forward is still to experiment oneself: to try out wheezes and see if one can get them to work and so contribute to clearer, easier programs.



The Dialogue Box produced by running DEMOBOX.PRG



When the cursor in the grey slider bar is moved over to the right, sound channels 2 and 3 increase their volume, producing a harmony with the stable sound channel 1.

Sub-Program Listing

```
'*** SUB-PROGRAM ***
'handle harmony dialogue box
SUB set_harmony
SHARED boxx,boxy,boxw,boxh,csr_posn,harm_num
STATIC t&,temp

form_center volume&,boxx,boxy,boxw,boxh
form_dial FMD_START,0,0,0,0,boxx,boxy,boxw,boxh
    t&=FNobject&(volume&,cursor%)
    POKEW t&+ob_x,csr_posn 'initial position of slider
' draw the whole of the dialogue box
    temp=FNobjc_draw(volume&,0,10,boxx,boxy,boxw,boxh)
DO
' set the volume of channels 2 & 3 according to "harm_num"
    WAVE 7:SOUND 1,15,1,4,0
    SOUND 2,10+harm_num,5,4,0:SOUND 3,10+harm_num,8,4,0
        temp=FNform_do(volume&,0)
' check if exit object was cursor: exit if not
' (note top bit of exit object may be set if "TOUCHEXIT"
' so AND it out)
    IF temp<>cursor% AND &H7FFF THEN EXIT LOOP
' if not exit then go to drag-box routine & loop back
    harm_num=FNdrag
LOOP

' exit from the SUB-program
' tell AES finished
form_dial FMD_FINISH,0,0,0,0,boxx,boxy,boxw,boxh
' deselect the EXIT button
t&=FNobject&(volume&,xit)
POKEW t&+ob_state,PEEKW(t&+ob_state) AND(NOT mask_selected)
' turn off sound
SOUND 1,0:SOUND 2,0:SOUND 3,0
END SUB
```

The first six lines set the initial position of the cursor (held in the variable "csr_posn") and draw the complete dialogue box. Next the program enters a loop, which first generates the sound, setting the harmony on channels 2 and 3 in accordance with the variable "harm_num", which is linked to "csr_posn". Then the interaction with the Dialogue box takes place ("temp=FNform_do"), using the "TOUCHEXIT" flag to signal if the cursor has been selected. If it was not the cursor which ended the "form_do", then it must have been the "EXIT" button, in which case the routine goes on to clear up in the last nine lines, before exiting from the sub-program.

However, if the cursor was selected, another routine is called, a function, "FNdrag", which operates the slider like this:

```
    ' the drag-box routine to reposition cursor
DEF FNdrag
SHARED csr_posn,boxx,boxy,boxw,boxh
STATIC t&,outx,outy,cx,cy,slx,sly

' get the initial positions of the cursor
' & slide box
junk=FNobjc_offset(volume&,cursor,cx,cy)
junk=FNobjc_offset(volume&,slide_box,slx,sly)
' now drag the cursor within the slide box
' (the cursor is 31X22 & the box 182X22 pixels)
graf_dragbox 31,22,cx,cy,slx,sly,182,22,outx,outy
csr_posn=outx-slx
t&=FN object&(volume&,cursor%)
POKEW t&+ob_x,csr_posn
' re-draw the slide box & cursor,
' using the original clipping area
junk=FNobjc_draw(volume&,slide_box,1,boxx,boxy,boxw,boxh)
FNdrag=csr_posn\30
END DEF
```

CAD Column

Joe Connor has spent the last month testing ICD AdSpeed with CAD Applications and still found time to tidy up the defaults in DynaCADD.

So far DynaCADD, CADja, Campus CAD, Becker CAD and GFA Draftplus have been tested and all appear to function perfectly, only faster. In order to make an objective test of the actual speed improvement in use I decided to introduce 2 benchmarks:

1) Load: time taken to load and display drawing from floppy and hard disk. Tests the disk subsystem and main processor(s).

2) Regenerate & Redraw: time taken to regenerate the drawing from memory. Tests memory and processor(s). Avoids disk access affecting the result. Can also be used to measure the efficiency of large screen graphics cards and driver software.

All tests were performed using the Space shuttle drawing as this is included as one of the demo drawings with most CAD packages. Unfortunately I could not find or transfer the shuttle drawing to Campus CAD. If anyone has the shuttle drawing in Campus or ASC format please send me a copy on disk to:

Joe Connor, 65 Mill Road, Colchester, CO4 5LJ. Campus will then be tested.

