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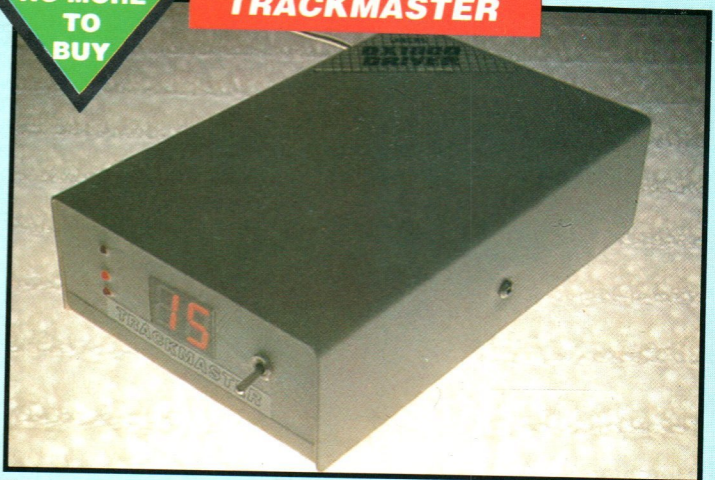
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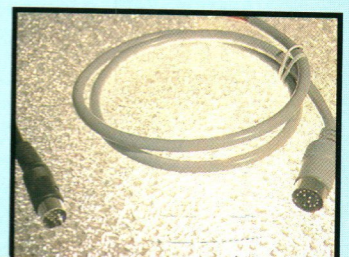
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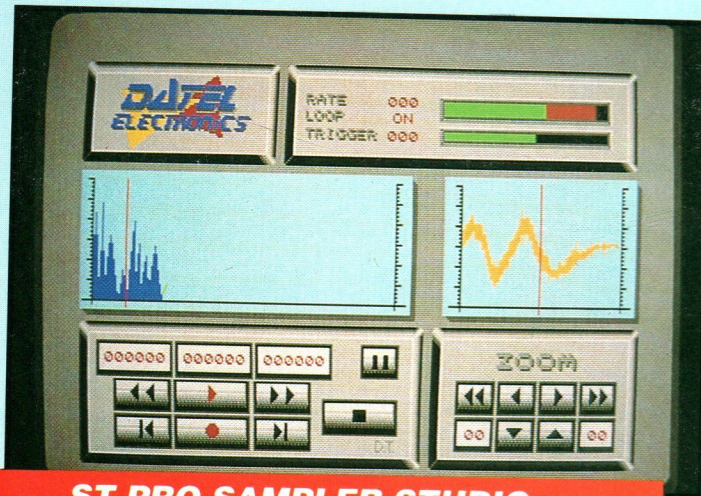
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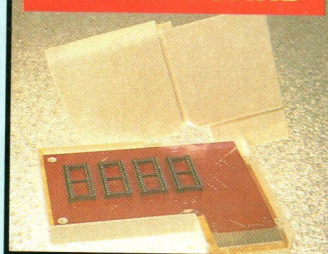
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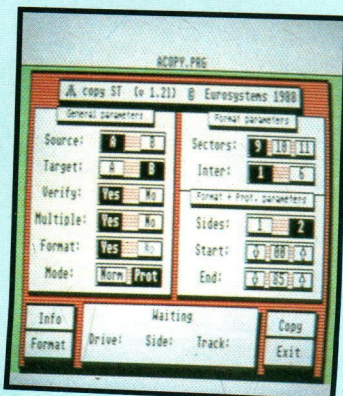
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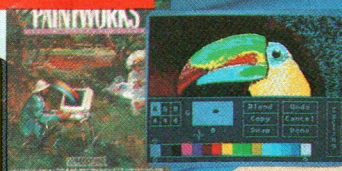
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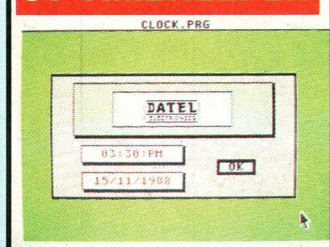
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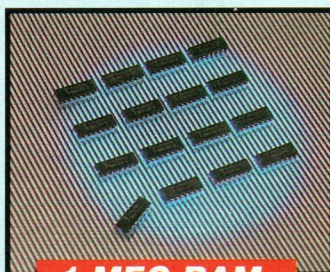
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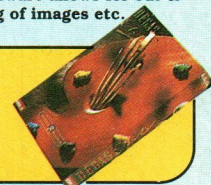


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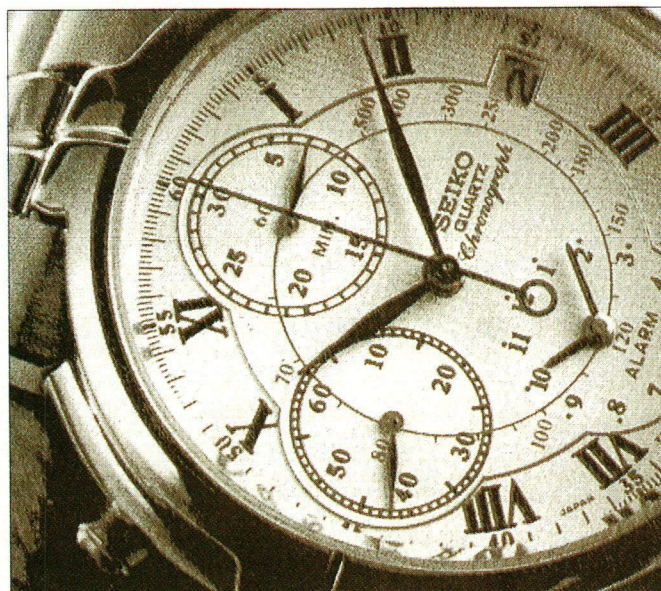
CONT



STW SUPERTEST: SCANNERS

Eight image scanners tested; from a sub-£200 hand-held, to the £1700 400dpi Panasonic flatbed. We test just about every scanning product available for the ST.

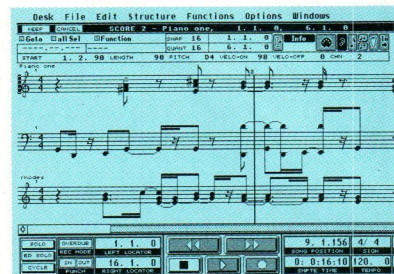
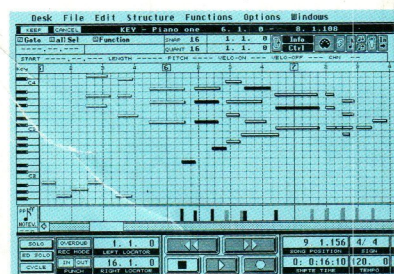
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THE ART OF SCANNING EXPLAINED

From paper to pixel - John Nuttall explores the various types of scanning device available today. But there's more to this than just capturing an image on to disk...

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CUBASE: SUPER SEQ

A leap into the future with what is probably one of the most major Midi software releases to date. We present an overview of this remarkable package for professional Midi musicians.

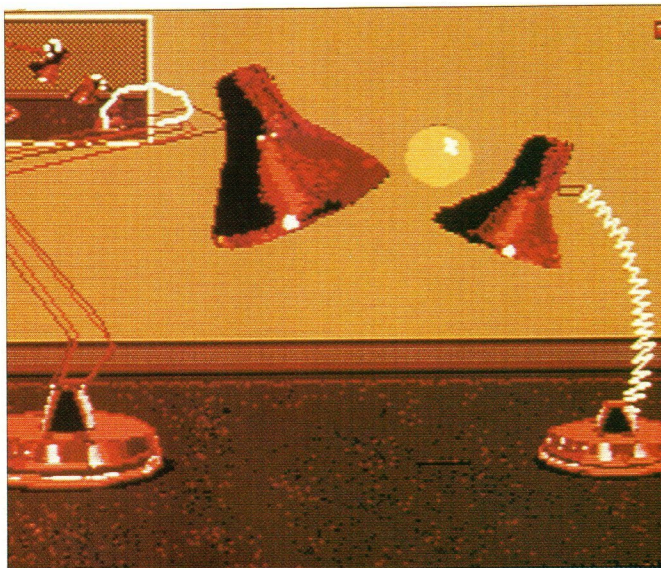
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DESKTOP VIDEO (DTV)

Desktop Video in the home. We explore the options available to you if you are interested in making pictures move, or getting your ST taped.

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A SLICE OF ST ACTION!

A slice of the games action from ST Action, ST World's sister magazine. Dust off your joystick for a round-up of the month's gaming action.

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STW AT LARGE: ELITE VIDEO

Graham Wayne visits a small but effective video production company - working wonders with a 1040ST

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PAGESTREAM REVIEWED

A detailed review of the second major desktop publishing release of the year. Can SoftLogik's power package challenge the might of Calamus?

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CREDITS

Published by:

Gollner Publishing Ltd,
10 Theatre Lane, Chichester,
West Sussex. PO19 1SR.
Telephone: (0243) 783932
Fax: (0243) 789809
Email: stworld@CIX

Publisher:

Hugh Gollner

Editor:

David Stewart

Art Editors:

Hugh Gollner, Ian Tindale

Editorial Assistant:

Jonathan Ross

Art production assistants:

Paula Mabe, Allison Luckins

Contributors:

David Gristwood, Jeff Lawson,
Graham Wayne, David Jones,
Mathew Lodge, Steve Cassidy,
Andreas Ramos, Garry Knight,
Mark Annetts, Dimitri Koveos,
Günter Minnerup.

Subscriptions:

Brenda Skinner (0243) 533575

Advertising:

John Riding (0225) 447453
Mike Hayes (0457) 875229
Fax (0457) 871852

Printed by: Redwood Burn,
Yeomans Way, Trowbridge,
Wiltshire, BA14 0QL.

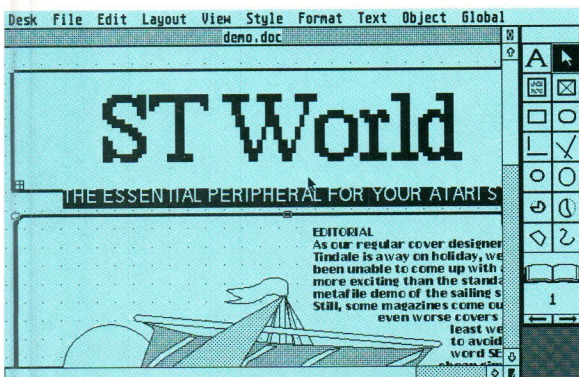
NEXT MONTH

Supertest: Sound Samplers
MegaFile 44 removable HD
Mega Big ST screens! (yep)
Plus much, much more!

Contents may be subject to change due to re-scheduled product release dates; priority exclusives; possible strikes, severe snow drifts, premature retirement of editorial staff, or total global loss of ozone. We will, of course, do our best not to let any of these events get in the way.

COVER ART

This month Ian Tindale has used a combination of electronic artwork and conventional colour reprographics to produce the cover of our scanning special report. In addition to looking at scanning techniques and scanner types, we have rounded up just about every scanning product available for the ST. So read on...



ParSec Megapixels on ST

Elmtech Research have announced the launch of their highly specified ParSec graphic interface. The ParSec board is actually a stand-alone module which is connected to the ST via a lead plugged in to the cartridge port. This device comes in two versions; the 4768 model offering 4096 colours with a resolution of up to 1024 by 768, while the 8768 model offers 16.7 million colours at a maximum resolution 1024 by 1024.

This is a professional product aimed to serve a wide range of graphic processing requirements. It will not instantly transform your ST into a very high resolution multi-million colour machine, rather it gives access

to these facilities as an external function - the ST is used as an I/O control interface and terminal, while most of the work goes on inside the ParSec.

The ParSec is based on a 50MHz, 6.25 MIPS Texas Instruments processor, with 768K of RAM. The 8768 model can be expanded to 16Mb of RAM, and has two additional video ports allowing 4 + 4 bit-plane output to be generated, thus giving special effects such as overlaying images. There is also a genlock module which will allow ParSec output to be mixed with a second video source.

RS232 and SCSI interface ports are present as standard,

so the ParSec is capable of addressing mass storage devices such as CD ROM and high capacity hard disks, and other input/output devices such as plotters, graphics tablets, mouse, etc..

A graphics processor such as the ParSec is of limited immediate use without specially designed software. Elmtech, however, will be supplying a graphics package, with promise of CAD, DTP and Professional Art software to follow. There will also be a GEM to ParSec conversion program which will allow many standard GEM applications to run without modification with the advantage of increased resolution and colour.

The ParSec will be launched at the Atari show, with finished production models available by the end of August. The price has been set at £799 + VAT, although prices for the 8768 options have not been established due to volatile RAM costs. Elmtech will also be able to supply the necessary Multisync monitor at a competitive price.

Elmtech Research,
6 Witherford Way, Selly Oak,
Birmingham. B29 4AX.
Telephone (021) 472 5719

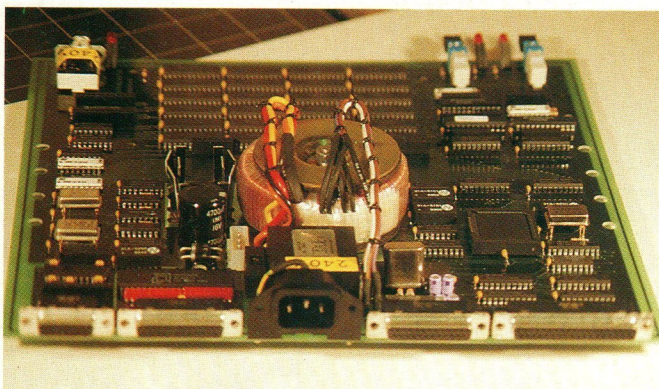
Signa drops DynaCADD

Signa Publishing Systems' exclusive deal for the UK distribution rights of the sophisticated Canadian CAD package, DynaCADD, has now fallen through.

Commenting on their decision to pull out from distributing this long anticipated 2D and 3D program, Mike Dale, Signa's Managing Director, issued an apologetic statement, in which he maintained that "Despite the time spent on this project and many attempts to finalise an agreement with Ditek International, we have withdrawn from negotiations as we could not reach a conclusion which we felt would allow us to promote and support DynaCADD in a way which would do it justice. It is a disappointment, but we could not see any other solution. I personally apologise to those potential clients who were sufficiently interested in DynaCADD to call us, and regret any inconvenience Signa may have caused them."

For more information on DynaCADD, contact Ditek at:

Ditek International, 2651 John St., Unit 3, Markham, Ontario, Canada, L3R 2W5. Phone: (416) 479-1990.



Inside the ParSec graphic interface. Note the line of i/o ports along one edge of the board.

FSP III on the way

Mirrorsoft's low-profile DTP package, Fleet Street Publisher, is due for an upgrade later on this year. Leaping to version 3, FSP will build on its reputation for giving excellent typographical control, by offering an improved user interface with the ability to import Metafiles (GEM object file) and other ST graphic file formats. FSP has always been considered as a good front-end to the PostScript page description language, although the current version of FSP has weak page layout facilities.

Few details of FSP III have been released yet, although an August or September launch date is expected. Watch this space for more news about the product when Mirrorsoft have finalised its specification.

Mirrorsoft, Irwin House, 118 Southwark Street, London. SE1 0SW. Tel: 01 928 1454

That's Write - That's Right

It's been a long time since a high-spec ST word processing package was launched on to the UK market, but the arrival of That's Write is set to wake up the WP scene with its impressive list of features. That's Write, from Compo, has been available in mainland Europe for a while now, but has only just found its way into the UK.

Although TW uses drop-down menus, dialogs and alerts to the full, it is not a very 'standard' interpretation of the GEM user interface. The most obvious deviation is the lack of proper GEM windows, a move which was no doubt engineered to improve screen handling speed, which is noticeably better than with many applications of this type. TW will permit several documents to reside in memory at one time. Although the program does not require GDOS, it does use standard GDOS fonts, and thus has rather limited typesize control. But looking on the

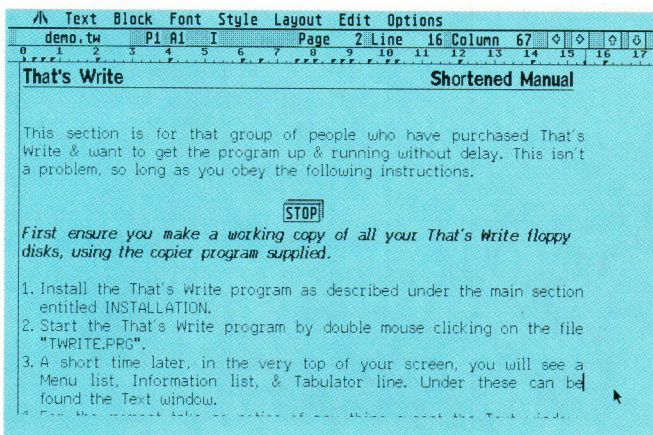
positive side, a wide range of fonts already exist in this format.

The TW specification includes: proportionally-spaced, multi-font text; multi-column layouts; adjustable line spacing; graphic import; style sheets (tagging); hyphenation with editable exception table; spelling checker; keyboard shortcuts; command macros;

decimal tabs; multi-line headers and footers; and much more.

TW should be on view at the Atari show, with the finished product shipping shortly afterwards with a retail price of £129.

Cavendish Distributors Ltd., 209-212 Tottenham Court Road, London. W1 9AF. Phone: 01 323 4761





If he's using an ordinary spreadsheet he's waiting. If he's using LDW Power he's finished.

With 2 Megabytes of RAM, the Atari Mega ST2 is one of the most powerful machines on the market.

Unfortunately few people are using the spreadsheet that best takes advantage of this power.

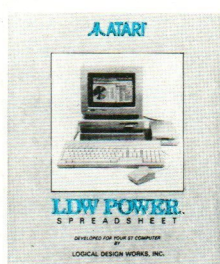
LDW can calculate almost twice as fast as Lotus 1-2-3 Release 2, the industry standard.

But it is not just speed that makes LDW Power stand

out, it's performance as well.

LDW Power is a full function spreadsheet that boasts an extensive array of formats, commands and functions. Users can also create five types of graph, providing a particularly useful presentation tool.

The LDW Power spreadsheet is also Lotus 1-2-3 compatible, allowing you to read and write Lotus files directly to and from a PC compatible file.



Features:

- ★ Lotus 1-2-3 Release 2 compatible
- ★ GEM and Lotus interchangeable interface
- ★ Simultaneous use of up to four worksheet windows
- ★ Condensed display allows 29 rows per window
- ★ Customised monetary formats
- ★ Note feature for every cell
- ★ Close to 300 commands
- ★ More than 80 functions
- ★ Five graph types: XY, line, bar, stacked-bar, pie
- ★ Optional grid, average/standard deviation lines
- ★ Built in printing procedure for graphs
- ★ Metafiles and laser printer (GDOS) support
- ★ Sideways printing programme
- ★ Direct loading of Lotus and ASCII file
- ★ Macro language compatible with Lotus 1-2-3
- ★ Macro recorder

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Three new financial packs from Digita

Digita International announce the release of three new fiscal packages for the ST, previously only available on the PC.

Personal Tax Planner, due for release at the Atari Show, is a unique program which calculates your income tax liability for a given tax year, in addition to providing pertinent facts about your tax position. By taking you through a series of questions, as per tax return form, the program can then translate your input into a personal tax breakdown, thus aiding in Tax Return completion and providing an accurate document for verifying the Inland Revenue's calculations; and all this for just £39.95.

Cashbook Controller contains a number of additional features, all making for a powerful management information package for the small business. Included are: entrance of credit sales and purchases; automatic double entry routine completion; sales and purchase ledger control accounts; total debtors and creditors; automatic calculation of VAT; and income and expenditure analysis. Set for a June 30th release and carrying a £49.95 price tag, the program integrates automatically with Final Accounts, which is set to retail at £29.95.

Digita International, Kelsley House, Barns Road, Budleigh Salterton, Devon. EX9 6HJ. Phone: 0395 45059

Mac Emulation gets better

Two major new accessories have been released for the Aladin Macintosh emulator. The Aladin SLM804 Laser driver allows the Atari Laser printer to be driven directly under Aladin. The driver yields full 300dpi resolution and allows the SLM804 to be used as if it were an Apple LaserWriter. The driver is available free to all registered Aladin users.