News

A new A4 Roland flatbed plotter, the RP11, has just been announced. Cost £475 + VAT. How very interesting, I hear you yawn. Well, actually, two unusual options are available: an overhead transparency kit and a knife-cutting kit. Budding lecturers and sign-writers should contact

Expressworks Ltd.
Vyne Cottage, 75 Heath Lane, Farnham, Surrey, GU9 0PX.
Telephone (0252) 726255.

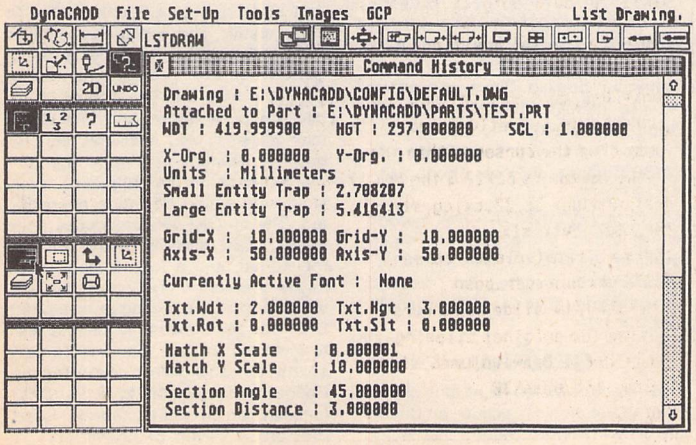
They also have several ex-demo DXY 1200 A3 plotters for sale at £695 + VAT.

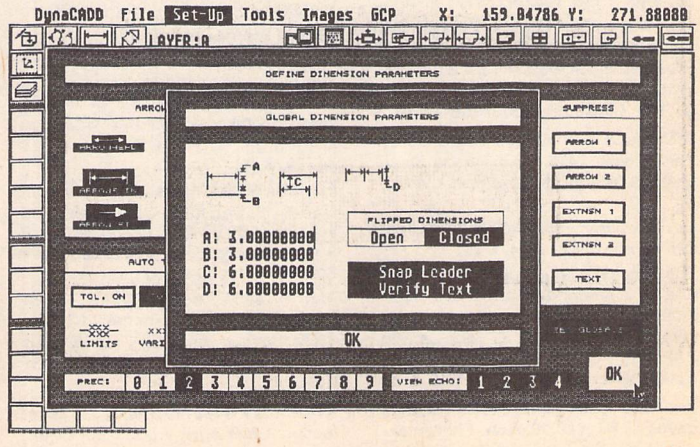
Draftplus	BeckerCAD	DynaCADD	CADja	Description
17332	36031	48608	35572	File size
5.2	6.6	4.7	6.1	Load from hard disk at 8 MHz
3.6	4.5	2.9	3.9	Load from hard disk at 16MHz
31%	32%	38%	37%	% increase due to AdSpeed
9.4	27.0	25.0	12.8	Load from floppy at 8 MHz
7.0	19.6	24.0	11.0	Load from floppy at 16MHz
26%	28%	4%	14%	% increase due to AdSpeed
2.4	5.0	1.5	6.1	Regenerate screen at 8 MHz
1.8	3.1	0.9	3.9	Regenerate screen at 16MHz
25%	38%	40%	38%	% increase due to Adspeed

DynaCADD mini tutorial

When DynaCADD is run for the first time the system level dialogue box is displayed. Have you ever noticed or been irritated that the settings are in inches? If you usually just select your chosen settings each time this occurs and carry on regardless you may also have noticed a myriad of other settings within DynaCADD are also not set to your liking. All the settings shown below are controlled by a file called (unsurprisingly) DEFAULT.DWG in the CONFIG folder and can be changed.

From System level activate any part or create a new one. Change the path as necessary and load DEFAULT.DWG. Set the defaults to your chosen values and click OK. From inside DynaCADD set the dimension, grid, text and other defaults as required. Quit DynaCADD, saving the drawing. From the desktop open the CONFIG folder and delete DEFAULT.DPT.





Classified Adverts

Classified adverts are free to subscribers.

Please use the form on page 58.