The Aladin Exchanger is an add-on of equal, if not greater, importance than the Laser driver. The Exchanger allows single or double-sided Macintosh disks to be slotted into a standard ST disk drive from where they are converted (by copying to another disk) to Aladin format, using a small utility program running in 'ST mode'. This process also works in reverse, enabling Aladin disks to be converted so that they can be read by a genuine Macintosh. The advantages are enormous; now it is possible to exchange programs and data between Aladin and Macintosh environments, without having to put the two machines side by side for serial-link transfer. Conversion takes about 6 minutes for a double-sided disk, but perhaps the biggest inconvenience is that of having to remove the Aladin cartridge to plug in the Exchanger.

The Aladin Exchanger cartridge is based upon the technology used in the Happy Computer Discovery Cartridge and the more recent 'Quickverter' derivative, both of which are not officially available in the UK.

Aladin Exchanger retails for £150 + VAT - quite a sum - but it still works out cheaper than buy-

ing an external Mac disk drive, even if it could be interfaced to the ST. The convenience of direct file exchange and the ability to drive the Atari Laser printer opens up many new possibilities for Aladin - a healthy boost for a good product which has been overshadowed recently by the arrival of the bigger-ROMmed Spectre 128 from HiSoft.

Exchanger sneaks on to the scene before Spectre GCR, the version of the Spectre 128 Macintosh emulator which can read Mac disks. GCR is due to be introduced into the UK, through HiSoft, by the end of August. Spectre GCR will be an all-in-one emulator with 128K ROMs and a built-in interface to allow Mac disks to be read directly from the ST's disk drive - when the ST is in its 'Mac mode'. Atari Laser support is planned, and Appletalk networking interfaces are also under develop-

ment. GCR will cost £329 complete, and HiSoft will be offering an upgrade path to existing Spectre owners.

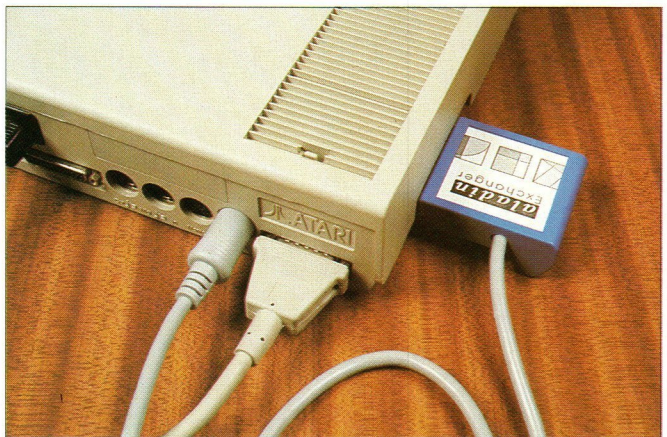
Meanwhile, one of Spectre's biggest weaknesses, that of printer support, can be eased by purchasing PrintWorks, a set of printer drivers which work with the emulator. PrintWorks costs £69.

For more details about the Aladin SLM804 Laser driver and Exchanger cartridge, contact:

Signa Publishing Systems, Alexander House, Station Road, Aldershot, Hants. GU11 1BQ. Phone: 0252 341600

For Spectre 128, contact:

HiSoft, The Old School, Greenfield, Bedford. MK45 5DE. Phone: 0525 718181



The Aladin Exchanger cartridge allows Mac disks to be read by the standard ST disk drive - a disk conversion process, unfortunately, and not usable from within Aladin itself. The flying lead plugs back into the ST's external floppy drive port.

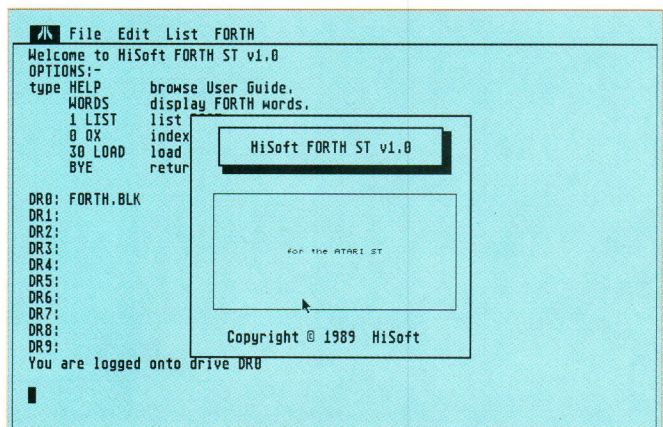
Go Forth with HiSoft and...Program!

If you're one of those programming language enthusiasts who just can't let go, then: 'this over eye your cast'. A new Forth programming system is due to hit the ST from HiSoft. This is a serious and very capable language, which is often used for programming real-time systems, but is equally at home when used for more mundane tasks. HiSoft Forth is a full 32-bit version of this unusual stack-based language. It can generate stand-alone executable program files and gives full access to all AES, VDI, GEMDOS, BIOS and XBIOS sections of the STs operating system.

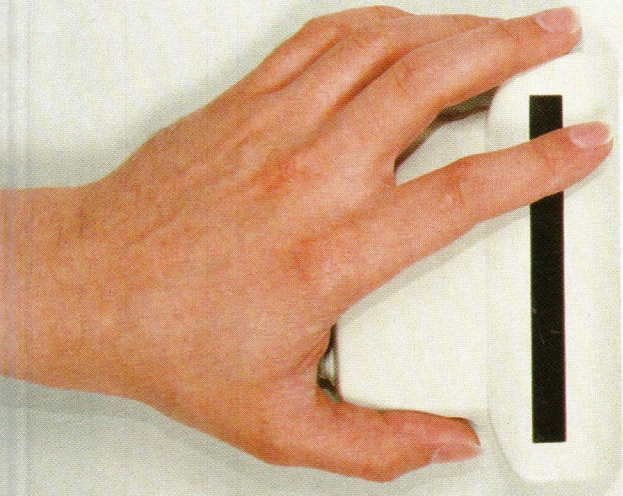
The package includes a full-

screen editor, and an MC68000 assembler to facilitate in-line code. A GEM shell in Forth source code is included, and support for multi-tasking and interrupt programming is provided. HiSoft Forth uses subroutine-threaded code with embedded assembler macros to improve performance. The compiler has been programmed using Devpac2, and will be available for a keen £24.95 shortly after the June Atari Show where it makes its debut.

HiSoft, The Old School, Greenfield, Bedford. MK45 5DE. Tel (0525) 718181



The GEM-based shell for HiSoft Forth.



A scanner for all reasons


We offer our customers a complete range of solutions for their productivity needs - that's why we have introduced the Hawk 432 and the Hawk Colibri hand-held scanner to complement our market-leading Hawk CP14.

The Hawk 432 offers unparalleled performance and quality, up to 400 dpi scanning at full A4 size. This is ideal for capturing quality line art or photographs - and when used in conjunction with AUGUR, provides the perfect professional Optical Character Recognition (OCR) solution - even automatic batch processing!

Colibri is our entry level scanner, which

despite its small size and aggressive price, offers many of the advanced features of its big brothers including 100, 200, 300 and 400dpi scanning, up to 32 grey levels sensing and 105mm scan width. There is even Colibri OCR - available today!

Of course, all our Hawk series of scanners come complete with Scansoft and HJB Paint Plus the amazing software driving forces which couple up with the scanners to produce results of sheer quality. There is even a typeset 150 page manual with each scanner! So whichever Signa scanner you opt for, you can be sure of top performance which will stand you in good stead, no matter what your application.



Signa
Publishing
Systems Ltd

HAWK CP 14

Alexander House,
Station Road,
Aldershot,
Hants GU11 1BQ.

Phone (0252) 341600.

Fax (0252) 341584.



The ATW Ascendancy

Although the Atari Transputer Workstation (ATW) has been demonstrated at many a show, it is only recently that Atari and developers, Perihelion, have begun to market the machine at a serious pitch. However, recent activities suggest that companies and institutions are not taking long to recognise the awesome potential of this parallel processing computer. Now, with the machine poised to enter the market in some volume, Perihelion were keen to clarify their business position in respect of their close working relationship to Atari and future sales of the ATW. Under the terms of their deal with Atari, Perihelion have the exclusive distribution rights for the ATW in the UK. In addition, they also have the sole worldwide distribution rights for any value-added peripherals like bridgeboards, farmcards and network cards.

According to Perihelion spokesperson, Peter O'Keefe, the current emphasis in marketing the machine is in seeding the educational market, whilst encouraging software developers to adopt the machine. Through two recently won contracts from the DTI, Perihelion have set up 20 awareness centres in the UK based on the Atari ATW and running Helios, the Perihelion parallel-processing operating system. These centres are aimed at small and medium-sized businesses and offer training courses on the ATW and its uses.

The second DTI initiative involves the installation of Helios at 20 Universities, including a

demonstration centre at Southampton University, who have three ATWs at present. Between the two initiatives, Perihelion hope to make an impact at both ends of the industrial market; the further education facilities that will develop new software for research and data processing, and the small to medium business user who is looking for a system, or prepared to port over existing Unix / Fortran applications and data which is a relatively straightforward recompiling operation, although many routines would have to be rewritten in order to take full advantage of the parallelism of the ATW's architecture.

Perihelion also sponsored a well-attended conference recently, at which over 50 UK software vendors discussed participation in a scheme by which they will be supplied with development systems. According to O'Keefe, they are currently signing up one software developer a day. Perihelion predict they will release the first catalogue of third-party software in the fourth quarter of 1989.

The company are putting a lot of faith in the ATW's outstanding price/performance ratio. The systems, which start from £5000, are competitive against a whole range of existing machines, from the top-of-the-range PC to the low-end super-computer. As O'Keefe puts it: for £50,000 you can have a desktop Cray running at 500 mips! The average system being installed at present (if one could call anything about the ATW average) costs approximately £20,000.

This configuration suits large data processing and other research projects; typically, the systems currently in use have gone to educational users or other institutions.

Perihelion reckon they are currently selling all the machines they can get from Germany, but these are going exclusively to Government departments, Universities and software developers, at the exclusion of end-users. This emphasis reflects

the urgent need for software that can really take advantage of the processing power and, in courting the educational market, Perihelion are following the proven market trail established by Apple in the US and now Steve Jobs with the NeXT computer, which is also being made available to the institutional groups for much the same reason. However, it will be some time before the kind of exciting software ST users can only dream of will be available in any quantities. The Atari Transputer Workstation is destined to be a computer of the 1990's.



HiSoft gain rights to Lattice C version 5

HiSoft have announced that they will be taking on the Lattice 5 C compiler for full distribution and support. This should establish a more secure future for the product in the UK which is undergoing a major upgrade to reach V5. This move comes after the demise of previous Lattice distributor, Metacomco, who have not yet made any formal announcement of their future plans.

HiSoft will be working with Lattice to produce a high-spec product with greatly improved code generation which will

make the compiler very competitive in terms of object code quality. Lattice V5 should be ready for a late August release. The package will include: an editor; debugger; linker; and optimiser. Although prices have not yet been confirmed, the package is expected to retail for a shade under £100, with an upgrade for existing Lattice users at around £40.

**HiSoft, The Old School,
Greenfield, Bedford. MK45
SDE. 0525 718181**

More Ram from Ladbroke Computing

Ladbroke Computing, the Preston-based Atari specialists, are offering a RAM upgrade service for STM and STFM owners. The upgrade board can take your 512K ST up to 1Mb or 2.5 Mb, and has to be fitted by one of Ladbroke's service engineers. The board costs £60, fitted, but that's without the RAM chips. Because DRAM prices are so unstable at present, potential customers are invited to phone for the latest prices of the populated boards.

Also available from Ladbroke Computing, is a track

ball which can be used as a plug-in replacement for the Atari mouse. This device is actually a standard Atari VCS track ball which has been converted for use with the ST. It should be ideal for uses as diverse as CAD and Missile Command. A snip at £24.99

It is also worth mentioning that Ladbroke offer a good repair service for broken STs and peripherals.

**Ladbroke Computing, 33
Ormskirk Road, Preston,
Lancs. 0772 203166**

Genlock Sync'ed to Atari

At long last, a fully featured genlock for the ST is going to be distributed in the UK by Digita International, previously known in the market for their business/utility software. For some time now, the DTV honours have gone almost exclusively to the Amiga, primarily due to the lack of an interfacing unit that would convert the RGB signal of the ST into standard video signal and mix it with pre-recorded video pictures.

The Multigen genlock, a hardware device that will take

the output of the computer and a video source like a VTR or camera, has not yet gone into production according to company director Jeremy Rihl. A prototype model will be demonstrated at the Atari Show at Alexandra Palace, but when asked about the specifications of the Multigen, Rihl was extremely cagey, saying he could make no comment before the show. He was prepared to say that the unit "would do everything that people have asked for" although he was unable to say who those

people were. He also confirmed that the Multigen will work in all three video standards (PAL, SECAM and NTSC) and that it will retail for £200 plus VAT. Production models will be available approximately four weeks after the Atari show and Digita are offering a 10 percent discount on orders placed at the show.

Digita International, Kelsley House, Barns Road, Budleigh Salterton, Devon. EX9 6HJ. Phone: 0395 45059

Third Coast Hard acceleration

If you are hungry for more computing power, then Third Coast Technologies have the upgrade for you: a replacement 68000 processor chip running at 16MHz - quite an improvement over the STs standard clock speed of 8MHz.

Hypercache ST uses a speeded up Thompson-manufactured 68000 processor, and comes with 8K of instruction/cache memory which can be turned on or off under software control. Although the German designers of Hypercache claim extensive compatibility (and I quote: 'it runs Laser C and Calamus' - Ed.) it can be switched back to a more sedate 8MHz mode.

Mega ST owners will be disappointed to learn that Hypercache will not plug in to the expansion bus of their

machines - it must be fitted in place of the old 68000. For owners of non-Megas, however, this means that they too can have an accelerated ST.

Third Coast will be offering a fitting service. No price has been set, but Hypercache is not expected to cost more than a couple of hundred pounds.

To give you an idea of the kind of performance improvement to expect, here's a table of speed increases as clocked by the manufacturer:

In a remarkable two-pronged

Program	Speed gain
1st Word search and replace	63%
Calamus screen redraw	58%
Calamus page RIP before printing	83%
Savage benchmark ('87 Megamax C)	81%
Quicksort benchmark ('87 Megamax C)	86%
GFA Basic	73%
That's Write, text formatting	60%
(a 100% gain is roughly a doubling in speed.)	

attack on ST processor speed, TCT have also released information about another speed-up product, the CMI MC68000 Processor Accelerator board. The CMI board is similar in many respects to Hypercache. It too is a replacement 16MHz SGS-Thompson CPU chip which can be fitted to just about any ST. The CMI board has a socket for a 68881 maths-coprocessor, and a blitter socket as well. Speed improvements are said to be in the order of a 30-40% increase, depending upon the program being run. Details of prices and availability have yet to be announced.

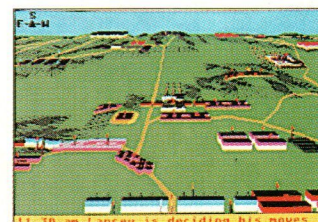
For more information, contact: Third Coast Technologies, Unit 8, Bradley Hall Trading Estate, Standish, Wigan. WN6 0XQ. Phone: 0257 426464

Waterloo guns for War game victory

Despite being signed up for a series of 'Battlescapes' to be released by Atari UK, Peter Turcan's second war simulator, based on the famous battle of Waterloo, has been released by PSS through Mirrorsoft.

Waterloo uses the standard Turcan game interface which features accurate static 3D perspective views of the battlefield, coupled to an intelligent command parser through which you can issue battle orders or interrogate your fellow commanders for status reports and so on. Perhaps the greatest asset of these games, certainly in the eyes of wargame enthusiasts, is the historical accuracy and subtle detail which has been woven into the games. Waterloo costs £24.99.

PSS/Mirrorsoft, Irwin House, 118 Southwark Street, London. SE1 0SW. Phone: 01 928 1454



MicroMan Systems chart designer

People use the EasyDraw object-oriented drawing program for all sorts of tasks, but sometimes you just can't help thinking that the job you're doing really needs a dedicated pro-

gram. Chart Ed is such a program. It is a general-purpose chart design and editing tool which can be used for creating flowcharts and structure diagrams. The program generates

.GEM object files which can be imported into other packages, such as: EasyDraw, Calamus or PageStream.

Chart Ed makes extensive use of GEM and, therefore,

requires the dreaded GDOS to be installed. The program's user interface is nicely designed with pleasant features, such as: auto scrolling when objects are dragged out of the window area. The program has a range of standard symbol types, which can be connected with arrowed lines. Text may be placed anywhere on the diagram, and when a symbol is dragged, its connections remain attached and are 'rubber-banded' as the symbol element is moved.

Currently, Chart Ed has no official distributor, and no fixed retail price. For more details, contact:

MicroMan Systems, PO Box 45, Horsham, West Sussex. RH13 7XR. 0403 732 916

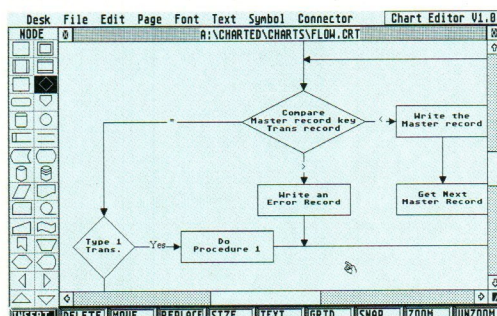
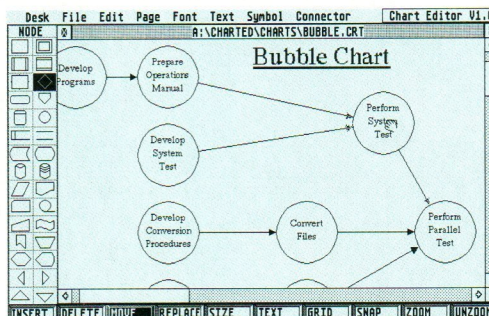


Chart Ed. Create program flowcharts using this EasyDraw-style environment.



Many uses for Chart Ed. which do not have to be of a programming nature. When an element is dragged, connections remain anchored as the lines are 'rubber-banded'.

The Big Screen Taxan

You've seen them at computer shows running pre-release versions of Desktop publishing packages. Nice. But try and buy one and you'd be fighting a losing battle. Don't give up hope though; if you contact Signa Publishing, they'll tell you that an A3-sized 'megascreeen' is now available. Raise the £1700+VAT asking price and they'll gladly supply you with one.

The item in question is a Taxan Viking paper-white A3 monitor, a substantial beast with a maximum 1280 by 960 pixel image array with an effective resolution of 91dpi. But what do these figures mean? Fire up an ST system with the 'MatScreen M110' installed, and you will see a quadrupling of the standard SM124/125 screen area, in which most well-behaved GEM programs can extend their windows giving a large, clear and steady picture.

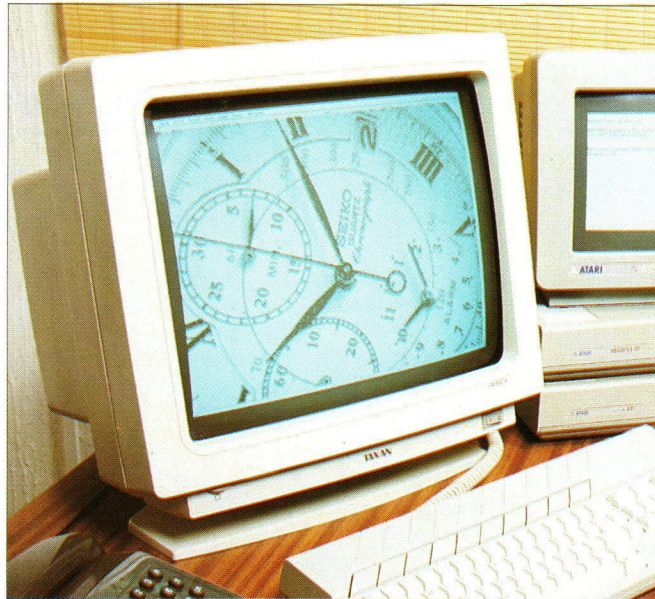
The MatScreen M110 can only be connected to a Mega ST as it has to be driven by a dedicated graphics card which, in this case, is a Seimens-built board, plugged in to the Mega's

expansion bus.

This is an ideal peripheral for those who are really serious about their Desktop Publishing or CAD applications where the increased screen size allows much more of your document or drawing to be viewed and

worked on. For more details, contact:

**Signa Publishing Systems,
Alexander House,
Station Road, Aldershot,
Hants. GU11 1BQ.
Phone 0252 341600**



Taxan 'megascreeen' - ideal for DTP and CAD applications.

View from Above

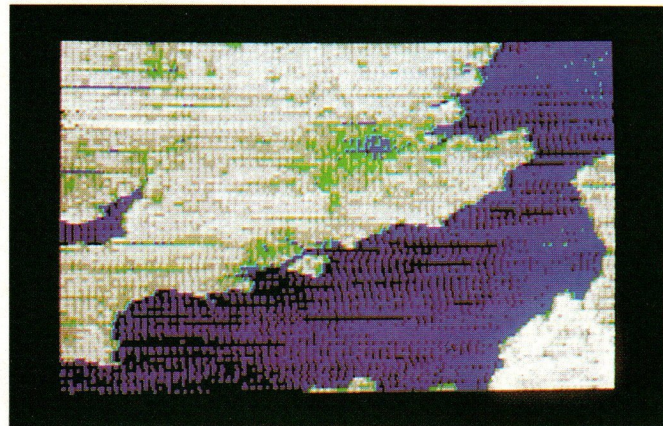
Joining the established 'Timestep' weather satellite receiving package, is a new low-cost decoding system for the ST. WX_SAT is the control program (to run on any ST, 520, 1040 or Mega) which takes data via an external decoder from a satellite receiving dish, and forms colour pictures in the ST which can be zoom-viewed, saved to disk and animated.

As weather fronts sweep in over the Atlantic, it is possible to monitor their progress, and with a bit of inside knowledge, to

identify exactly what is coming. This system has many uses ranging from education through to practical on-site installations which need access to this kind on information.

The software will cost between £20 and £30, while cheap receiving equipment can be obtained for around £70, and a decoder for about £60.

**Contact: David Lyons, 41
Camphill Road, West
Byfleet, Surrey. NT14 6EG.**



Just one of the many views of Earth which are beamed down from the various weather satellites orbiting our planet.

Minix on the move

Enthusiasts of Prentice Hall's Unix-like operating system for the ST, Minix, will be pleased to learn that 'The Minix Centre', of Norwich, will be supporting the product over a range of formats including the ST.

Minix is a clone of the established UNIX operating system. Minix/UNIX is a multi-tasking character-based operating system which has only just found its way down to the humble home/small business micro, now powerful enough to run it. Minix is compatible with UNIX V7 calls, and is supplied complete with a K&R standard C compiler and a range of tools and utilities.

The Minix Centre can supply the ST version of Minix for £85 + VAT, with a range of Minix/UNIX books also available.

Additionally, TMC will soon be able to supply and support a range of applications running under Minix: a UNIX-type spreadsheet, database, Kermit TEX, and the popular uEMACS editor. For further information, contact:

**The Minix Centre, Fornsett-
end, Norwich, Norfolk. NR16
1HT Phone: 095 389 345**

COMMENT

With the relentless advance of Macintosh emulation on the ST moving closer and closer to that ultimate goal of, well, usability, it is particularly disappointing not to see the quality of user-interface design in ST software improving at an equal pace. Will we end up running Mac software on our STs? I hope not. And it's not going to happen on a large scale, indeed, many ST owners are actively seeking that elusive 'power without the price' when they finally reach for their wallets in the computer shop. So upping the ante with a Mac emulator and some expensive 'tosh software is not the way to go.

Sure, there are some really excellent power-programs for the ST which can, when all is said and done, tan the hide off the faster versions of the computer industry's favourite box of chips - and with a degree of user-friendliness which will leave the MS-DOS users reaching for the manual at every strike of an F-key.

All of this still does not explain why ST software is not designed as well as it should be. We're talking about intuitive user interfaces here - power through ease of use. "If you want to design your program well, you should look at Macintosh software" - I say. "But that's an expensive piece of kit" - they reply. Rubbish. Thoughtful software design costs nowt.

It's a crying shame to think that Computer Concepts' Calligrapher still has not been bettered in terms of front-end design; it had a truly well thought-out user interface, and even made GDOS worth persevering with. What a pity the program never made it.

With the prospect of some great software and hardware products about to come on stream for the ST, why can't we have our cake and eat it? A little more thought and planning put into software design could make this happen.

David Stewart, Editor.

The word is PROTEXT...

More and more people are now recognising Protex as the word processor that the ST has been waiting for. Developed over a period of 4 years, Protex has been designed to be fast, flexible and efficient. The emphasis is very much on word processing.

Unlike its competitors, Protex does not use Gem. The scrolling speed is four times faster than that of Gem based word processors. Yet Protex is still WYSIWYG and still allows access to desktop accessories.

Protex is faster all round; for example the search and replace command is six times faster than First Word +, and the spelling checker, too, is faster.

Protex has all the features you would expect from a good word processor - many text editing commands, print commands, spelling checker and mailmerge. What you might not expect though, is the refinement and thought that has been put in to make Protex ideal for the novice or the experienced user alike.

"To sum up, Protex is probably the most powerful word processor on the Atari ST and is quite likely to become the best selling too"... ST USER 4/88

..."At last one that seems to fit most of what I call essential in a word processor" PAGE 6 #34

..."Extremely good for manipulating and merging large text files". "Wins hands down as the all round package". ST USER 8/88

A brief summary of some of Protex's features ...

Box manipulation	move, copy, or delete any box as well as blocks	Proportional text	will print proportionally spaced, right justified text
Configuration	configure most features to your own preferences	Quick dictionary	dictionary held in memory is very fast
Dictionaries	add/delete words to/from supplied dictionary. Create additional specialised dictionaries.	Ruler lines	any number of ruler lines to define document layout, left/right margins and normal/decimal tab stops
Disc utilities	copy files, erase, rename, type, create directory, change directory, remove directory, catalogue files	Spelling checker	check from disc or current text. Suggests alternative spellings. Works with foreign languages
Exec files	store sequences of commands in files for easy use	Symbol	Screen character symbols may be redefined
File conversion	flexible file conversion utility for other WP files	Time and date	set time and date, use within document
Find & replace	very powerful and fast with many options.	Tutorial files	help you to start using Protex
Foreign languages	10 built in keyboard languages. Easy to use accented letters: ä æ ç ö ü è é ß à ù ô õ ñ etc.	Two file editing	two documents in memory, copy text between them
Headers & footers	up to 9 lines of text, different even/odd headers and footers possible, automatic page numbering	Typewriter mode	direct printing for envelopes etc.
Help	edit and command help available on-screen	Undelete	retrieve text deleted in error
Keyboard macros	string any sequence of letters together on a single key e.g. "Yours sincerely". Load and save macros.	Word count	quick count at any time, whole text or just a block
Line spacing	variable in half lines, including 0, ½, 1, 1½, 2, 2½, 3	Word puzzles	anagram and crossword solving features
Printer support	works with any parallel or serial printer. Wide range of printer drivers supplied, incl. lasers and 24-pin printers; or create your own drivers or edit ours.	Wysiwyg	on-screen bold, underline, italics, sub/superscript
Printing styles	bold, condensed, double strike, elite, italics, enlarged, pica, NLQ, subscript, superscript, microspacing, proportional spacing, any other printer fonts		Mail merge
Program mode	suppresses formatting; auto-indent; set tab stops		The most comprehensive mail merge program available. Use it for labels, personalised "standard letters", club membership lists, and much more:

Protex is a professional word processor

If you want a fast efficient program for processing words, get PROTEXT

STOP PRESS. The latest version (4.0) includes footnotes, spell check whilst typing, a fast First Word file conversion program, background printing, macro record mode, automatic reformatting and a new menu-driven configuration program.

The conversion program will rapidly convert your old First Word/First Word+ files into Protex format, preserving your printer codes and layout.

The background printing feature allows you to continue your word processing while waiting for your printer to finish printing.

Please send SAE for reprint of review plus feature summary.

Prices

	IBM PC	Atari ST	Amiga
Protex v4	£99.95	£99.95	£99.95
Protex Filer	£24.95	£24.95	£24.95
Protex Office	£34.95	£34.95	£34.95
Protex v4 demo	£7.00	£7.00	£7.00



Releasing your micro's potential...

Arnor Ltd (STW), 611 Lincoln Road, Peterborough, PE1 3HA. Tel: 0733 68909 (24 hour)

All prices include VAT, postage and packing. Access/Visa/cheque/postal order.

Fax: 0733 67299 Prestel: 016848009



THE ART OF IMAGE CAPTURE EXPLAINED

SCANNING

The rise of powerful desktop publishing systems into the home and office environments has triggered the emergence of important input and output peripherals. John Nuttall casts a watchful eye over the current 'image scanner' market and finds that there are many ways of getting a picture into your ST, and many things you can do with it once it is there.

If a picture paints a thousand words, then every computer should have some means of getting images into its silicon matter. When William Blake wrote "This life's five windows of the soul distorts the Heavens from pole to pole, and leads you to believe a lie, when you see with, not thro' the eye", perhaps he understood that images are important, but only if they are interpreted correctly.

A scanner might be regarded as the eye of the computer, enabling it to "see", but it must do its job without imposing too many limitations, and it will always presuppose an intelligent being at the other end to help it along. The other day I was browsing through a rather expensive book on the subject of desktop publishing. I did not buy it because it flouted just about every rule on good presentation: it contained wall-to-wall text, with no illustrations, and very little white space. A good printed presentation will nearly always require a line drawing, some artwork, or a photograph.

Desktop publishing isn't the only use for a scanner: it can provide a useful visual catalogue of things, it might be used to provide a template for further work in a drawing program, or it might be used as part of a process of interpreting text, called optical character recognition, or OCR. But it is certainly in the ever expanding field of DTP that the scanner comes into its own. Look at any decent printed brochure or leaflet

and you will see a liberal sprinkling of diagrams and maps, line art or photographs.

The Silver Reed connection

Many low-cost desktop scanners, such as the Hawk CP14 and competitors, look very similar to each other. There is a very good reason for this: most are based on the same Silver Reed personal photocopier.

The Silver Reed copier works by scanning the source image, and printing it out (simultaneously) on the built-in thermal printer. It

took a flash of inspiration, and a dash of electronic wizardry to intercept the scanned image data and squirt it down a cable into the host computer where some custom software is ready to catch the data.

After all, the vital component is already there: the scanning mechanism. And with the built-in printer, the whole package makes for a rather handy peripheral.

The best, however, is yet to come. Add a suitable modem to the Silver Reed device and you have all of the elements necessary to make a Fax machine:



A scan of colour material at 400 dpi using the Hawk 432, which resulted in a massive file of over 600K, even though it was less than an A4 page. No dithering routines have been used, so that it can be used as a reference point in comparison with other screen shots.

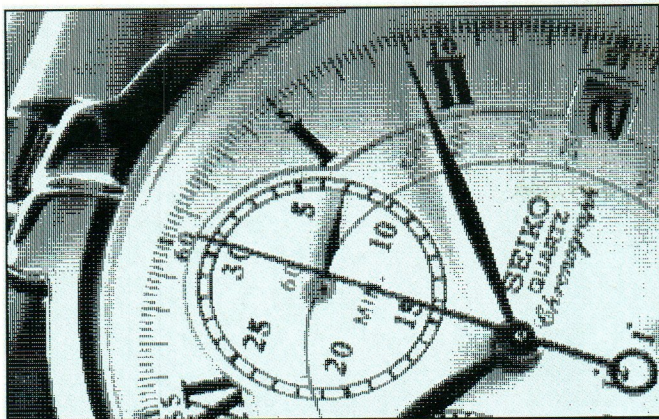


Fig 1 The Source image

scanner, printer, modem. This enhancement has not yet been performed, on any of the ST derivatives, at least. But it could well happen.

The final resolution output from the scanner is usually selected from either the hardware or from the software. In rare cases software algorithms can be inserted to go beyond the true optical resolution of the scanner, as in the Hewlett-Packard Scanjet. Most can offer 75, 100, 200, 300 dpi, with a select few offering 400 dpi.

However, more is not always better. The limitations of a printer (the Atari laser printer has a 300 dpi resolution), and memory constraints must also be considered. For example, the file size of the watch .IMG picture (400 dpi) printed here, is some 670K. High resolution is very important when it comes to publishing scanned artwork without jagged edges, and for halftones that provide both high screen frequency (closeness of dots) and a good number of grey levels. In most cases, a resolution of 300 dpi will be sufficient.

How on earth do you attempt to reproduce various levels of grey or even colour? A simple bi-level or black and white scanner makes no attempt to do this. Some hardware contains routines to add more depth to the scan: 4 bits per sample means that it can capture 16 grey levels, and at the very top of the range, something like the Microtek 400 can go as

high as 8 bits per sample, or 256 levels of grey. One way round the grey scale problem is to offer something called dithering. Instead of a single dot being off or on, dithering is a process of using several grouped dots to form each 'halftone' dot. Some scanners offer hardware dithering patterns, while others can achieve similar results using software.

But there is a caveat here: dithering always reduces the resolution of the scan. Various types of dithering or error diffusion are employed by different scanners and software. In some cases it is just a matter of trial and error to see which works best.

We are about to look at the effect of application of two dithering patterns. So

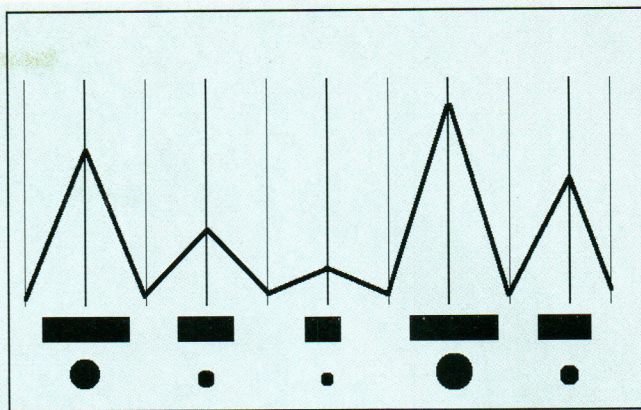
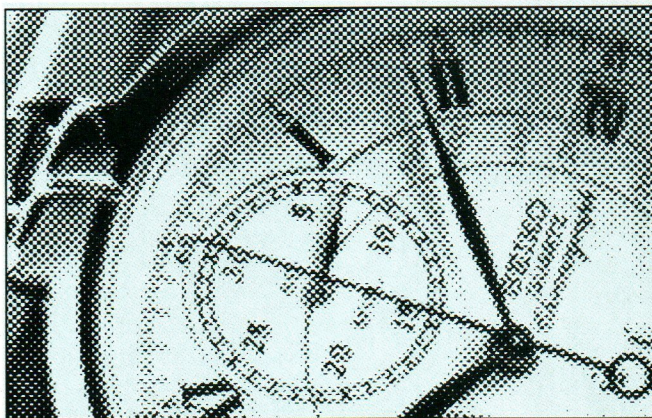


Fig 2 Variable Amplitude (different dot sizes), produces:



that we can make a fair comparison, I have taken a section of the original IMG file and converted it to PI3 screen resolution (see fig1).

These dithering routines give a rather coarse granular effect, which certainly knocks down the edge resolution. Dot size is variable (variable amplitude) while the

frequency is constant.

These shots show the effect of amplitude modulation error diffusion. This groups a number of adjacent pixels, calculating an average grey level, and places that recalculated pixel value in their place (see fig2).

This time around we have frequency modulation dithering routines. Here, the

DATA IN AND OUT

When scanning material, we are sometimes required to manipulate or store an image which is greater than the physical size of the monitor. Degas PI3 format will only allow us to hold a screen-sized image at 72 dpi. This might be sufficient in some cases, but it is far from adequate in DTP applications. Increasingly, the IMG format is becoming the de facto standard here, for a number of reasons. It is Digital Research's bit image standard for picture files, and therefore it would be quite easy to save and load from PC-based machines. As such, the header contains encapsulated information concerning the number of colour planes, and the source device pixel height and width. In practical terms, this means the file will always "hold" its resolution, and it can be greater than screen size. All the major ST DTP packages support these formats, and others.

Once the image has been scanned, it might need further enhancement in terms of changing the brightness or contrast. It

might need scaling which would enable the user to create scans larger or smaller than the original, or even to cut sections from it. In most cases stray dots appear, and the image could be improved to some extent by pixel editing facilities. We need to try to get the image as correct as possible before exporting it elsewhere, if for no other reason than that the DTP packages currently offer poor image editing facilities, and if the image is then re-scaled, it sometimes exhibits those terrible tartan patterns. HyperPaint and FlairPaint can edit high resolution IMG files.

We also need to be able to print from the scanning software, for proofing the scan. But remember, in the end the hardware is responsible for about 30% of the image, the software for a further 30%, with the skill of the user amounting to the last 40%. What you purchase will depend on your pocket, what you want to achieve, and the combination of excellent software and hardware.

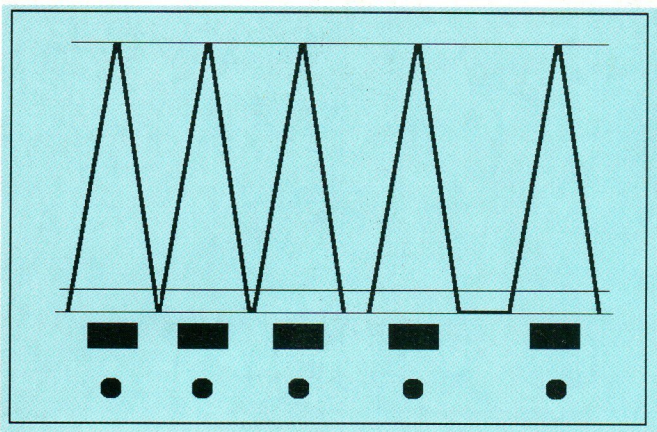


FIG. 3. Frequency modulation varying space between dots.

frequency is variable but the amplitude is constant. Besides making the image contrast look sharper, the pattern is much more subtle, almost like a noisy television picture. Edge bleeding is substantially reduced because the pixel cluster and shape is less granular (see fig3).

OCR

If you handle large amounts of text, then you should also consider optical character recognition. An ordinary

scan is just like a photograph of a sheet of paper, and it is impossible to manipulate the contents of it in any useful way. OCR on the other hand can save retyping text, and will distinguish text lines and word boundaries, so that the resulting ASCII file can be manipulated or imported into a layout program. In other words, it is properly called recognition software.

There are at least two types of recognition systems. One is called matrix matching, which

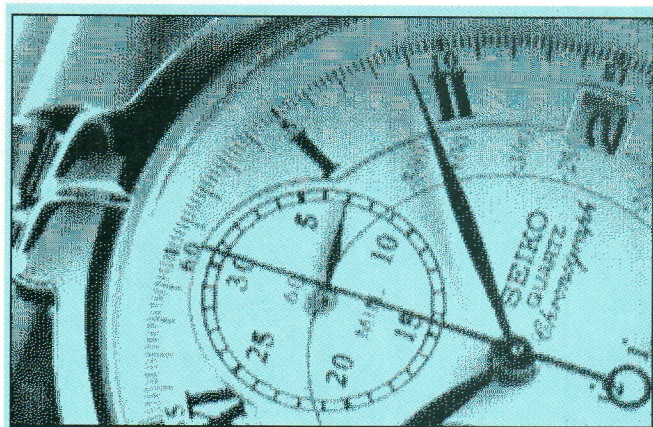


FIG. 3. Frequency modulation varying space between dots.

compares each scanned character with a database of characters held in memory. It requires a separate font database for every font you plan to scan. On the other hand, feature extraction recognizes characters by their general shape, but although it lets you scan a wider range of fonts, it's slower and tends to use more memory.

There are some questions which must be asked: does the width of the scanner limit the size of the text page that can be

interpreted? If handling large amounts of cut paper, will there be a sheet feed option? Can I adjust the contrast or brightness so that light or dark print can be catered for? Do I have sufficient control over the resolution of the scan, with a choice of 400 dpi? If errors occur with any regularity, how easy is it to access a text editor? Can I save libraries of currently used fonts and recall them? A lot of questions: check out the answers before passing go.

INSIDE STORY

The hand held scanner looks like a mouse, and in some ways functions like one. So how does a hand-held work?