FOR SALE

Midi Music Sequencer. Pasport Master Tracks Pro (2.5v)(89). All original with manual. This very versatile software still retails at £275. My offer £100. 0603 411185. (6)

The following are all in excellent condition and of course are all originals and boxed. APL 68000, GFA Draft V.3, Degas Elite, Borodino, Waterloo. All for £85.00 Telephone Martin on 081303-0289. (6)

Atari Half Meg single-sided internal disk drive and associated PCB. Virtually new. Cheap: any reasonable offer accepted. Tel. 0970-623328. (7)

Atari 520 STFM with 1 Meg Internal Drive, mouse and mat, joystick, manuals, magazines, dust cover, lots of software in lockable disk box including games, databases, wp's etc. All in immaculate condition. £280. Ring (0342) 327072 (East Grinstead, W. Sussex). (7)

Iron Lord. Original, boxed £8. Phone 0902-21448. (6)

Teco VP 1814 Printer (180 cps DRAFT;39 cps NLQ) 9-pin - Nice output £100 ono. STAR LC24-10 Printer (200 cps DRAFT;59 cps NLQ) 24-pin includes cut sheet feeder. £200 ono. Also Timeworks DTP £60 ono; Microsoft Write £20 ono; Wheels of Fire £15 ono. (includes Turbo Outrun, Hard Drivin, Power Drome, etc.) Call (081) 995 3766 after 6 pm - ask for Tom or Chris. (6)

Epson RX80 printer with 64K Buffer and NLQ card £80 + postage. STOS Maestro and sound sampler £15, STOS Games Creator £8. STOS Compiler £5.00. F.O.F.T. £8, Shanghai £5, Galdregon's Domain £8, Football Mgr + Exp Kit £8, Verminator £8. All software £1 postage. If interested call: John on 071 260 2885. (5)

Cyber Studio £22, Flair Paint £7, Supercharger inc 1 Meg, 8087, PSU £175. Ring Phil Woodall on Dudley (0384) 241461. (6)

STAR LC1011. Less than 1 year old. Perfect condition. Boxed, lead and ribbons, etc. £115. Tel: 0602 817198. (6)

Atari Stacy, 2Mb Ram, 40Mb HD. Still under guarantee. £1500 ono. Spectre GCR Macintosh emulator for ST. £250. Prodata, Arnor's database package for ST. £35. Ring John (0603) 259111. (6)

65MB hard disk (SH204 upgraded by Third Coast) £425 o.n.o. Phone Steve on 0923 265539 (Watford/Hemel area). (5)

Data Manager Professional, little used, £25. Phone 0202-515476. (6)

The Blag (ST) - huge detective adventure on two extended format S/S disks. Features digitised graphics, printed manual and free pen: £7.99 plus 50p P&P. Apply G. Atkinson, 60 The Green, Rowlands Castle, Hants. PO9 6AB. (10)

2 x 1Mb internal replacement disk drives for ST, £40.00 each. 1 Mb internal replacement drive for ST (Citizen) £30.00. Contact: Colin on 0270-780257. (7)

Atari 520 STFM with 1M Drive + 1/2M Drive + Atari Mono Monitor £250. Contact Physics Dept. Aberystwyth. Tel.0970-622822. (5)

Star LC10 Colour Printer, Two ribbons, some paper, original packing, home use only. Very good printer in very good condition. £150.00. Tel: Mick Jackson, Oxford (0865) 724753. (5)

Original Software: Metacomo Pascal Developing System - £35 and 2.02 + Hisoft Wercs - £8 (Both Unregistered). Atari Gem Programmer's Reference (Abacus Book) - £8; or swap all for PageStream 1.82. Phone Nick 0535 730161. (5)

Star LC10 Mono Printer in good condition, £120. Ask for Frank on 0738 28721 after 8 o'clock or 033 76575 during work hours. (5)

Atari STE 520 Boxed and still under guarantee, complete with mouse, joystick, Pro-Sound Designer sound sampler, software and magazines: £300. Atari STM Double-sided drive, mouse, joystick, software, magazines £150. Tel: 0246 235105 after 2pm. (5)

Atari STFM. TOS 1.09, 2.5Mb Ram, SM124 Mono Monitor, Third Coast 22Mb hard drive. £1500 worth of business and leisure software, £700 o.n.o. Will split. Call Nigel Lucas (0279) 622178 office hours. (5)

Panasonic KCP1081 9-Pin Printer, with spare ribbon, ST interface cable, and special iron-on transfer ribbon for DIY T-Shirts. £80. Call Frank Hollis on (0279) 434168 (Eves) 622017 (day). (6)

Supercharger 1MB. Latest version, still under warranty including Dos 4, Dos 3.3, Books and P.D. - £220. NEC Multisync Greyscale Monitor £125; 5.25" 40T/80T Disk Drive - offers. Hyper Paint original and unregistered - £12. French STF Keyboard + Roms offers. Faulty STFM Mother Board + Case + PSU Offers. Tel. Mark 061-434-0992. (5)