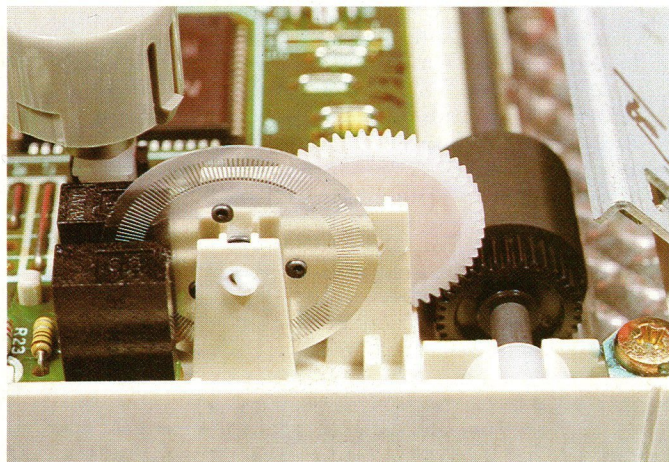
As the scanner is drawn across the source material, its base-mounted roller spins a fine slotted disk which interrupts a beam of invisible light travelling between two optical encoders; this tells the scanner how fast it is moving, if at all.

The scanner unit has an LED strip aimed downwards to illuminate the material being scanned. The

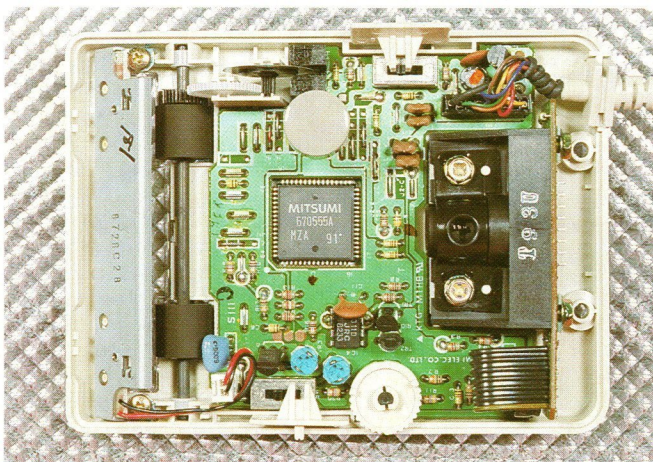
image itself is detected by a high-precision linear CCD array (the large black housing in the centre of the circuit board) which receives light through the clear window in the base of the unit via a mirror which reflects it into the centre of the scanner. The CCD array has its own lens which 'catches' the image and focuses it on to a strip of light-sensitive elements, rather like a video camera using a CCD matrix which can capture a square or rectangular image. Because the CCD can detect quantity as well as

presence of light, grey scales can therefore be registered. As the scanner is dragged along, the strips of 'sampled' light are joined up by the scanning software to form a complete image. The resolution, dithering and grey scale factors are handled by the on-board custom silicon which does some image processing before the data is sent to the ST.

The Hawk Colibri and Geniscan 4000 also function in this way, but use two mirrors to aim light at the CCD element.



The slotted wheel and optical sensor monitors the speed at which the scanner is being dragged.



Inside the Cameron Type 4 scanner.

CHOICES, CHOICES!

There is a veritable maze to wander through if you are thinking of buying a scanner, but the good news is that as volume goes up, the competition gets keener, with better models, better software and better prices. Here, we'll look at the main scanner types.



Sheetfed scanners

Sheetfed scanners are quite fast and not too expensive. This was the first type of scanner available for the ST in the guise of the Canon IX-12, with interface and software from Computer Concepts, and also Navarone Industries. They can scan at high resolution, but the problem is that they can only cope with single sheets, and they tend to damage photographs because the paper is dragged in on rollers. There are also alignment problems, because if you attempt to put a very small item into the entry slot, it skews.



Professional scanners

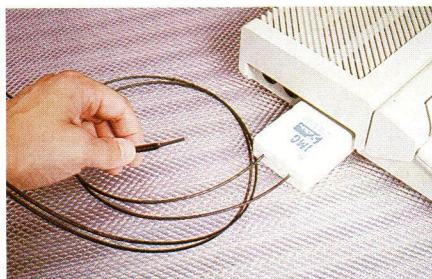
The colour photographs which appear in most magazines are likely to have been scanned by one of these expensive beasts - a commercial colour scanner which is capable of producing colour separations of a picture to the final print size in a single step. This type of scanner is just part of a sophisticated colour repro system, soon coming to a desktop near you.



Flatbed scanners

These are best for scanning flat art.

They have a glass plate on which single sheets (A4) or books or even 3D objects can be placed. In some cases the carrier moves, and in others, the object stays put while the scanning element moves. On the minus side, they are quite expensive, but essential if the scanning width of 105mm on handheld devices is insufficient. There are even overhead scanners, like the Chinon, which can handle 3D objects and flat art, but they are generally slower than sheetfed or flatbed machines. Since some models rely on ambient light for making the exposure, the quality can vary.



Fibre optic

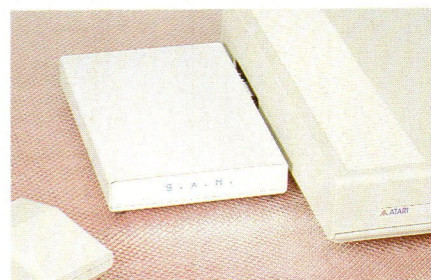
If your budget is tight, you might like to think about one of those fibre optic devices which clamps on to the head of your dot-matrix printer. One such model exists for the ST, the 'IMG scan' is available from Ladbroke Computing. This is a relatively inexpensive device which can scan to full-A4 size. But expect lengthy scan times and image quality below that of the latest scanners as a penalty for breaking the £100 price barrier.



Colour

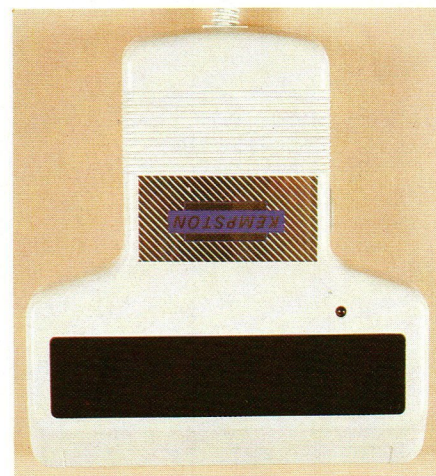
Way up at the other end of the spectrum you can find colour scanners (such as the Sharp/Howtek) which can handle the most appetizing colour originals as well as 35mm slides. This is still an area in its infancy, largely limited by the huge amounts of required RAM: one square inch of scanned colour material requiring 371K at 300 dpi, allocating 24 bits per

pixel. Then you must consider the output costs in terms of a colour laser printer or PostScript output device.



Digitizers

Crossing the threshold slightly, we arrive in the world of the video digitizer, which grab a frame from either the video recorder or camera. There are several already available for the ST, but the resolution and palette are fairly poor quality, and they are less suitable for DTP work. I am sure the "magnetic disk 35mm camera" will become very useful, simply because we do not have to go through the process of making a colour or monochrome photograph.



Handhelds

Handheld scanners are beginning to appear on the market in increasing numbers, and their main advantage is price. While they are limited in terms of the scan width (and this will vary not just on the specified width, but also on the selected scanning density), their biggest problem is one of alignment. If you slew by as much as 1mm, the scanned image will exhibit the famous staircase effect, particularly with line art. A number of more recent arrivals have a scanning density of 400 dots per inch (dpi). Expect to see 600 dpi machines in the very near future. There are two current widths on handheld scanners: the rather limited 65mm type, and the more useful 105mm width.



Now two does go into one

In 1985, when Jack Tramiel announced his Atari ST range of computers complete with WIMP environment and a Mac like mouse, the computer press dubbed the machine the 'Jackintosh'. Three years later it turns out that those headline-hungry writers were not far wrong. Aladin is a small cartridge that proves that the ST has all the power of the Macintosh at a fraction of its price.

When Aladin is plugged into your ST's cartridge port you can use a large selection of the ever growing range of high quality Apple Macintosh software including: MacWrite, MacPaint, Excel, Microsoft Word, Cricket Graf, Double Helix, MacDraft, RedRyder, WriteNow and even PageMaker. Not only is Aladin compatible with literally hundreds of Mac programs, it runs at least 25% faster than the standard Mac Plus and utilises the ST's bigger screen to give a display 30% larger than that of the Mac's.

The latest enhancements to Aladin include the facility to use the ST's hard disk, emulation of the Macintosh's sound facilities using a

simple hardware add-on, Hierarchical filing system, 400 and 800k format floppy disks and support for Epson and 24-pin compatible printers. Enhancements are always offered to existing users at minimal upgrade charges.

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Alexander House, Station Road, Aldershot, Hants. GU11 1BQ.
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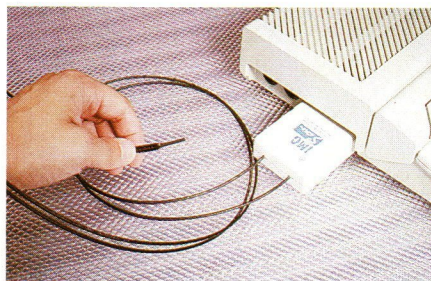
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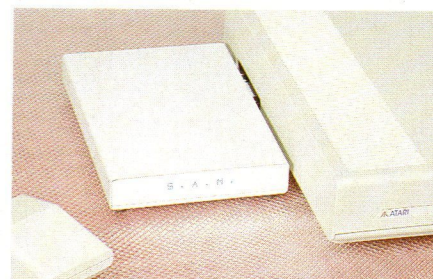
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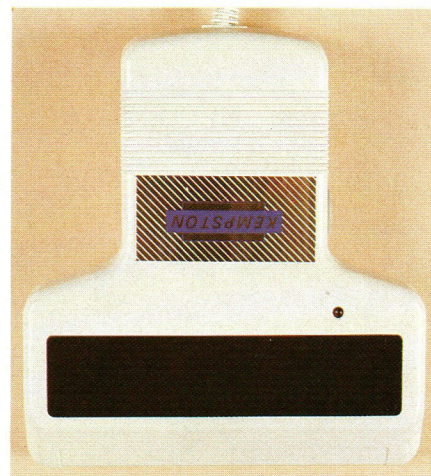
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SUPERTEST: SCANNERS



Skills Unlimited.

Awash with just about every scanner available for your ST, John Nuttall evaluates their performance. Is the most expensive device necessarily the best?

It seems like only yesterday that I set about reviewing the first available trio of scanners for our favourite machine. Actually, it was way back in issue 22, and since those Spartan days, we've come to expect better value and a greater choice. Now, with the total number of scanners fast approaching double figures, will the range make the choice any simpler? Recent surveys have shown that between 1984 and 1987, scanner sales in the US have increased by 250% annually, with another 200% increase for 1988. Which is another way of saying that we can expect to find the good, the bad, and the ugly amongst the sample. What follows is not a full review of each product, since that would take up an entire issue. What I have tried to do is to give a few

salient points on the hardware and software, and to evaluate respective strengths and weaknesses. To what extent do they assist or detract from the process of claiming good images?

If you are serious about DTP, then there are a few imperatives. Nobody can ignore the DG IMG format. Yet there are a few samples in our review that are offering Degas-only file formats. Perhaps someone will explain to me the lunacy of scanning at 200 dpi and only being able to save or load at 75 dpi. Next, you should be given the choice of scanning resolution. As the resolution goes up, so do the demands on memory and disk space. OCR is more reliable at 400 dpi. At the same time, you ought to be able to cut part of the total image scanned and

save that to disk. Also quite useful, is a zoom facility, enabling the final image to be larger or smaller than the original.

Some scanners offer proper grey-level scanning, and that will always cost a bit more. Others achieve pseudo-grey by offering dithering routines. If you are handling high quality photographic work, then go for the former type. Finally, a fairly massive saving can be made if you can live with the more limited scan width offered by the hand-held units (a maximum of just over four inches), but you might find this too limiting if you are thinking about text recognition, which isn't always limited to neat columns.

Conclusions

These products are still evolving, and what is best for one user, might not necessarily be right for another. But at the time of writing, if you want simply superb graphics, regardless of cost, the Hawk CP14 is the outright winner. Not even its bigger, more expensive brother, the Hawk 432, can produce images with

Front row from left to right: Cameron Handy scan type 2, Kempston DAATAscan, Hawk Colibri, Cameron Handy scan type 4, Datel Geniscan. Back row: left, Hawk 432; Back row top right, Hawk CP14; Back row bottom right Cameron Personal A4 Flatbed scanner.

the same sparkle. If you require OCR, then buy software which does the job: it will save you money and heaps of frustration. Less capable programs mean you'll spend a lot of time teaching the package and correcting errors - time which could be better spent typing in the text by hand. The only serious contenders here are the Hawk 432 and Colibri. If all that sounds like too much of a dent in your resources, then consider the Kempston DAATAscan. It does not come supplied with OCR, its manual is rather dismal, but it is a capable hand-held unit, with excellent software, which is still being improved, as I write.

Continued on page 21

HAWK 432

The most expensive scanner for the ST. An A4 flat-bed type based on the Panasonic FX RS-505, and offering a user-selectable 200, 300, 400 dpi resolutions. Since the document itself does not move, but rather the light source and mirrors, it makes for very accurate scanning. Dithering routines are built into the firmware, as is the process for making a negative, although Scansoft has additional routines. Sixteen grey

levels are available as well as seven levels of intensity. This scanner is recommended for OCR work, especially when used in conjunction with the optional Augur cartridge. Version 1.4 has just arrived which has additional routines for direct linking to your favourite text editor, a database facility, and batch processing. The speed of 1.4 is nearly twice as fast as 1.3. This unit also comes with IBM XT/AT interface and software.



HAWK CP14

A Silver Reed-based A4 flat-bed, with a thermal printer and photocopier mode too. It is capable of 16 grey levels at 200 dpi. Contrast is selected both by software and hardware, and the only slight difficulty is to remember to hit the start button on the scanner. It takes just under ten seconds to scan an A4 page. This time, the actual document is moved, so you need another 9" of desk space when scanning. These flat-bed

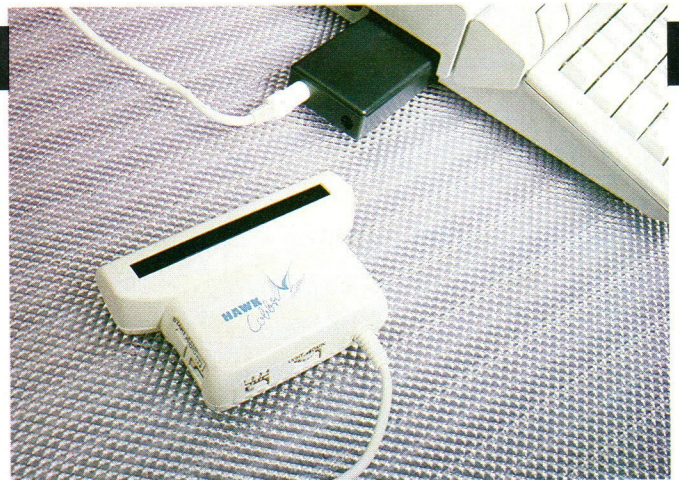
machines are capable of handling modest sized 3D objects, along with other specialised objects, such as X-Ray plates. While 200 dpi is just about adequate for OCR work, the CP14 excels in its handling of line art and photographic material. Even though the resolution is less than the 432, the CP14 produces work of outstanding quality with a depth and sparkle not available with any other unit.



HAWK COLIBRI

This unit is a handheld scanner, offering a scan width of 105mm. Four switched resolutions can be chosen, along with bi-level and 8, 16, 32 grey levels (with dithering routines). For a further £180 plus VAT, you can have a slightly cut-down version of Augur, the excellent OCR package, actually built into the interface box. In use, the Colibri was outstanding. Some very fine line drawings which were scanned and printed on the SLM804 laser printer

looked superb. I must also say that OCR'd text at 400 dpi is a lot more reliable than at lower resolutions. In terms of photographic material, it was just a shade less impressive than the CP14, and don't forget that hand-held units need a very steady hand if you are to avoid jagged edges and distortion. If you can live with that and a reduced scanning width, the Colibri is a cost-effective solution if you have demanding DTP requirements.

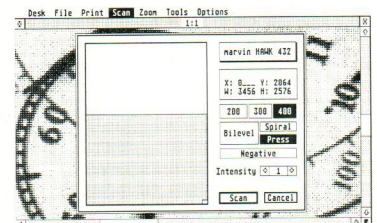


SOFTWARE: HAWK SCANSOFT

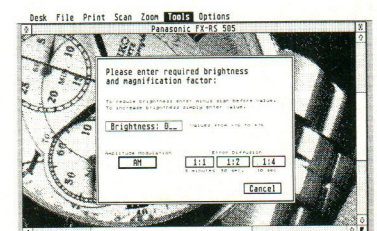
All three Signa scanners come with the same software, and the same excellent documentation running to 130 pages. Don't forget that what makes any scanning product into a useful tool, is the right combination of software and hardware. There isn't space here to list all the features, but there are two basic windows; a sort of A4 preview window, and a 1:1 window which is quite good for determining if the scan contrast or depth is looking right. A third window is used as a clipboard, where sections of the original can be placed, or used to change

resolution. File formats supported include IMG, PI3, and SCN (FAX compression). Support has been provided for a number of printers, with direct links to the OCR software, when installed. By way of editing facilities for the scanned material, HJB PaintPlus has also been bundled, offering pixel editing and a host of text, rotate, bend, and skew facilities. Both pieces of software contribute much to the success of all three scanners supported.

The Hawk 432 offers the capacity to go straight to a defined area on the A4 page, and then to scan a specific zone. This speeds up the operation considerably. The same dialogue box offers firmware-set dithering and a choice of resolution.



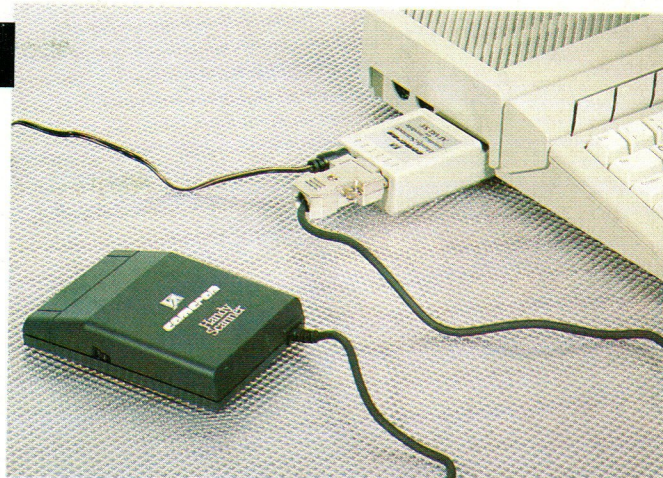
For the Hawk CP14 as well as the other units, further dithering can be obtained from the software: AM or FM error diffusion. The overall brightness can be adjusted, plus an additional routine to alter the grey/white table, the nearest we come to gamma correction.



HANDY SCAN TYPE 2

■ This is just about the smallest piece of hardware under review, measuring 12 x 9 cm. It connects via the cartridge port, as does the Type 4. Sadly, both units are limited to a 64mm scan width, which is around 2.5", and this has to be a major disadvantage. This particular model suffers a further disadvantage: it scans only at bi-level or black and white, so photographs and multi-tone material will always come out with a soot and whitewash effect. With a

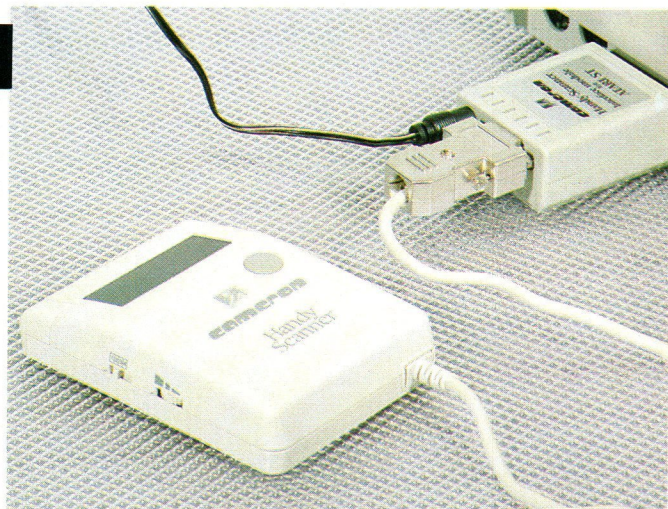
scanning resolution of 200 dpi, it performed quite well, and produced good quality scans from line art. But considering the fact that the Kempston costs only a little more, it is difficult to see how the Type 2 can compete. All the Cameron scanners come with Handy Reader, a software OCR package. The scanning software does offer the ability to splice several scans together, but in the end I cannot help feeling that 64mm units are a dying breed.



HANDY SCAN TYPE 4

■ This model shows more promise, since it offers 16 grey levels and a choice of scanning resolutions, including 200, 300, and 400 dpi, plus three dither modes. The Type 4 handles line art very well, and bi-level and colour material, with dithering, looked excellent. Again, the 64mm scan width leaves much to be desired. Time and time again I simply gave up because it was not possible to obtain the full picture or drawing. While it may be relatively easy to splice two bi-level sections, it's

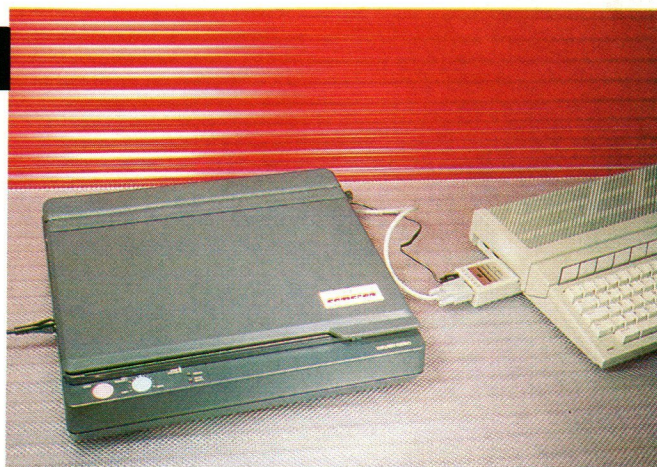
almost impossible with grey-scaled images. Once you have scanned your material, you need to export it for use in art or DTP packages. Handy Painter will only save its work in PIC format. This is a variable sized, compressed single bit plane format which is very efficient for storing data, a popular standard in Germany. The major hurdle for Cameron is that no DTP package in the UK has that facility. The only recourse is to convert it into PI3.



PERSONAL A4

■ This is an A4 flatbed scanner using the popular Silver Reed mechanism, and so contains a thermal copier unit. It scans at a fixed resolution of 200 dpi, and is quoted as coming with 4 half-tone capacity and one dither mode. There was no mention in the manual of whether or not the dither system could be turned on or off. Scan times were quite fast for an A4 page, and the quality of line art scans was very good indeed. Photographs, colour and

monochrome, looked 'overexposed', they lacked subtlety, no doubt due to the 4 grey level limit. No amount of delicate adjustment of the intensity level on the scanner could compensate for this. Printer support includes: Epson compatibles, the NEC P6 (which produced some excellent results) and the HPLaserJet, but there was no support from within the control program for its own thermal printer. This hardware is capable of more.

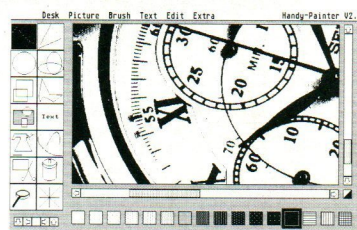


CAMERON HANDY PAINTER AND READER

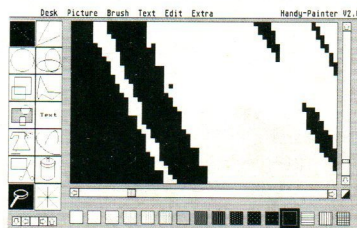
■ The Handy Painter software is replete with all sorts of good drawing facilities. In fact, the bulk of the manual is given over to its artistic capabilities, and that's where the problem lies. It tries too hard to be an art package, and the scanning part suffers. This is software with an identity crisis, since there are better drawing packages available for the ST. The software divides available memory into seven buffers. This has the very useful advantage of being able to copy segments from one section to another, with zoom facilities. Scanning parameters have to be entered including the num-

ber of lines where 1mm = 8 lines, but it does also offer horizontal or vertical options as well as normal or inverted. Handy Reader comes with the units supplied, and offers OCR facilities. It has a number of common fonts built in, plus a learning mode so that it can be taught new fonts. The intensity of the scan is fairly critical: too light and bits go missing from the scan; too dark and it starts to block up. With a lot of patience, it works.

(LEFT) A section of a scan taken at 200 dpi from the A4 Personal scanner. Small sections can be taken from the main work area and posted elsewhere, with text or other special effects added.



(LEFT) Handy Painter offers "fat bits" or pixel level editing. Most scanners require such work, because lines exhibit jagged edges or stray pixels. But at this level, it is very easy to get lost.





DATTEL GENISCAN

Looking for all the world like the Colibri, this is another 105mm hand-held scanner, with exactly the same resolution and dithering switches on the handle. It is slightly unusual in that the software will work in either medium or high resolution screen modes. However, although there are four switches for 100, 200, 300 and 400 dpi scanning, the manual states that the latter two resolutions are not available, since they would require additional hardware. Pity. It is interfaced to the cartridge port, and produces some excellent material, limited to the 80K buffer size, so that means you cannot scan an entire page at 200 dpi. Printer support is available for Epson compatibles. The software itself is the least power-

ful of any of the products under review. While it offers cut and paste facilities and the ability to shrink the image in either direction, its main, and most serious limitation is that it will only load or save in Degas PI3 format. An external converter program offers NEOchrome compatibility. It is a pity that such competent hardware (the scanner, not the interface and psu) should be so limited by such crude software, and it cannot be considered as it stands as a useful tool for serious DTP work. In its favour, it does offer the freedom to save a section of the scan to disk, and comes bundled with Paintworks. The manual is just about adequate given the limited software facilities.

Desk File Scan Edit Extras



No icons and complex windows to get in the way. This scan has come out very well indeed, at 200 dpi with dithering. But it's a great pity that it can only be saved at Degas resolution.

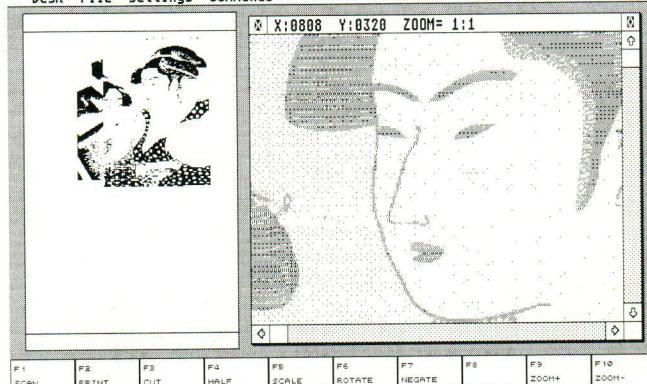


KEMPSTON DAATASCAN

When I reviewed this scanner in March of this year, I thought it had great potential, and with some new features added to the software, I think it offers good value for money without imposing any serious limitations. It offers 105mm scanning width at 200 dpi, and has a four-position switch with black and white and three dithering positions. The software supplied with the review sample was in the process of a complete rewrite, but it looks better than the old 1.01 or 1.02 releases. When scanning, there is an A4 preview window as well as a zoom window. Simply clicking on the A4 area will speed the picture around inside the zoom area. Initially, all images are saved in IMG format, but there is also

support for Degas, NEOchrome, TIFF, and MSP. It is possible to save a section of the total image, and there are extensive scaling or zoom functions. I particularly liked a feature of the load mode: offering opaque or transparent options. If the latter is selected, whatever was there before would still be partly visible. As the program runs under GDOS, it can support virtually every printer, including the SLM804. While it offers rather limited editing functions, it does come bundled with a small additional program for image translation and modification. The manual runs to fifteen pages. By the time this appears in print, Kempston reckon the new software will be finished and will be available at the June Atari show.

Desk File Settings Commands



The brand new Kempston software. There's no problem finding your way round the smaller zoom window, either by the standard GEM sliders, or simply by pointing with the mouse inside the A4 screen box. The function key indicators contain most of the key features.

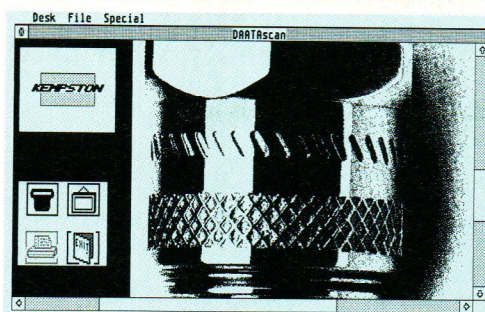
...continued from page 17

A product to consider seriously.

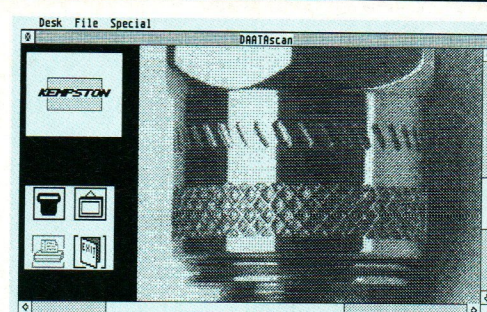
The Signa scanners are not cheap, but until the opposition can deliver a product to match their performance, the market will remain divided. If, however, you consider the price differential to be too great, then you have a good choice of less capable products at affordable prices, if, of course, you can afford to live with the disadvantages.

So what of the rest? They all require some major rethinking in software design. In some cases robust hardware has been failed by anaemic software, as in the case of the Datel GeniScan. Sadly, they impose just too many limitations for anyone who needs graphics for DTP work. If that sounds a shade too subjective, two years of Desktop scanning and DTP work have taught me the right way and the wrong way to do things.

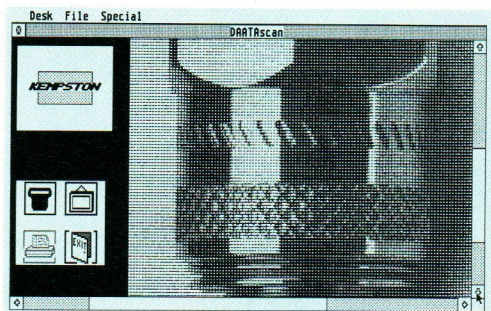
THE DAATASCAN DITHER



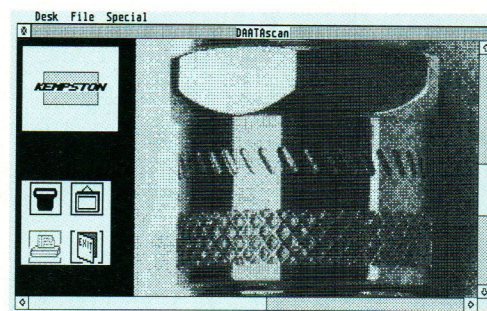
A Bi-level scan taken with the Kempston DAATAScan .



...and scanned with dither mode 1.



...try dither mode 2.



...or perhaps dither mode 3 looks best.

SUPERTEST SUMMARY CHART

	1	2	3	4	5	6	7	8
	Datel GeniScan	Kempston DAATAScan	Cameron Type 2	Cameron Type 4	Cameron A4	Hawk Colibri	Hawk CP14	Hawk 432
Hardware...								
Type	hand	hand	hand	hand	flatbed	hand	flatbed	flatbed
Optics	CCD	CCD	CCD	CCD	CCD	CCD	CCD	CCD
Scan width	105mm	105mm	64mm	64mm	A4	105mm	A4	A4
Resolution	100/200	200	200	2/3/400	200	1/2/3/400	200	2/3/400
Interface port	cart	cart	cart	cart	cart	cart	centronics	DMA
Bi-level setting	.	.	.	.	.	.	.	*3
Price incl. VAT	£189.99	£249.95	£229.88	£344.88	£678.50	£454.25	£1250.00	£1667
						£661.25 *1		
Supplier	Datel	Kempston	Silica	Silica	Silica	Signa	Signa	Signa
	Electronics	Data	Systems	Systems	Systems	Publishing	Publishing	Publishing
Phone	0782 74470	0908 677886		01 309 1111			0252 341600	

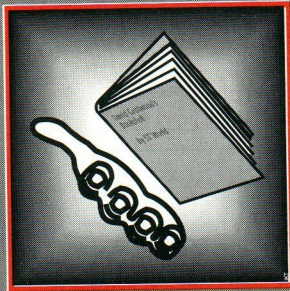
Software...								
Version	1.0	1.xx	2.0	2.0	2.0	2.63	2.63	2.63
Grey-scales	16	16	2	16	4	8/16/32	16	16
Dithering	.	.	.	.	.	.	.	.
IMG file	.	.	.	.	.	.	.	.
Other file formats	PI3	PI3, TIFF	PIC *2	PIC *2	PIC *2	PI3/SCN	PI3/SCN	PI3/SCN
Touch-up facility	.	.	.	.	.	.	.	.
OCR available	.	.	.	.	.	.	.	.
OCR supplied	.	.	.	.	.	extra	extra	extra
OCR version	.	.	3.02	3.02	3.02	1.3/1.4	1.3/1.4	1.3/1.4
Bundled with	Paintworks					HJB Paint+	HJB Paint+	HJB P+

1 - With or without built-in OCR.

2 - Conversion to .PI3 possible.

3 - In some cases, bi-level is available in software.

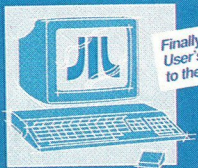
4 - Time to scan: circa 10 secs at 200 dpi for flatbeds; rest are 2-3cm/second.



Two alternatives to the official Atari Owner's Manual are given close examination in this month's Book Shelf.

DAVID GRISTWOOD'S BOOK SHELF

The Atari ST Book



Tips, Instructions, Secrets and Hints for the 520, 1040 and Mega STs

by Ralph C. Turner

'The Atari ST Book'

Ralph C Turner

Index Legalis Publishing

£9.95

ISBN 0-945959-00-1

Subtitled "Tips, Instructions, Secrets and Hints for the 520, 1040 and Mega STs", this book, in the words of the publishers, "begins where the Atari Owner's manuals left off, providing step-by-step instructions that help both beginning and experienced users to get the most out of their STs".

The first half of the book covers roughly the same ground as the Atari Owner's Manual, but in much more depth. There is the usual information, such as the way files are arranged, and how to use the item selector. The text itself is very straightforward, if perhaps a little uninspired. As a guide for complete beginners though, it is

let down a little by the lack of actual screen displays.

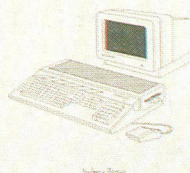
The occasional attempts at humour seem somewhat out of place. Mr Turner refers to the 'SIMPLE' programming language, with a footnote: "The creators of this language wanted to make it virtually impossible to write code with any errors in it. Therefore, SIMPLE has only three commands: BEGIN, STOP, and END. It doesn't matter how you arrange these commands - you never get a syntax error".

The second half of the book moves on to tackle more advanced subjects, such as word processors, public domain software and telecommunications. With this change of direction, there is also a change in writing style. The book adopts a question and answer routine to cover its subject matter. Whilst this approach is quite useful, as it helps answer many of the questions that newcomers will have about the ST, the technique can become annoying at times - "Question: What's a terminal program? Answer: It's the software that allows your ST to use a modem and phone line to communicate with other computers. Question: Is a terminal program the same thing as telecommunications software? Answer: Yes. In fact...".

Mr Turner wrote this book because of the lack of information about the ST when he

bought his machine. While this is a laudable motive, the result is unfortunately a rather mediocre book.

YOUR SECOND MANUAL to the Atari ST



'Your Second Manual to the Atari ST'

Andreas Ramos

The ST Club

£3.95

"This is not the Hitchhiker's Guide to the ST", explains Mr Ramos, by way of introduction, "not to the BIOS, not to Betelgeuse 5. This manual will not help you to get into the ST; this manual will help you to get around the ST. If the first one, the Atari Corporation's ST Owner's Manual, tells you how to turn on the machine, this one tells you how to use it".

Don't, however, be fooled into thinking that this is yet another introductory guide to the ST, designed purely for first-time computer users; it is far more than that ("Experienced users will learn many things which they didn't know. My experience is that programmers need this most of all; they can program, but they rarely know much about the computer", observes Mr Ramos). With this text Mr Ramos has written about the ST more thoroughly and with greater background detail than virtually anyone else, and moreover, has managed to instil his own off-beat sense of humour.

The range of material actually covered in this manual is quite extensive, and includes the mouse and keyboard, files and RAM disks, and public domain and commercial programs. However, the rather unique way in which Mr Ramos tackles

each subject means that though things start in an ordered manner, the text soon wanders off to cover a whole myriad of other subjects - witness the section on mouse pads, which includes a detailed explanation of the differences between wetsuits and drysuits, and the best way to buy the material at a scuba-diver store!

Unlike many other authors of similar books, Mr Ramos is not afraid to be critical about the ST, and Atari itself: "Atari doesn't bother much with the companies which develop hardware and software for the ST. TOS is faulty; it makes errors and is limited; it was poorly written ... Documentation for GDOS, a supplement to the faulty TOS, has been kept secret/unavailable for a long time, for no particular reason ... User groups, which are supported by Apple and IBM, are ignored by Atari".

What really does set this book apart, though, is Mr Ramos's unique sense of humour, which is to be found lurking in every corner of the book. The section on repairing a broken ST suggests, as a final measure, when all else fails, dropping the machine a few inches onto a flat surface. The advice Mr Ramos offers is: "Other users prefer to slam it down, firmly and solidly. This has the effect of jarring the connections. It works. If you are too gentle with the machine, ask your girlfriend to slam it down. They usually do this happily. Be prepared to grab it away from her after a few swings".

Interestingly enough, Mr Ramos devotes an entire chapter to a rundown of just about every ST magazine and newsletter in the world. His opinion of ST World - "the best English-language magazine".

This is really the sort of manual Atari should have supplied with the ST. Perhaps they have finally realised this, for it is now bundled with all STs sold by Atari Scandinavia. If you weren't lucky enough to get one with your Atari ST, you can buy it directly from The ST Club.

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DESKTOP VIDEO

Desktop Video is one of the latest buzzwords to appear in the computer press. We asked Graham Wayne to investigate how the ST can be put to use in the process of making videos, and he discovered plenty of scope for anyone with an ST and a video recorder. Poor Walt must be turning in his grave.

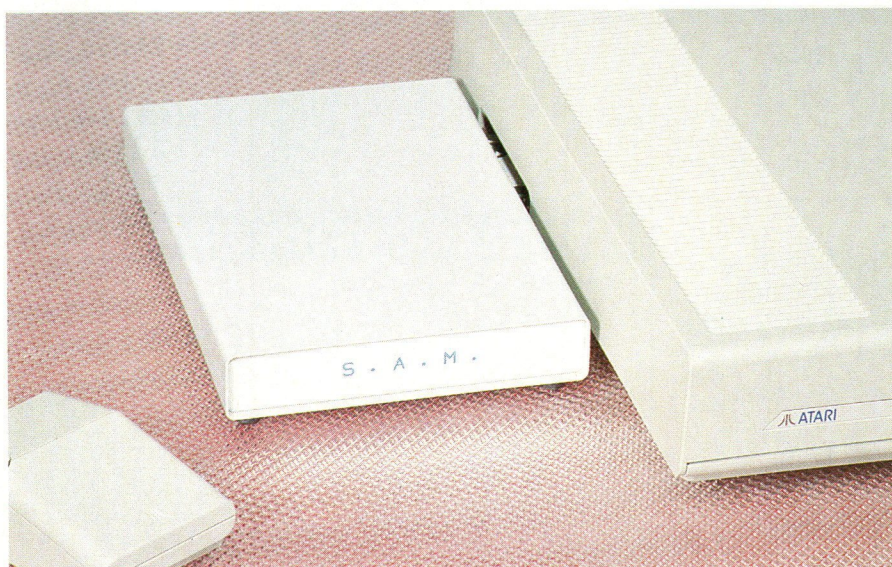


The reason that computer technology so quickly established itself in the visual medium was largely economic; photographic film effects were notoriously expensive. Even a simple dissolve from one scene in a film to the next involved complex optical printers, and traditional animation techniques remain the most labour-intensive and expensive methods of producing footage. Producers everywhere recognised the unique potential offered by powerful mainframe computers, but of course, the cost was still prohibitive to all but the largest ad agencies and the big-budget film makers until the advent of the Personal Computer, for there are now packages available that cover virtually every kind of DTV application.