Star LC10 Printer £125. JUKI 6100 Printer £170. Telephone 0487-841637. Home use only. (6)

Easy Text Plus V.1.3K (9Pin) Unused and complete with manual. £10.00 or swap for Astronomy Lab or UIS III. David Henniker, 199 Brontsfield Place, Edinburgh. EH10 4DR. Phone 031 4478226. (5)

FZ1 Shareware. 100's of sounds from USA & UK. SAE for List. 50p/Disk if you supply, or £1.50 (DD), £2.50 (HD) + P & P if I supply. Contact Brian at "Kave Studios" on 0909 486971. (9)

Atari 1040ST, needs repair hence £150. 1Mb Cumana external drive £50. 32Mb Seagate hard disk for PC plus controller card £150. A Chapman, 081 549 6244. (5)

STAR LC24-10 printer with cut sheet feeder. £200 ono. V.good condition. Also Timeworks DTP - £50 ono; Microsoft Word - £30 ono. Overlander - £10 ono; Poolsmaster - £10 ono; Wheels of Fire Compilation - £16 ono. Contact Tom on (081) 995 3766. (5)

1) Atari Mega 4 SM124 Mono Monitor. SH205 20Mb Hard Drive. Cameron Hand Scanner - £965.00. 2) Atari SLM 804 Laser Printer - £695.00. Items 1 and 2 together - £1595.00. 3) Atari 520STFM plus 2nd Floppy - £195.00. 4) SM125 Mono Monitor - £65.00. Items 3 and 4 together £250.00. Phone Rob (0865) 741331 ans. (5)

WANTED

Original Pipe Mania with all relevant paper work. Contact A.J. Sanders on 0327 60935 (Northampton). (5)

"Eickmann" HD Plus software wanted so I can re-install my hard disk. My Eickmann diskette has died. Also wanting internal clock card, 1 Meg. internal disk drive, and hand scanner. Also Info about "Overscan" Mono-Monitor. Answer with address and telephone number please! Einar Skog, Sualaskjerran 46, N.4645 Nodeland, Norway. (6)

Epson or fully compatible wide carriage printer in good condition. Also Timeworks DTP. (Must be within 100 miles radius) Tel:- Graham on Middlewich 2049 (Cheshire). (5)

NEC Multisync GS (mono) monitor, preferably with a suitable cable for the Atari ST. Call Dave (081) 305 1331 (answerphone 24hrs). (6)

Does anyone have any Mean 18 course files, other than the six available from Accolade? If I can gather enough together, perhaps a diskful could be added to the ST Club library? Phone Steve on 0923 265539. (7)

Infocom adventures - Bureaucracy, Hitch Hikers' Guide, Beyond Zork, Nord and Bert. Must be original versions (i.e. not the new budget copies) with all original material. Phone Steve on 0923 265539 (Watford/Hemel area). (8)

Mega ST4. Will pay upto £500. Phone/Fax 0206 851488 anytime. (The nearer to Colchester, Essex the better). (5)

Retouche Professional English Version, Reprostudio Professional and Harlequin English Versions wanted. I'm also interested in a hand scanner. Good prices only. Please write to: Franco Turra, Via Castiglione 91, 40136 Bologna, Italy (or phone 051-6484641). (5)

GENISCAN SCANNER - Has anyone found/written some software which works on the STE and will capture images larger than screen size? Needed desperately. Phone Tim on 0602 224773l. (7)

GENERAL

Treknet - A new club for all fans of Star Trek. Great club magazine, produced on ST's, for information contact:- Captain Angie Jarrett, 46 Regis Crescent, Milton Regis, Sittingbourne, Kent. ME10 2ES. Telephone: (0795) 471970. (7)

Postscript Printing Service for Timeworks DTP and FSP3. Excellent quality laser output for only 90 pence per page. Also laser output of various graphic formats including IMG, GEM and PI3. Send your disk plus cheque, or £2 for further details, font charts and examples of the quality obtainable to:- E, Nelson, 3 Woodview, High Street, High Littleton, Bristol, BS18 5HT. (7)

Crystal Tower BBS 01-886-2813 24hrs 300-2400 Baud (Towernet System) Atari ST, PC, Languages, Comms etc + much more. All callers welcome. (R)

Guide Dogs for the Blind Appeal - Please send used postage stamps to help this worthy cause to: 19 Dunloy Gardens, Newton Abbey, Co. Antrim, BT37 9HZ. (R)

STARGATE BBS: 0476-74616 V21 V22 V22BIS V23 Atari ST section; also PC, Amiga and Comms areas. Comms help and advice for ST and PC via ST Editor. Give it a call and leave a message. If you need comms software get Uniterm from the ST Club. (R)

Professional typeset from 1st Word disks. Over 100 Faces. Output to high quality PMT. Much better than laser. Also cheap printing A5/A4 single colour. Contact: AZTRAL Games, PO Box 8, Lowestoft, Suffolk, NR32 2AS. (R)

CONTACTS

Established ST user wishes to contact other ST users. Interested mainly in serious stuff. P. Armitage, Ashmere House, Week St Mary, Holsworthy, Devon, EX22 6UN or telephone 028 884597. (6)

I'm looking for a Graphic Artist to work with me on my games project. If interested ring Ed on 0255 675983. (6)

Electronic Circuit Simulation. Available now is a well-featured analogue circuit simulator, similar in operation to the industry standard 'spice' simulator. Included is a Text Editor for Metlist Creation and Editing, a Graph Plotter to show results, and a graphical shell to bring it all together, all making use of Gem. What is required is a number of people to help with beta testing of the package as a whole, and to suggest modifications, etc., additions, etc., for ongoing development. Also, any correspondence on the subject of circuit simulation would be much appreciated. The B-Test version comes on a single sided disk, including all files mentioned, and a fully working analogue simulator. To cover costs, I would appreciate a cheque or p.o. for £12. This will allow me to keep all testers etc. up to date with revised versions as and when developed. Cheques/P.O. payable to M. Schcmalenbach, or write 21, Kenwith Road, Bideford, N. Devon. EX39 3NW. (7)

Subscription Notes

Subscription Expired?

Check your address label to see when your subscription expires: the first number above your name is the issue of ST Applications that your subscription will expire with, and the second number is the number of the disk mag that your Disk Mag subscription will expire with.

Example: STA6 - DMG-

In this case: the ST Applications subscription will expire with issue 6 and there is no Disk Mag subscription.

You are free to cancel your subscription at any time. If you do not want to continue receiving issues of ST Applications please let us know and we will cancel your subscription and immediately refund the unused part of your subscription.

No Subscription?

If you received this copy of ST Applications through the mail check the first line of your address label carefully: if it reads STA5 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 future issues.

Subscriptions

ST Applications is by far the best value magazine for the ST. A 12-issue subscription costs just £15.00; 12-issues would cost £18.00 if bought individually at a newsagents. Taking out a subscription saves you £3.00 (the cost of two issues), and you get guaranteed delivery direct to your door with no delivery charges.

You can also subscribe to ST Applications and The ST Club Disk Mag. 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. A subscription to ST Applications magazine plus the six Disk Mags costs just £22.50. To buy all six disks individually would cost £15.00: subscribers get a massive 50% saving off the cost of the disks!

For details on back-issues of the ST Club Disk Mag see the PD Catalogue Version 11 and subsequent updates.

Back Issues

ST Club Newsletters and ST Applications

For four years prior to the launch of ST Applications, The ST Club produced "The ST Club Newsletter"; this experience has formed the building blocks for this magazine. Whilst the layout and content of ST Applications has altered, enabling us to tackle more ambitious, long-term projects and have up-to-the-minute news and reviews, you may find the back issues of the newsletter of some interest. The following is a list of the back issues available, with a brief outline of the content of each Newsletter.

Newsletter Issue 28

Reviews: Calamus, A Book on C, STOS, HP Desk Jet Plus, Fontkit Plus Tutorial I, Football Crazy, Canvas, Goliath 2, Hi-Soft Forth. Articles: 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 3, 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: NeoDesk3, Universal Item Selector III, Deluxe Paint ST, Easy 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, Gadgets by Small, Reading CP/M disks; 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 Cub, 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 (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 book review, ST Internals, DIY Fan Thermostat, Fontswitch 3, Giving it the WERCS (2), GEM Dialogue boxes in C; Regulars: News, Forum, Adventure Column, CAD Column, STicks and STones, PD Update 11.4, Programmers' Forum.

Newsletter back issues cost £1.20 each.

ST Applications back issues cost £2.00 each.