Of course, we must acknowledge that the Amiga has led the field in DTV for some time. So far, the ST has remained at the periphery of video production, but the reasons are rather

obscure. It's true that there is more software for the Amiga, but only just. Products like the Cyber Studio range, Film Director, the Vidi-ST and SAM digitisers, not to mention paint and drawing packages like STAD, ST Art studio with its limited animation facilities, or the forthcoming Imagic animation and display system, can all be pressed into good service as DTV tools. But software developers are, like potential ST buyers, put off the market by a lack of essential peripheral ST hardware, available in abundance for the Amiga. Chief among these is the Genlock. The workings of a Genlock are described more fully later in the article.

So why is it taking so long for the ST to get a Genlock? This is a baffling question to which no answer is immediately apparent, but it is an essential item if the ST is to be used for serious DTV applications. ST World are aware of a large potential world market for a



The SAM real-time digitizer can be used to capture detailed still frames, or screen-flipped animation sequences.

suitable Genlock, as demonstrated by a torrent of enquiries received after running an article about a company in Scotland who were about to produce one that would also negate the main advantage held by the Amiga over the ST, blowing the picture up to a full screen size with no borders using a technique called Overscanning. And yet, at the time of writing, even this unit has not gone into production because the designers have not been able to find a suitable mass-production facility.

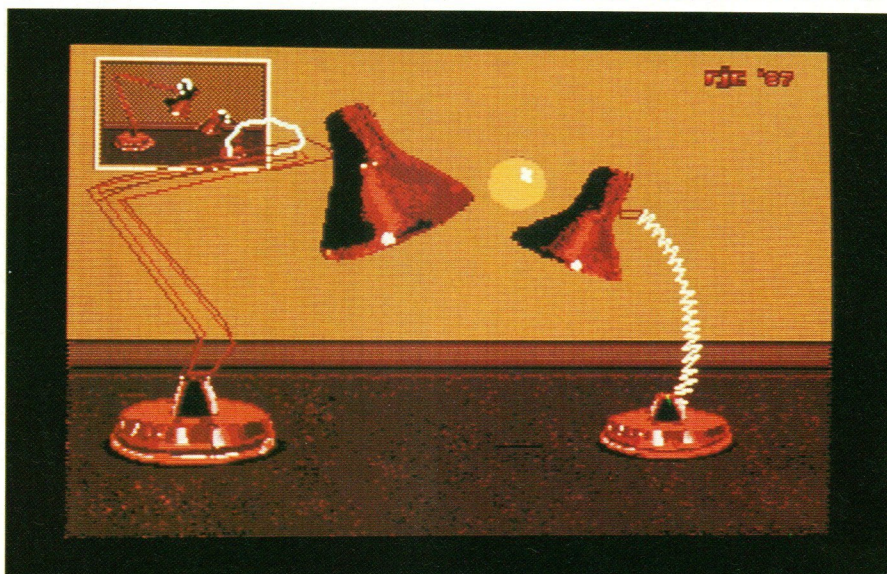
So is that it - the end of this article, and DTV on the ST, at least until a suitable Genlock appears? Not a bit of it. There are a number of ways that the ST can be used in DTV without any additional hardware at all. The ST is very capable of excellent results that can be recorded direct on videotape or output as a 'live' display. In fact, these are the primary distinctions between the two kinds of DTV usage: running direct from an ST on site, or prerecorded on tape. Either method can encompass a wide variety of uses including showing pictures or animations to friends, rolling demos combining text, graphics and animation that can be used in a business as a training and information medium, as a learning tool, a point-of-sale promotion in a shop, at shows and exhibitions, in schools or even on TV, as regular readers may recall from a recent article on Thames Television in this very magazine.

DTV is dead, long live DTV

DTV can be informative, comic, dramatic and powerful; pictures tell thousands of words although they use just as many frames. And that is exactly where the ST comes in, generating all those frames with comparative ease. The choice of software depends on what

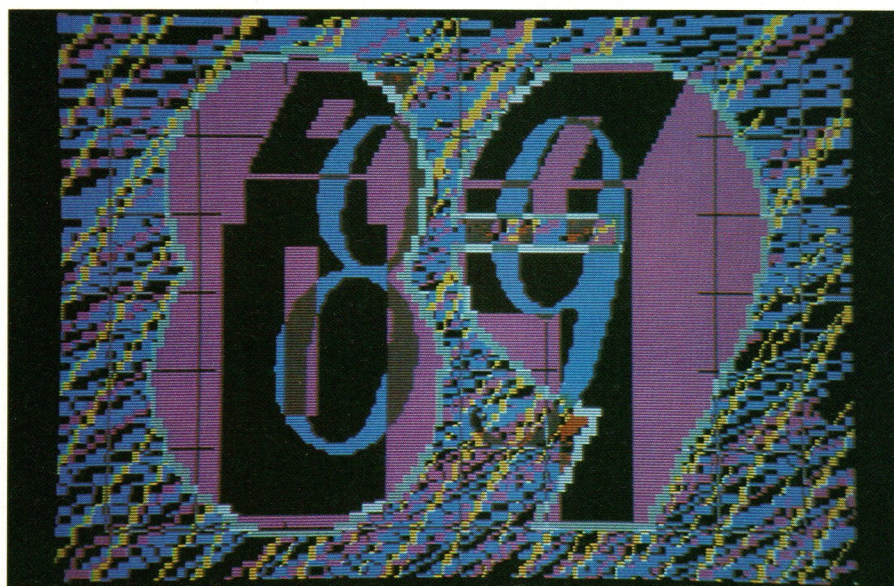
IF IT MOVES, SHOOT IT

From using a paint package, the next rung up in the DTV ladder is making images move. There are many different forms of animation and as many techniques to produce them, but a most common technique is normally excluded from this generic definition: that of generating text for captions and titles. Given that pages of text can be "turned" just by switching from one picture to another in the ST's memory, the next step would be to move the text on and off the screen using some kind of scrolling, itself a simple form of animation. Any sprite design package with animation facilities could be used, using text created as sprites. But if you have more demanding ideas and a little money to spend, a simple 2D animation package like *Film Director*, *Aegis Animator*, or the obscure *Make It Move*, from US company *Avila Associates*, will prove useful. These packages will move and manipulate user-defined sections of pictures or sprites created in a paint package, with varying degrees of facility.



you intend to do with it. At the simplest level of DTV, a standard paint or draw package is all that is needed to produce pictures or graphics, or text for captions and titles. Very effective material can be produced in the style of an audio/visual display or slide show and there are plenty of simple tricks that can be used to great effect. Colour cycling

can be used to add movement and colour. If your ST will hold a number of pictures, they can be switched while the tape is running or changed using a slide show program. With a little planning, pages of titles for a video can be recorded as a sequence in this way, changing pages by switching to the next picture.



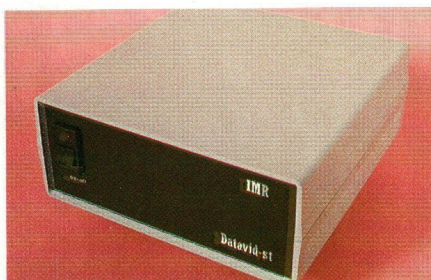
Although they had access to all the best equipment, much of the work on Thames TV's spring promotional campaign was done on a standard 1040ST.

Making connections

Meanwhile, what kind of DTV can be done without the dreaded Genlock, and what equipment do you need? The answer to the first question is that any output from an ST can be recorded onto video tape, so the most down-to-earth setup could consist of just a 520ST, a domestic video recorder and a lead. In fact, the lead is the hardest part to sort out, because all but the earliest 520ST's output a composite video signal on Pin 2 of the monitor socket. However, by following our guide to soldering in the last issue, making a lead connecting Pin 2 and earth (Pin 13) to the corresponding connections of a phono plug shouldn't be too difficult. This lead can be plugged directly into the Video Input socket of your VCR; if your machine has BNC connectors

(big, like an aerial socket) I would suggest you buy a BNC to Phono adaptor. (For a couple of quid you can save yourself the aggravation of fitting a BNC plug). Once connected, all you have to do is put the VCR into record and play in the signal from the computer, using record/pause (or backspace edit if you have it on your machine or camera) monitoring the picture from the VCR rather than from the ST, since the monitor socket is already in use.

For 1040 or Mega owners, the picture is slightly more complex. Neither ST produces a composite video signal except the most recent 1040's. So even in a simple DTV set-up, a signal converter is required. The Datavid ST Pal



The Datavid ST PAL encoder - cleans up the STs video signals.

encoder from IMR (0902 25444) featured in STW Issue 38 will make a good job of this task, although Triangle Television (01-874 3418) do sell small numbers of RGB to Composite converters at around £100.

The software can range from the paint package in your collection to the

COLOURS 512

Of course, these days you aren't limited to a mere sixteen colours. Spectrum 512 is an underrated paint package that will display all 512 ST colours on screen at once. There is also an animation system called Unispec that works in conjunction with Spectrum, but at present there is no UK distributor for the product. On the other hand, the UK-sourced, Quantum Paint, will display even more colours than Spectrum and has animation facilities built in. This picture was digitised by a bureau called Photofile (0602 261498), who offer an inexpensive service to ST owners, digitising any photos or artwork in 16 or 512 colours.



specific tools from the Cyber Studio, but for most leisure purposes a simple 2D system like Aegis Animator or Cyber Paint (which runs on a 520ST, unlike CAD 3D 2) will provide hours, if not

months, of creative enjoyment. But spare a thought also for some other programs not necessarily connected with DTV. The remarkable Trip-a-Tron by Jeff Minter is a fascinating tool for DTV

CYBER TIME

For the truly ambitious, and who have time on their hands, there is a further type of DTV which is in the exclusive domain of the Cyber Studio software range: 3D animation. This differs from 2D in that the latter moves bitmapped pictures of objects (a man, spaceship, wheelbarrow or graph representing STW sales in Thailand, to name but a few) over bitmapped backgrounds. 3D animation, however, requires the computer to generate mathematical models in its memory, which can be moved and shaded according to the direction of light sources and the viewpoint from which they are seen. This viewpoint, referred to as a camera position, can be moved through the 3D "universe", a technique called the "fly-through", which is also found in some CAD/CAM systems. 3D animation, although the most time-consuming, is also the most adventurous and pseudo-realistic of animation styles, and a combination of painted backgrounds and 3D objects can look quite stunning.

I make no secret of the fact I really like this suite of software, which contains some of the best programming I have seen on the ST. Indeed, Cyber Paint, although intended as a rotoscoping/special effects unit (rotoscoping is the hand-retouching of individual frames), con-

tains painting and text facilities so good it's worth using just as a paint package.

CAD 3D 2.0 and Cyber Paint are the two workhorse programs of the range, although most of the object creation could now be done in the much extended Cyber Sculpt, which I had the pleasure to review in Issue 38. CAD 3D 2.0 is the program that allows you to place and



move objects in the 3D universe. It also renders objects created in Sculpt and runs in conjunction with two simple programming languages, Cybermate and Cyber Control, both of which are easy to use. Cybermate is a limited, Forth-like environment but Cyber Control is a straightforward Basic-style language with which the most complex moves, effects, light control, movement and camera tracks can be programmed and refined.

In addition, there are several design disks containing 3D fonts, machine parts, space ships, human skeletons and architectural designs. If you are going to display your animations on the ST (as opposed to video) you might also be interested in the G.I.S.T sound effects program, whose sounds can be incorporated in Cyber Animations.

work. This light synthesiser, video sequencer, and image processor (and all-purpose mind massager - Ed.) has masses of creative potential. Another idea involves display software like K-Graph, which can generate graphics for a presentation. Even a database that runs in medium resolution can be used with suitably designed forms (I'm thinking of Superbase here) that can relate certain kinds of information. And of course, if you want to demonstrate that you can indeed get to level xx and defeat the mega-bugger in your favourite video game, you could always dump the action to tape for the later humiliation of your friends.

Right now, ST owners must look to the future for the real potential of DTV, yet there are people out there using STs for all sorts of videos and live display purposes. It's frustrating to glance over at another 68000 machine and find it has all the accoutrements one wants, but let's face it - things can only get better.

Useful addresses:

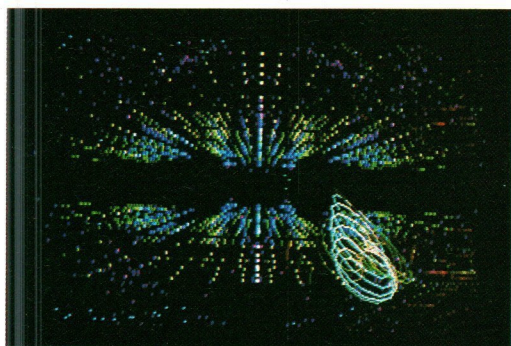
Photofile: P.O. Box 196, Nottingham NG2 4GQ
Tel: 0602 261498

Cyber Series, Spectrum 512: Electric Distribution, Meadow Lane, St. Ives, Huntingdon, Cambs. PE17 4LQ Tel: 0480 496666

Trip-a-tron: Llamasoft, 49 Mount Pleasant, Tadley, Hants. Tel: 07356 4478

Datavid ST: IMR, 8 North Street, Wolverhampton, West Midlands WV1 1RD Tel: 0902 25444

Quantum Paint: Power Computing, 44A&B Stanley Street, Beds. MK41 7RW 0234 273000.



(ABOVE) Trip-a-Tron - many creative uses for Jeff Minter's weird and wonderful light synth.



(ABOVE) SAM can grab frames on the fly from a live video.

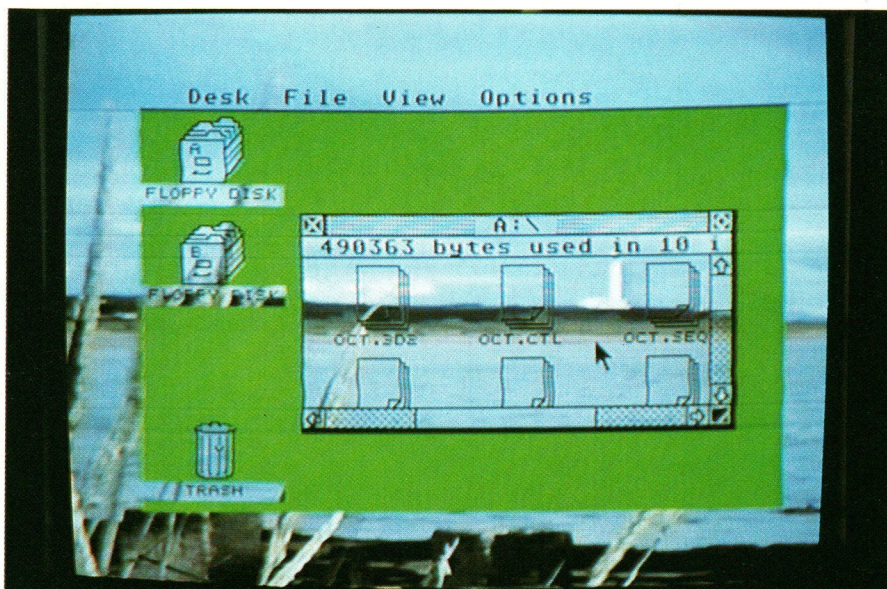
LEGEND OF THE GENLOCK

When we come to discuss hardware, one of the main misapprehensions seems to be over the use of Genlocks. Indeed, there is much confusion about what it actually does: at the simplest level, a Genlock is a device that will synchronise the timing of two video picture signals being mixed together. It is necessary because each picture carries its own timings for the display of each frame. When two pictures are mixed, say from a video tape and an ST, the sync signals of both sources must be perfectly in time or the picture gets mashed. This applies to any kind of mixed picture sources, including video cameras, digitisers, frame grabbers and so on.

A second function found in nearly all Genlocks these days is called Keying. This is the process where one colour is considered by the Genlock to be transparent, like colour 0 on the ST, the background colour, which is treated as transparent by paint packages in some cut and paste modes. Keying is used when a computer picture is designed to occupy parts of the screen, but let another picture show through in the remaining areas.

But there are also two more functions that would be required in an ST Genlock. One has been mentioned previously, a technique called overscanning. Unlike the Amiga, the ST is unable to generate a picture that fills the whole screen of a monitor or TV. However, it is possible to expand the picture electronically to eliminate the border, providing a more useful full-screen display. Finally, there is the business of signal conversion. A Genlock will require a good quality signal to work with, in which case it would accept Analogue RGB from the monitor output. But before it can process the signal it must be converted into the standard video signal that all VHS and U-matic (3/4 inch tape) video machines use, called Composite Video.

So these four functions: synchronisation; keying; overscanning; and RGB to composite signal conversion, are the tasks performed by a good Genlock. Drawing on the prices of Amiga Genlocks, the unit I'm imagining will cost around £250-300. Of course I'm imagining it because, as I say, there isn't one yet. (Stop Press! See news - Ed.) You may even think my writing about it is a waste of time, but I can only hope that some Genlock maker out there reads STW. We live in hope.



This weird looking Gem desktop illustrates the way a Genlock can combine a computer image with video pictures using the Keying technique. Here, some footage of sunlight reflected on waves provides a shimmering background, but only shows through where a predefined colour is used in the computer's output. This picture is courtesy of Elite Video, an ST-based video production company featured in this month's ST World user feature.



Augur OCR - Recognisable Character

Despite the much-vaunted 'Paperless office', the world is still knee-deep in documents produced using good old-fashioned ink-on paper methods. This, in itself, is not a problem until you want to interrogate the information stored in the bundles & piles of paper which usually clutter today's offices, schools, research centres and businesses.

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This month, Andy Allen looks into the advantages of Midifile, and, in an attempt to find his desk under the flood of review software, takes a look at some of the recent music software releases.

THE WORLD OF MUSIC & MIDI

While it has brought many advantages, the music computer has encouraged musicians to become rather insular. Whereas some years ago they would get together and form a band, swapping, debating and arguing over ideas (and whose round it was), it is now more normal for just one person to sit in a music room, surrounded by sophisticated equipment.

It may seem a godsend not to have to organise other people to perform your compositions, and it's certainly quicker and easier to try out different ideas when you don't have to teach the parts to other people before you can hear how they sound in context. What you lose, while gaining that advantage, is the interaction and character of the other musicians involved, which may spark off ideas that would not otherwise have occurred to you. The inclusion of Midifile on sequencers may now be redressing the balance a little.

As mentioned last month, Midifile is a standard file-format that allows the transfer of musical data between sequencers that support the standard. I have recently been working on a project with two other musicians. We all use different sequencers, and the ability to work on someone else's ideas, swapping disks back and forth has produced some of the best music I (we) have created. Without Midifile we would either have had to do all the work on one type of sequencer, which would have been awkward and unfamiliar for two of us, or swap audio cassettes of the tracks, involving much unnecessary programming.

Most good sequencer soft-

ware now supports Midifile and, if you are about to buy, it is especially important that your prospective purchase does so. It seems likely that, like the Midi did initially, Midifile may well completely change the way people write music with their computer.

It is quite a coincidence that one of the things that popped through my letterbox is connected to this very matter: a disk magazine called The Music Matrix. A cross between a magazine and a public domain disk, it includes a number of musical pieces (in Midifile format from the fourth issue onwards), text articles on widely ranging musical topics, and some useful demonstration programs and shareware utilities. I was particularly disappointed to find that most of the shareware programs would not

run on a monochrome monitor, especially as this is the configuration owned by the vast majority of ST music users.

The music files, however, were of great interest, as they fit closely with my views above, that working on other musicians' material can help with your own. Of course the musical files per-se are copyright, you can't just do a bit of editing and publish the music under your own name. What you can do is examine exactly how they are put together, find out how this particular effect was achieved or how that technique was used, and apply them to your own music. This is an enjoyable way of broadening your musical knowledge and experience, and invaluable for those days when ideas just won't come.

The Music Matrix is published every three months, although no doubt as it becomes more popular the frequency of issues will be stepped up.