Subscription Rates

United Kingdom

12-issue subscription to ST Applications: £15.00

12-issues plus 6 Disk-Mags: £22.50

Air Mail to Europe

12-issue Subscription to ST Applications: £18.00

12-issues plus 6 Disk-Mags: £26.50

Air Mail Worldwide

12-issue Subscription to ST Applications: £28.00

12-issues plus 6 Disk-Mags: £34.50

A Subscription and Order form is on page 57

ORDER FORM

- Commercial Software - - Books - Accessories - - Disks and Boxes -

Qty	Title	Price	
	ST Applications Subscription (£15)		
	ST Applications + Disk Mags (£22.50)		
	Overseas Subscription		
	Clip Art Catalogue (£2)		
	The Astronomy Lab - £19.95		
	A Users' Guide to DTP - £9.95		
	A Users' Guide to 1st Word - £6.95		
	Universal Item Selector III - £19.95		
	The Astronomy Lab £19.95		
	Fontkit Plus 3 - £19.95		
	Molgraph - £12.95		
	Virus Killer (CRL - RRP £9.95) - £6.95		
	Disk Boxes for 12 disks (£1.40 each)		
	Branded D/S Disks: 10 @ £12.95		
	Un-Branded Double Sided Disks		
	Disk Labels @ 1.5p each		
	Sub Total A = £		

Public Domain Disks

	Code (AAA NN)	Title / Description
1		
2		
3		
4		
☆	FREE	PACK OF DISK LABELS
5		
6		
7		
8		
9		
10		
☆	FREE	SLIMPACK DISK BOX
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Name: _____

Address: _____

_____

_____

Post Code: _____
(This is essential)

STA5

Cheques and Postal Orders should be crossed and made payable to: **SIMPLE LOGIC & Co.** You may pay by Transcash at The Post Office or by Giro Bank Transfer to our Account Number: 37•820•7806
Overseas orders are welcome. There are no postal surcharges on disk orders from within Europe; other countries please see Air Mail prices in our catalogue.

PD disk prices

	up to 6	7+ disks
Non subscribers	£2.80	£2.50
Newsletter Subscribers	£2.50	£2.25
Disk Mag Subscribers	£2.35	£2.05

Budgie UK disks are licenseware - not PD - and cost £2.95 or £3.95 ea. - please use the left hand column to order these disks.

__ PD Disks @ £___=		
Plus Sub total A =		
TOTAL ORDER VALUE		

Subscription to start with current issue / issue no. ...

All prices include VAT • Our VAT No: 432•2334•90

☐ Please tick here if you require a VAT Invoice

Easy Text Plus

A budget priced
Desktop Publishing Package

Imports First Word documents, allows use of GDOS fonts and imports clip art. Many different text effects and fill patterns are available. New version now includes improved GDOS support with greatly enhanced print quality. (Upgrades from Easy Text are available for £5 direct from zzSoft.)

Price: £20

Map Edit

A professional tool for producing the scrolling backgrounds found in arcade games. The files it produces are suitable for either vertically or horizontally scrolling maps; and example assembly language code is supplied for vertically scrolling maps.

Full C source code for Map Edit is included with the package - so users can customise the package, or as an example of how to write a GEM application.

Price: £6.95

Classified Advertisement Copy

Please insert the following advert for ..... issues under the following classification: / ST Contacts / For Sale / Wanted / General / User and Special Interest Groups.

Warning: It is illegal to sell unauthorised copies of commercial software - All software offered for sale must be in the original packaging with manuals etc. Anyone found to be selling pirated software through the classified advert listings will be reported to the appropiate authorities. Software Publishers do not normally offer user support or upgrades to users of software purchased second hand.

Blank Disks

Sony Branded Double Sided
3.5" disks
Box of 10 - £12.95

High Quality Unbranded disks
(Kao or Sony) With disk labels
Each - £0.75
10 - £7.50
25 - £17.50

Virus Killer

Features:

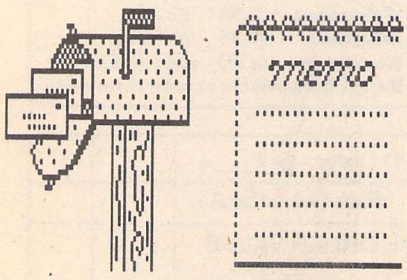
* Recognition of all known ST viruses - both bootsector and link viruses, and virtually all software that legitimately uses the disk's boot sector.
* All data on your disks remains 100% intact!
* Immunizing of disks against all known bootsector viruses.
* Option to repair damaged disks.
* Option to write Anti-virus.
* Comprehensive manual on disk.

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

Published by CRL/Practical at £9.95

Available now from The ST Club for just £6.95

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



Springtime at Network....

Give yourself a treat with Network's Springtime bargains.

AT LAST----the TT!

Network can now supply the long-awaited ATARI TTs. All the speed and computing power you could ever desire.