Product:.....The Music Matrix
Supplier:.....Lou Nisbet (editor)
Phone:.....0592 714887

Trackman and Midiman

Trackman first caught my eye with some rather sensationalist advertising which unfortunately put me off a little. The copy I received for review was extremely well packaged and presented, with tutorial and reference manuals that were full of useful information, not only on the way that Trackman works, but about Midi in general. The manuals would certainly be ideal for someone just entering

the computer music field. Unfortunately, they do have a tendency to blow unremarkable features out of proportion. This is completely unnecessary in a manual, especially one as otherwise well written as this.

The software itself is not as slick as the packaging and documentation. All the standard functions are there, they work well and reliably, but the design is rather elementary, using standard GEM buttons, windows and dialogue boxes, which make interaction with the program a little slow. There are some nice touches: a footswitch that plugs into the joystick port and can be assigned to remotely operate functions, and perhaps for the beginner the simplicity of the program could be a real advantage, but there are some important features missing, such as no facility to name tracks.

This package is well suited to the beginner market, but there comes the rub, because unlike other starter sequencers that retail at under £100, this is priced at £199. This seems rather expensive, and sets Trackman against a range of professional sequencers.

Hollis Research have a demonstration version of Trackman available for £10, and it is worth taking the opportunity to check it out so that you can decide whether or not to buy the program on its own merits and because it suits you, not just on the merits of the publicity men.

Midiman, the other piece of software, is rather more interesting. Although the programming is no slicker than Trackman (I have a beta test



The hardware accessories give added value for money to the Trackman package.

copy, so there may be changes in that department before it is released), the idea is unique and potentially very useful. It is a desk accessory that has software sliders, displayed on screen, that output Midi data when that slider is moved, just as a synth editor would. The difference with Midiman is that you can assign the Midi data to be sent, customising a setup for automation, editing, education, or even software development. There is even a display, in Hex, of the Midi data that is being sent as the sliders are moved. For those who don't feel confident about programming Midi data themselves there is a comprehensive set of files already written for most popular synths, and analysing these could even teach you about the nuts and bolts of Midi. As the beta test version was dongle protected (full release versions will not be) I was unable to test out the accessory's integrity when used together with the popular sequencing programs, which are also dongle protected, but assuming that this works, it should be a very useful and popular utility.

Product:.....Trackman
Version:.....1.04
Price:.....£199 inc VAT
Product:.....MIDIman
Price:.....£79 incl VAT
Supplier:.....First Rate (Guernsey) Ltd
Phone:.....0481 23169

Cubase

At last, Cubase, the long-awaited new sequencer program from Steinberg and successor to Pro-24, has arrived and is in the shops. Cubase was first going to be called Cubit, but a last-minute injunction by heavy-weight computer company, ICL, meant that they had to change the name.

Pro-24 was a phenomenally successful product, and

deserves the credit for opening up the market for computer sequencing over four years ago. Recently, however, it was beginning to look rather old-fashioned, and was becoming overshadowed by the competition, particularly Notator from C-Lab. Steinberg anticipated this over two years ago, and started putting all their experience and expertise into designing a new sequencer from scratch. The result is certainly impressive.

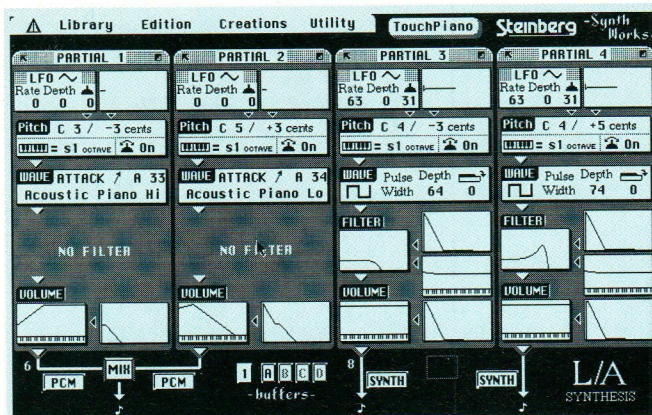
The operating system has been completely rewritten and replaced by MROS (Midi Realtime Operating System), looking similar enough to GEM to be instantly familiar, but working in a very much smoother and quicker manner. Featurewise it is impressive, with 64 tracks, 192cpqn (clocks per quarter-note) resolution for starters.

Product:.....Cubase
Produced by:.....Steinberg
Price:.....£500
Supplier:.....Evenlode Soundworks
Phone:.....099 389 8484

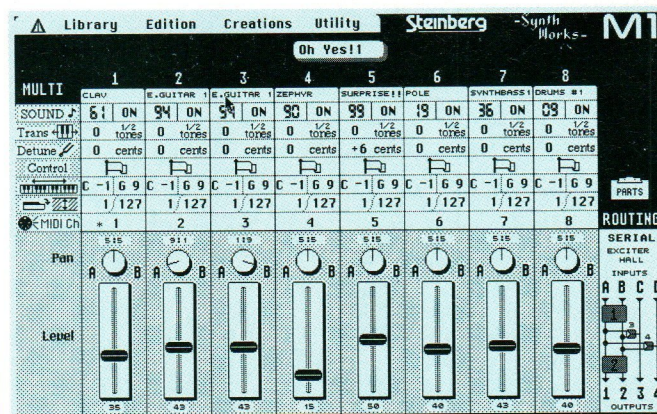
Synthesiser editing

At the risk of concentrating too heavily on Steinberg products this month, it is worth mentioning their two latest synth editors. These are for the Roland D10 series of synths, and the Korg M1, both of which I mentioned last month as being ideal for use with computer sequencers. The complexity of modern synths makes the job of sound and system editing awkward; the small amount of information displayed on the synth front panel makes it difficult to visualise what you are doing within the depths of the machine.

Computer editors help enormously. Even the simplest, with just lists of parameter values, show more information at one time than the synth display, and a good editor will do much



The graphics throughout the Steinberg editors are no less than stunning. The edit page of the Roland D10/20/110/Mt32 Synthworks gives an easily understood representation of the structure within the synth, providing visual as well as aural feedback when editing. The window-style environment is much slicker and faster than standard GEM..



The M1 Synthworks is very similar to the D10 editor. Both have a system page that allows easy set-up of the individual parts of the multi-timbral instrument, visually representing the system as a mixing desk.

more. The Steinberg editors display the synth parameters in a highly visual way, and using the computers processing power to provide more editing tools than just remotely controlling the synth's internal parameters, can certainly take the sting out of the painstaking job of sound editing.

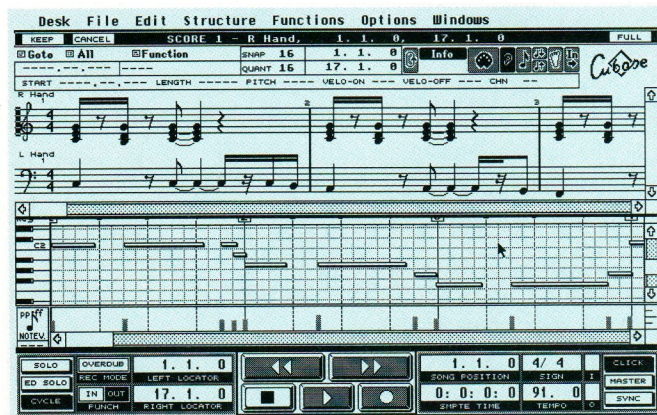
Even when using an editor it takes time to edit sounds to exactly the required standard, and many of us collect sounds from all sorts of sources, private and commercial, for the most common synths. I find it incredible that no-one but Steinberg have implemented any databasing facilities within their editors, to enable the cataloguing of sounds into an easily retrievable library. After all, the database was one of the earliest uses for computers. Given that you will probably want to retrieve your edited sounds more often than you want to edit them, the library facility may be the most important feature of all.

The libraries on the D10 and M1 editors are extremely

sophisticated, and allow you to store each timbre with a description of how it sounds. The computer can search for all the timbres fitting the description of the required sound. This, like all databases, initially takes a while to setup, but can save much more time otherwise spent searching through bank after bank of timbres to find the sound you need.

The only drawback to the Steinberg editors is that all those extra features, while not costing any more than their competitors, do use more memory, and need a 1040ST or larger to run. The new Steinberg editors are MROS compatible, allowing them to be integrated into a real-time Midi workstation with Cubase and other Steinberg products.

Product:.....Roland D10/20/110/Mt32
Synthworks and Korg M1 Synthworks
Produced by:.....Steinberg
Price:.....£99.00 inc VAT
Supplier:.....Evenlode Soundworks
Phone:.....099 389 8484



Cubase - Steinberg's awesome new sequencer.



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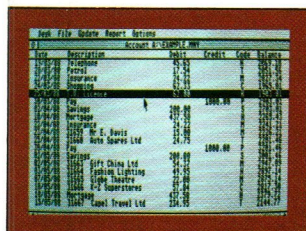
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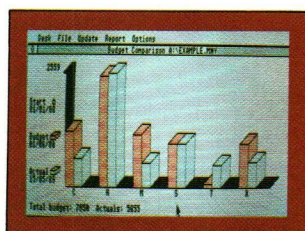
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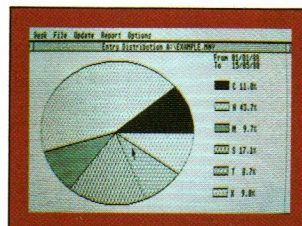
Ron Massey, ST USER

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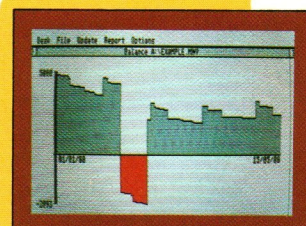
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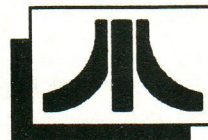
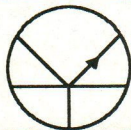
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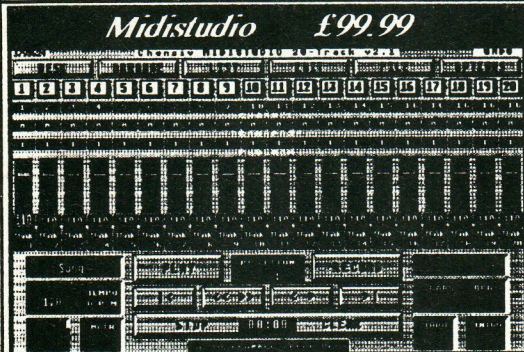
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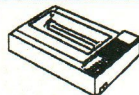
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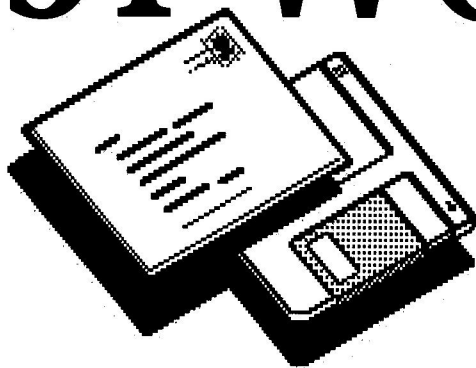
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ST WORLD I/O



Keeping things brief this month, I notice that the educational thread, as predicted, is picking up strongly. What I wonder, though, is how many ST evangelists have ever seen hypercard running on the Mac, really grasped its potential in education, and have the power to create the equivalent on the ST? The three Microsoft Press CD-ROM books contain some rather vital bits of thinking, relevant to this discussion. Tie this to the latent power in the Atari CD-ROM, and the Atari could be seen in a whole new light by many more key people.

ST World I/O is edited by Ian Tindale.

**Write to: ST World I/O,
10 Theatre Lane, Chichester, West
Sussex, PO19 1SR.
Fax us on: 0243 789809.**

Unix for the ST?

Started by Barry Rose, STW31, p26

+Why UNIX?, Lee Cooke, STW33, p24

+Idris is here, Alan Knight, STW34, p24

+Minix is coming, Brian Woodroffe, STW34, p24

+More shells from the seaside, Steve Sharman, STW36, p27

+OS/9 68K already here, Paul Rossiter, STW36, p27

Confused? You will be...

Just when you thought all the 'UNIX on the ST' panic had died down, Prentice Hall goes and launches MINIX! Having actually bought it, I can perhaps shed some light on the mystery of the manuals, and missing appendices. However, first a little story.

This is what I ordered:

1 * set of MINIX disks for the Atari ST

1 * MINIX manual for the Atari ST

I authorised them to debit my credit card account with the maximum amount of £109.14. The reason for the '£109.14' was that all the information I had to date on MINIX implied that the disks were £98.44 and the manual £10.70. In due course, a copy of MINIX (MINIX ATARI ST) including the manual arrived. They had charged me £85.60! However, on close examination, printed black on black, the price £98.44 was visible.

Three days later, an invoice came stating that MINIX ATARI ST and MINIX MANUAL

ATARI ST were out of stock. This was rather unexpected, as I had already received what I thought I had ordered. Phoning the distributors did not really clarify things except for verifying that the second invoice was not a mistake. (It was, in fact, dated before the first one.) As to the extra manual, it appears they read my order as 'one complete copy of Atari MINIX including the manual, AND one copy of the Atari MINIX manual'.

The point of all this: Be careful what you order or you may get two of the same thing!

MINIX MANUAL ATARI ST has the SAME ISBN number (0-13-584434-7) as the one supplied in the disk set - i.e. if you order a MINIX manual for the Atari ST, you appear to get another of the one included in the set. It appears that it is this manual they want £10.70 for, and NOT the MINIX Reference Manual (though I'm still not really sure about this as the second invoice is lacking in prices).

The Appendix C referred to is from the book 'Operating Systems design and implementation' by Andrew S Tanenbaum, published by Prentice-Hall (International edition ISBN 0-13-637331-3. Note this is not the same ISBN number as quoted on the registration / order form supplied with MINIX). This book is approximately £19 and details the IBM implementation of MINIX (MINIX-PC). It is also quite a good textbook on the theory of operating systems, but is no good as a guide to using UNIX.

The MINIX Reference Manual appears to be these appendices separated out and published as a separate book. Its ISBN number is 0-13-584400-2.

As a final note: I am confused! [So are all my readers, now - Sysop] It's probably all my fault, but until the elusive MINIX MANUAL ATARI ST finally arrives, I will not know what I've got, and what I've paid for. P.S. MINIX is actually all it's made out to be, and well worth buying if you're interested in UNIX.

Roland Givan, Ingrave, Brentwood.

Voice of dissent?

Started by Mark Clarke, STW33, p26

+Home Defence, David Stewart, STW35, p27

+Up the ST!, Bruce Stewart, STW36, p27

+68000 based ST?, Ian Tindale, STW36, p27

+Performance Upgrades, Michael Evans, STW38, p74

+16MHz from the States, Bruce Stewart, STW39, p50

The long and the short of it

Michael Evans in STW38 talks about various upgrades for STs such as replacing the 68000 with a 68020/68881. I have not come across such an upgrade for the ST, but I remember coming across an article in the September 1988 issue (I think it was this issue) of Electronics and Wireless World, in which Bob Coates detailed a replacement processor / coprocessor card for his Kaycomp board. The Kaycomp board was a simple 68000-based educational system which communicated with the user via a serial link. It had a simple monitor which included the usual features, even a line assembler and a simple transfer utility to allow communication with a host computer.

The proposed upgrade consisted of a board, which you plugged into the 68000 socket, which held a 68020 and, optionally, a 68881. However, a couple of PALs were needed to provide an interface between the 16 bit data, 24 bit address bus of the 68000 and the 32 bit data bus and 32 bit address bus of a 68020. It is possible to make the conversion from the 32 bit to the 16 bit data bus because of the ability to dynamically re-size the data bus on a 68020. What that means is that, suppose the processor wants to fetch a long word (32 bits), the support logic may indicate that only a 16 bit word is available. Rather than indicate a bus error (the familiar two bombs), the processor will recognise this and repeat the memory access but addressing the other word. This is possible using bytes, words or longwords. However, having to continually reduce bus size is going to dramatically increase the amount of time required to fetch an instruction. This will remove some of the benefits of using a 68020.

One more plausible explanation would be to replace the 68000 with a 68010. This can be done directly, since the two processors are pin-compatible. While the 68010 instruction set is a superset of the 68000, there is one instruction that is slightly different. The instruction in question is a move from status register. On the 68000, this instruction can be executed in user mode. On the 68010, it can only be executed from supervisor mode. If an attempt is made to run this instruction from user mode, it will generate an exception. This may not seem to be too much of a problem, but I recall reading a piece of e-mail several years ago that originated in the States. They had tried this drop-in replacement and it had not worked. The problem was traced back to the processor trying to copy the system byte into a register while in user mode. This caused an exception and the result was that the GEM would crash taking the whole machine with it. The 68010 has a special instruction to move the condition codes (which are in the lower word of the system long word) into a register while in user mode. Motorola documentation indicates that this change has been made to allow correct support of a virtual machine on the 68010.

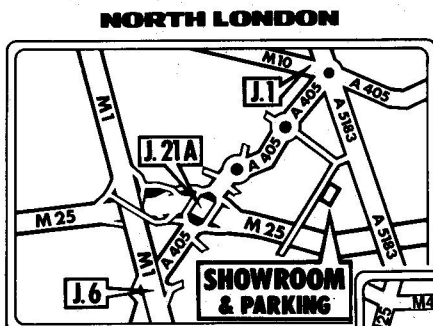
As far as I can remember, this is the only problem. Needless to say, when the guarantee on my ST expires, I shall attempt to make a suitable change to my TOS ROMs and drop in a 68010 [if you get anywhere, do let us all know - Sysop]. I came across this information some time ago, i.e. before TOS 1.09. Perhaps this has been corrected in the

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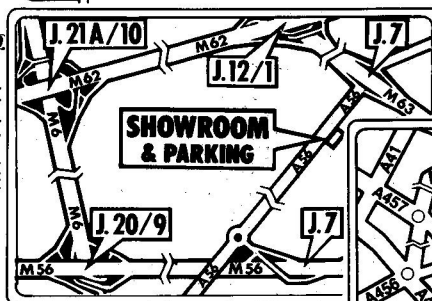
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new version of TOS, since the Amiga OS has been written to allow this.

Simon Jones, Harpenden, Herts.

Faster and faster

There seem to be a lot of people out there seeking a way of upgrading the performance of their machines, either wanting CPU upgrades or add-on 68020 / 68881 boards, but how many actually need the extra CPU power that would result? Recently, carried away by my own enthusiasm, I considered a performance upgrade path myself: sell 1040STF and monitor and buy Archimedes 310 (£500 cost approx). Being an impatient student-programmer, and possibly requiring some form of reasonably fast PC emulation for my summer job, I thought that the Archie would be the 'total solution'.

However, after a while I cooled down a bit and thought things through. Careful consideration revealed that really I didn't need my languages, etc., to go faster (and I don't use CAD packages), but that I'd like a faster development cycle for my programming environment (RAM disks large enough to hold compilers, etc., eat up memory, and swapping disks to get at assemblers, etc., eats up time). Bingo! Answer: Hard disk drive (fast access, no memory erosion, no disk swapping, no copying files to RAM disk). So now I'm considering Supra's 30Mb offer (£499). Even slow PC emulation is OK, as printing / editing data is all I'm likely to do at home. And if it turns out that sometime in the future I really do need a CPU upgrade, then perhaps Atari Corp. will have been kind enough to have made the fabled TT machine compatible with my humble ST!

Christian Leary, Pensby, Wirral.

Over the top

Started by A Sirajuddin and M Mawdesley, STW38, p75

Lateral improvements

Possible alternative processors: 1) The 68010 runs faster due to more efficient microcode but the MOVE SR,ea instruction is a privileged instruction on the 68010, but not on the 68000, which could cause programs to crash. [Apparently it causes TOS to crash unless you especially patch the code and pour it into a set of Eproms - Sysop].

It is possible to modify the program to overcome this problem. Also, there are differences with the Exception Processing, these will be more difficult to overcome. 2) With the 68000/16MHz the full potential may not be realised due to limits on memory access times (memory chips were selected for a 68000 running at 8MHz). Also, some programs may not be capable of running at faster speeds (there are some programs for PCs that must run at slower speeds).

[What a lot of people seem to overlook is this: the 68000 in your ST is rated at 8MHz. It also happens to be running at 8MHz. This is not because it is rated at 8MHz, but because all the clock signals going in, on and around it, cause it to run at 8MHz. If you simply dropped in a 16MHz 68000, it would carry on as before, safe and snug in the knowledge that, if ever anyone were to modify its surrounding environs to cause faster clock signals to be supplied, it could easily handle them.