All models feature 40 mb HD; 32 mhz speed; 4096 colours

TT 2 mb £1408; TT 4 mb ££1672; TT 8 mb £1848. Special monitor £352

All plus VAT

One year's warranty on all equipment.

Why not phone and check out all our Atari bargains?

ATARI DTP

PROXIMA --Proved in the professional environment for two years--and STILL nothing to touch it. Still £135 + VAT but NOW including TWENTY PostScript-compatible fonts.

Fleet St Publisher v 3-- The best UK-program available. Now from Network at £125 + VAT.

PageStream (latest version)-- A brilliant program at only £105 + VAT.

Calamus--P.O.A.

ULTRASCRIPT--The ultimate, MARVELLOUS PostScript emulator for the Atari. Near laser quality from even a NINE PIN dot matrix printer! Genuine PostScript quality, especially used in conjunction with PROXIMA and PageStream. £130 + VAT

FOR THE PC

First, check Network's own-construction PC compatibles, 286, 386, 486. Sample: the FULL 386, with EIGHT mb memory; 45 mb HD; 3.5" floppy; 14" colour VGA, high res.; RT clock; 25 mhz speed (runs at 32 mhz). One year's warranty; two years' warranty on HDs. All for only £1525+Vat

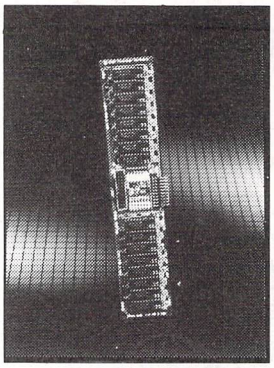
DTP: Fabulous dtp for the PC. **PageMaker**- £340 + VAT; **Corel Draw**-the world's top art/graphics package, 152 fonts on board, only £264 + VAT; (This is the latest version..2.); **Windows 3**-- £110 + VAT.

PRINTERS

We handle most laser and dot matrix printers, all at discount prices. Please send for details. **SHARP JX 9500 inc 2 mb**--£1025 + VAT; **HP LaserJet 111**--£1125; **HPLJ 111 + memory + PostScript**--only £1500 + VAT; **SHARP PostScript**--£1500 + VAT; **Our own high definition (800 x 800 dpi) laser**--only £2550 + VAT. **Send for brochure on all our services, including our at-home professional printing business scheme.**

Network News Services, Dock-rd., Tilbury Essex 0375:859103

Discover Your ST/STE's Real Power!



XTRA-RAM ST

Upgrades your ST's memory easily. Complete with testing software and comprehensive manual.

No Need To Send Away Your ST

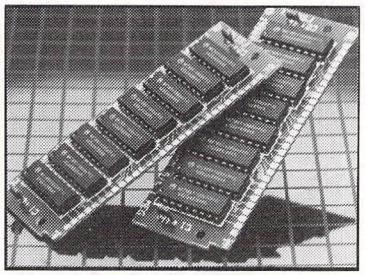
Upgrading the RAM memory of your Atari ST (520ST/M, 520STFM, 1040ST, Mega 1ST or Mega 2ST) usually means sending your ST away or doing a large amount of soldering yourself. Frontier's XTRA-RAM ST is installed by you, in your home or office.

Easy To Install

Installation takes around an hour and is carefully explained in a detailed 32 page manual which is written with the non-technical ST user in mind. If you have any problems during the installation process, Frontier's technical staff are always available on the phone to offer assistance. Most STs will require absolutely no soldering to fit the XTRA-RAM ST. Some newer models will require a small amount of soldering. Contact Frontier for more details.

No Need To Stop At 1MB

Most RAM upgrades for the ST leave you at 1MB and that's it! Not so with the XTRA-RAM ST. You can buy the $^1/_2$MB upgrade now safe in the knowledge that the XTRA-RAM ST can be upgraded later without any messy trade-ins. You just replace one set of memory chips with another without any soldering whatsoever.



XTRA-RAM STE

Easy to fit without soldering - no need to send your STE away.

Upgrade Your STE Yourself

Frontier's XTRA-RAM STE has been designed to work with the memory upgrade facilities built into your STE to make upgrading the memory straightforward and painless.

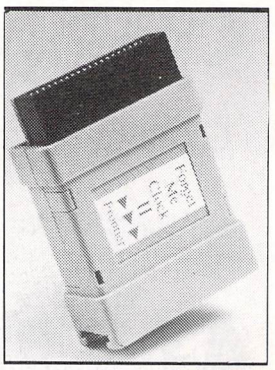
No Soldering

The installaion of the XTRA-RAM STE takes under one hour. You simply open your STE, plug in the XTRA-RAM STE memory boards and close the STE. It's as simple as that!

Expands All The Way To 4MB

With the XTRA-RAM STE from Frontier you can expand your STE all the way to 4MB. There are four possible configurations for the RAM memory in your STE - $^1/_2$MB, 1MB, 2MB and 4MB. For more details on the memory slots in your STE contact Frontier direct.

All of these products are manufactured by Frontier in the UK which means that you can be certain of the best possible after-sales support.



Forget-Me-Clock II

Automatically sets your ST/STE's system time. Now all your files will be properly date and time stamped.

Just Plug In And Go

With the Forget-Me-Clock II plugged into your ST or STE's cartridge port the system clock (used by the Control Panel) and keyboard clock will automatically be set at turn on or reset. No longer will you have to waste your time setting your ST's clock.

Full Pass Through

Frontier's Forget-Me-Clock II is a clock cartridge unlike any other. All other clock cartridges for the ST or STE will tie up the cartridge port. The Forget-Me-Clock II has a full cartridge pass through - any other cartridge for the ST can be plugged into it while it is plugged into your ST. The Forget-Me-Clock II remains totally invisible so that the other cartridge can be used normally, but it still automatically sets the system and keyboard clocks in your ST or STE.

No Need To Open Your ST

Installing some clock cards for the ST means that you have to open your ST's case and pry computer chips out of their sockets. The Forget-Me-Clock II is a cartridge which plugs into the port on the side of your ST or STE which means that its installation couldn't be simpler - you just plug it in and turn on your ST.

Satisfaction Guaranteed

MONEY BACK 10 DAY GUARANTEE

Totally Compatible

The extra RAM memory that the XTRA-RAM ST and XTRA-RAM STE gives to your ST or STE is totally compatible with all of your programs. The memory controller chip 'logs' in the extra memory and makes it available for your programs. You will automatically get more valuable memory space for DTP, word processing, MIDI, running the Atari laser printer and everything else that you use your computer for.

Software Included

Every XTRA-RAM upgrade is supplied with a free RAM testing program (so that you know with certainty that your installation has worked), RAM disk and printer spooler software.

Every Forget-Me-Clock II cartridge is supplied with time and date setting software for the Forget-Me-Clock II's clock together with a small auto-run program which automatically sets your ST's system and keyboard clocks every time you turn on or reset your ST or STE. Built into the setting software is the facility to stop the Forget-Me-Clock II's clock to save on battery life when the Forget-Me-Clock II is not being used.

Service And Support

All Frontier Software products are designed and manufactured in the UK and are supplied under Frontier's ten day money back offer which means that it you don't like the product for any reason you can return it for a full refund within ten days of purchase. All Frontier's products also carry a full twelve months' guarantee (two years with the Forget-Me-Clock II). Unlike some ST and STE upgrades, Frontier guarantee that each XTRA-RAM for the ST or STE only uses brand new memory chips - making your ST or STE and its memory upgrade more reliable both now and in the future.

We'll dispatch your order within 48 hours or you get 25% off!*

All of these products are available from your local dealer or direct from:

Frontier Software

Prices

XTRA-RAM ST Unpopulated (without memory chips)	£64.99
XTRA-RAM ST Populated to upgrade a $^1/_2$MB ST to 1MB (can later upgrade to 2$^1/_2$MB simply by changing the RAM chips)	£79.99
XTRA-RAM ST Populated to upgrade keyboard STs and Mega 1STs to 2$^1/_2$MB and Mega 2STs to 4MB	£189.99
XTRA-RAM STE $^1/_2$MB (includes two $^1/_4$MB memory boards and will upgrade a $^1/_2$MB STE to 1MB)	£49.99
Xtra-RAM STE 2MB (includes two 1MB memory boards and will upgrade a $^1/_2$MB STE or 1MB STE to 2MB or a 2MB STE to 4MB)	£119.99
Forget-Me-Clock II cartridge	£24.99

All prices include VAT.

Please add £2.30 postage and packing to all orders under £120.00. Frontier accepts payment by Visa, Mastercard or Access. Prices subject to change without notice. Goods subject to availability.

P.O. Box 113, Harrogate, North Yorkshire, England HG2 OBE. Phone (0423) 567140/530577. Fax (0423) 522874.

* If we don't dispatch your order within 2 working days we will give you a 25% discount! Offer ends 30th June 1991.