Conversely, you could imagine a sce-

nario whereby you perform clock mods to drive the 68000 at a higher speed, but leaving the original 8MHz 68000 in there. Chances are it will cop out, and who could blame it? Or, equally the chances are that you may have one that runs outside its rated speed (which is highly dodgy). Either way, you've got the rest of the system to worry about too - RAM chips that were designed for 150ns access times suddenly being left behind and losing odd bits of data (which is less of a problem in a PC - they often use 9 bit parity-checked RAM). I've no doubt that a faster ST can be hacked up, but there's going to be more involved than simply using higher rated processors - Sysop]

G P Burkitt, Church Crookham, Aldershot.

Spare bits

Started by Paul Wilson, STW38, p76

+Spare pieces, Ian Tindale, STW38, p76

The chips are down

Paul's glue chip problem isn't new. Here is the official tried and tested Atari method of reseating your glue chip (I'm reliably informed that they use this method in the Taiwan manufacturing plant):

- 1 Pick up your ST system unit and lift until it is three inches above a hard flat surface.
- 2 Drop it. I kid you not!

Mathew Lodge, Lach Dennis, Northwich, Cheshire.

The ST in Education

Started by Derek L Blackburn and Malcolm Windsor, STW39 p52

The ST in Education - 3

I am writing as head of a computer department in a 6th form College which makes extensive use of Atari STs and has been doing so for over three years.

In the early eighties, I decided to 'test the water' with 16-bit machines. Taking into account cost, power and some very favourable reviews, we acquired six Atari 520STs, complete with external power supplies and disk-based OS. These were very early issue machines and they came close to putting us off STs for life. We had a stream of problems - later we discovered the famous 'loose' glue chip. We now have more than 20 520 STs which find use across a wide range of courses and in staff training.

Mr Blackburn is correct in suggesting that the ST outclasses the BBC Model B but this is no longer the contest. In my view, Atari have failed miserably to promote and support the use of the ST within education, choosing instead to market it as a games machine and nothing else.

This image, particularly when schools are trying to make closer links with industry and commerce, is a most unfortunate one, and coupled with what seems to be a complete lack of an 'educational policy' leads one to suggest that Atari do not consider the market worth the bother. The 'contest' now is not between the ST and the ailing, but reliable, BBC Model B, but rather between the ST and the Archimedes, or RML's Nimbus range.

Whilst the ST may offer a price advantage, it can no longer be said to be a superior machine: it does not offer PC compatibility,

there is no educational base or support, and, critically, I feel, the machine cannot be networked at a reasonable price, or linked in to existing school networks, notably to Econet.

Ray Burcham, Swindon, Wilts.

The ST in Education - 4

Like Derek Blackburn, I am a secondary school teacher (science) and a convert to the ST. I bought a 520 STFM, in partnership with my son, after travelling the upgrade route of ZX81 - Spectrum - QL. I was immediately astounded by its educational potential, most importantly by its user-friendliness and having seen the light I set out to promote it as much as possible. The following are some points I would like to make in the light of two year's experience.

1 Become an ST 'bore'. Stress its uses to colleagues. Try to discuss its merits with persons of influence - inspectors and advisors. At first I met with the 'games machine' reflex response, but I have now persuaded five colleagues in school to purchase STs.

2 Illustrate its uses. I have prepared all worksheets, sets of notes, exam papers and notices using FWP and Easydraw 2. These allow me to extol the ST. When colleagues ask how they have been produced, offer to demonstrate the machine to interested persons.

3 Bombard key staff - Head, TVEI co-ordinator - with articles from ST World and also 'non-partisan' sources such as the Computer Guardian.

4 Try 'niche' marketing. After lobbying the music department and the TVEI co-ordinator, an ST, monitor and C-lab have been purchased for the music department. Last month, after serious negotiating, I achieved the greatest success to date - the school purchased a Mega 2 ST, monitor, second disk drive, laser printer, Timeworks DTP and Signum 2 for the reprographics department! Professional quality school brochures, option booklets etc. can now be produced. This latter use is a key argument for the ST, as with the Education Reform Act schools are going to have to indulge in promotion and marketing.

With respect to the question of subject-specific software and BBC emulator, I feel that this is a red-herring. The ST is an ideal applications machine and should be promoted for IT, business studies, CDT, music and art - subject-specific software is non-existent but some programs can be used, e.g. UMS, Balance of Power, etc.

A BBC Emulator? Definitely not!!! It leads to the question of "why buy another computer when it looks just the same on a BBC?" This question has been asked by colleagues after I have installed software for them on the newly installed RM Nimbus network (my greatest failure - I tried but was told that County funds would not be available for an ST network). Why use a racehorse to pull a cart! What would be useful is a cheap analogue device so that the ST can be used for science and CDT experiments. [Try taking a lateral look at the cheap 8-bit sound samplers; Replay 4, IS Digitiser, etc. and also K-Scope and K-spect. - Sysop]

David Waller, Chelmsford, Essex.

The ST in Education - 5

Further to D Blackburn's comments in STW39 on the potential of the ST in educa-

tion, my recent experiences may be illuminating. Northamptonshire LEA, like most other LEA's, has a county-wide schools computer purchasing policy, which in our case is the RM Nimbus. This is on the justification that the Nimbus is an 'educational computer'.

Perceptions of how microcomputers can be best utilised in schools have changed radically since the early 1980's. At the time, a plethora of software worksheets and simulations were envisaged to support classroom learning. Although a number of educational software packages are available, they have not proven to be as valuable in supporting learning as was anticipated. Instead, current educational initiatives, such as the National Curriculum and TVEI, see information technology as an integral part of every subject area. In short, pupils should be using word processors, spreadsheets, databases, etc. as a natural part of their work. The choice of so-called 'educational computers', in terms of appropriate software and value for money is being called to question.

With the coming provisions for schools to manage their own resources, many teachers are looking around for more appropriate technology. I believe the Atari ST running GEM-based applications offers professional quality, ease of use, and value for money. The science department at my school recently sold the entry-level Nimbus and mono monitor, which were gathering dust, to purchase two STs and mono monitors. They are in constant use by both staff and pupils, many of whom had been 'turned off' by their previous experiences with computers.

The notion of an 'educational computer' is as ridiculous as the idea of an educational brick for building schools. Education needs to wake up to this fact and invest our limited resources more wisely.

D M Anstead, Co-ord for Science, Technology and Industry, Guilsborough County School, Northants.

The ST in Education - 6

I wonder if you could help me. I am soon to be a fourth-year student therefore starting my GCSE, and I would be grateful if you could advise and tell me where I can obtain quality software which could help me with the course work and revision. I would like the software to help me with Science, English, History, Geography and Maths. I would be very grateful if you could help me out.

James Gordon, South Croydon.

OU are clever

I have been contemplating taking Open University courses in computing, but these courses require IBM compatibility. Rather than buy an IBM compatible computer, I was thinking of using an ST with pc-ditto installed. I have contacted the Open University technical support, who inform me that there are a number of students using Atari STs, but they could not tell me with what degree of success. Could any of your readers throw further light on this subject?

John Ogden, Whitefield, Manchester.

Just titling

Started by Alan Harrison, STW39 p52

PD titling

After reading Alan Harrison's letter in STW39,

I began a search through my PD library, and yes, I have found some titling software. Though limited in features, the program does provide a facility for some quite professional-looking, low resolution video titles. If Mr Harrison or anyone else would like a copy, just send me a SS or DS disk (preferably with some PD software on it!) to:

Malcolm Windsor, 202 South End Road, Rainham, Essex. RM13 7XT.

Erase the dead

Started by Steve Cassidy, STW39 p52

Back in fashion

Flair Paint. Yes, well. I spent a couple of hours playing with said program in a software shop and was greatly impressed. So much so that I bought it. I was disappointed but not too worried when I found the little photocopy informing me that since my 520 has a new ROM I could not use the cut-out screen. However, since then I have encountered other problems which drive me to the point of despair.

Firstly, and most importantly, I am completely unable to reload screens saved in the Flair format. No problem with Degas or NeoChrome files at all, but Flair screens seem to resent being asked to make an appearance; the machine goes through all the motions, but I'm left with a blank canvas at the end of it all.

Secondly, when I try and use the font load option, the thing just beeps at me and gives nothing else away at all.

Thirdly, when I tried to load an .IMG file from a game disk I was informed that the canvas size was 65535 square, when I know for a fact that it is only screen-sized.

Fourthly, the program has crashed several times when entering the security routine - the thing just won't respond.

Fifthly, there was no mention that the disk format used is non-standard and so using GEM disk copy to make a backup, as instructed in the manual, is impossible. Fortunately I had a PD extended copy program lying around. I think that Flair Paint is a stunning piece of software but why can't I get it to work the way it's supposed to? Is it me, am I stupid or something? Help!

Leo Carlyon, London NW2

New Discussions

Smelling pistakes

I find it a refreshing change to be able to read through your magazine without the tidal wave of errors which occur in many others. The README and similar text files on PD software are often dreadful in this respect, and I cannot understand how someone intelligent enough to produce a nice piece of software cannot manage to write a respectable document to describe how it functions! I even have several items of commercial software with this problem, and worse still, some display it on the screen in information boxes and the like. [What, they actually tell you that there is a spelling problem in the program? - sarcastic Sysop]. Recent examples include SEPERATELY, REQUIRED and ATATI!

D K Powell, Tupsley, Hereford.

DIY Screen fonts

I think I've sussed out a way for anyone who uses a PostScript output device, and has access to a scanner, to create their own GDOS screen fonts to exactly match printed output.

1 Print out a complete character set of the font and size you require on the PostScript printer.

2 Scan the printout and display it on the screen at actual size.

3 Use the screen grabber utility in the Fontkit Plus accessory pack to grab characters and convert them into GDOS screen fonts using Fontkit Plus. Tidy them up if necessary by pixel editing.

4 Install them into your GDOS applications (e.g. Timeworks DTP).

Would this really work or have I missed something? [The first thing that springs to my mind is the question of legality - most fonts are not exactly public domain - Sysop].

Steve West, Edinburgh.

They call it the streak

I was interested to read the review of the NEC P2200 24-pin printer in the May issue of ST World. I use two of these printers at work, and find them excellent for quality and ease of use. Certainly they are good value for money.

While most of your reviewer's comments were very fair, I have to disagree with the comments on print smearing and over-inking. Like most other printers, the P2200 has a lever that adjusts the position of the print-head relative to the paper. If this is not correctly set for the weight of paper being used, the P2200 does not cause smearing - at least, my two don't. I suspect your reviewer may simply have used the wrong setting; coupled with a new ribbon, this would account for the streaking described.

Philip Gardner, Leeds.

[As it happens, I reviewed the P2200, and found that no matter what I did with the lever, it either streaked badly or no image hit the paper at all - I must re-emphasise that this only shows up badly when driven under graphics mode. I have heard from many people that theirs offer similar entertaining behaviour, whilst others, like yourself, have defended the P2200. I have since been informed by a major distributor of professional ST wares that it is a good idea to sling the NEC ribbon as soon as possible, substituting a third-party one. I have a Degas screendump of a picture I drew (I may show you it one day) which is so saturated with ink that it reads just as well from the reverse side, after a few days. So there! - Sysop]

Prize corner

As there are only three pages, there are only two prize winners. Ray Burcham and David Waller are they, this month. Could you be a winner next month? Unlikely, unless you've sent a letter in.

More next month - Ian, your Sysop [For those of you who didn't know what 'Sysop' means, it's a term used on computer bulletin boards, referring to the person who runs the whole show - the **System Operator**!]

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The value for money offered by the Atari ST range is reflected in the Explorer Pack featuring the 520ST-FM computer with 512K RAM. The 520ST-FM computer now comes with a built-in 1 Mb double sided disk drive as well as a free mouse controller and a built-in TV modulator. The new 520ST-FM Explorer Pack includes the 520ST-FM computer, the arcade game Ranarama, a tutorial program and some useful desktop accessories. In addition, if you buy the Explorer Pack from Silica, we will give you the Silica ST Starter Kit worth over £200, FREE OF CHARGE. Return the coupon for details of our Starter Kit and of the full ST range.

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The MEGA ST computers are styled as a lightweight keyboard with a separate CPU, connected by a coiled telephone style cable. There are two versions of the MEGA ST, one with 2Mbytes of RAM and the other with 4Mbytes. Each version has a 1Mbyte double sided disk drive built-in to the CPU unit. The MEGA ST's do not come with modulator built-in and must therefore be used with a monitor. With every MEGA ST purchased, we will add the 'Professional Pack' software (worth £384.83) detailed above, plus the Silica ST Starter Kit (worth over £200) both Free Of Charge. Return the coupon for further details.

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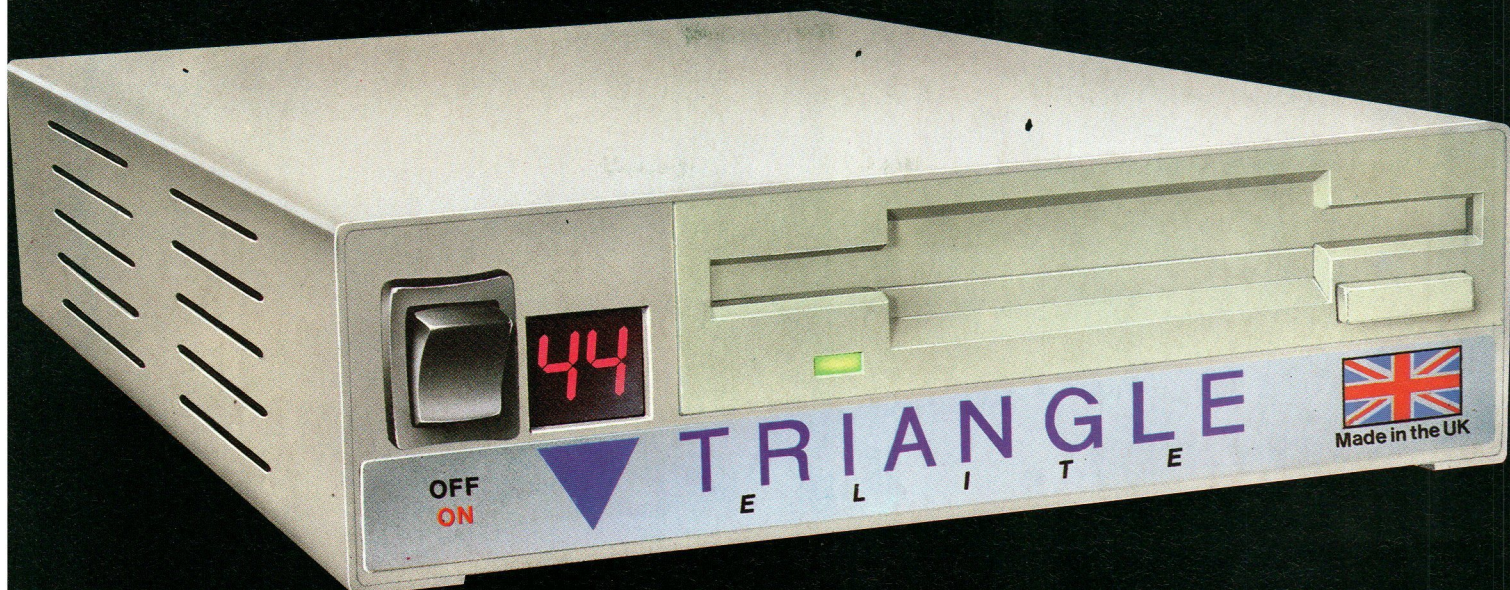
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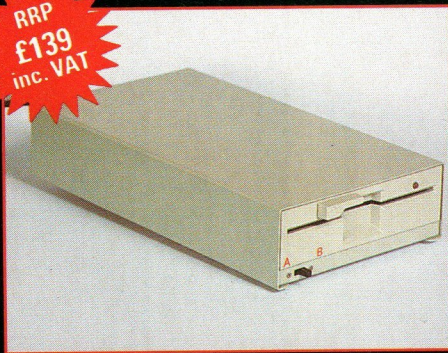
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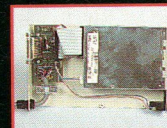
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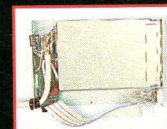
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While the editor fumed at the injustice of being trapped in a dingy office, harried hack, Graham Wayne, was enjoying glorious weather in the Scottish Highlands, travelling to the far end of the British Isles to interview a small company making big DTV productions with a 1040ST and little else. What, no main-frames?

● Naturally, their logo demonstrates the best of their work, both in design and use of the Genlock key in the background. When they originally wrote to ST World they enclosed a video which opened with this logo sequence.

Driving from Glasgow up the A9 towards Inverness, along the quaintly named Whiskey Trail, and in what can only be described as freak weather, blazing sunshine, I frequently found myself overtaken by aesthetic rapture as I rounded a set of tumescent, velvet-green hills, which gave way in turn to vast and magnificent... (stop waffling, Wayne - Ed.) ...and so, I arrived in the small town of Elgin.

After a drive of some three hours, it was quite late at night by the time Steve Rowan ushered me into the office of Elite Video and introduced me to his partner, Mark Harvey. I dumped the bags and baggage of my trade and we immediately adjourned to the only place an interview can really be held.

On the trail of the Bonnie Prince

"Bonnie Prince Charlie stayed here", I was told as we entered the pub they had taken me to. After the first round was comfortably disposed of and a second procured, they explained how the company was formed.

Steve: "We both worked for the same leisure company, a national leisure company based in Scotland. We were both unit managers, that is, in charge of any leisure unit

owned by the company, whether it be a cinema, bingo hall, night club or hotel. We went on various management courses together which is where Mark and I got friendly."

It transpires that they both had a burgeoning interest in presentation. At that time, their primary concern was to improve the advertising carried out by the company they

worked for.

Steve: "We looked at the advertising the leisure company was doing at the time, and we thought we could improve on it. One way of doing that would be to look at using video. So we thought, 'We're going to have to find some way of getting information on the screen'." A computer seemed the obvious solution, although neither of them had previous experience of using computers in this way. They looked around and their interest was caught by the ST. And, as often seems to happen in these circumstances, fortuity



● This man is dangerous. Beneath the charming and loquacious exterior there lurks a more primal creature with astonishing power over members of the opposite sex, a talent he demonstrated rather effectively in the local pub. And like his partner Mark, he's really much more interested in DTV on the ST. What a man!

● I asked Mark if they had promoted themselves locally. Apparently, they did try installing a point of sale system for free, but the results were less than impressive. "We tried putting one in a local shop. The thing is, it didn't really work. I think it's a bit too modern for the people round here."

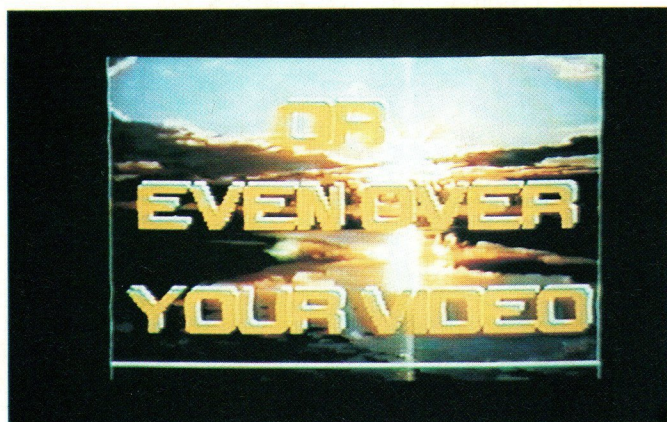
blessed the pair with an opportunity that helped them make up their mind.

"We looked at the ST, and at that time we knew of someone who was selling one second-hand, and we went for it."

Then they needed some suitable software with which to explore their presentation ideas. Steve, on one of his regular jaunts to Glasgow, attended the Scottish Computer Show where he saw several products that were to change both their lives.

"It was the first time we ever saw a Genlock for the ST

in operation. That was also where we saw the software; it was the first time we saw *Cyber Paint* in action. We bought the software that day, spent about a month learning that and then we went for the Genlock we'd also seen at the show."



● Of course, Genlock/keying effects need not be so restrained. This glorious sunset adds the perfect backdrop to the closing captions of *Elite's* showreel. Exactly what it is they are doing all over your videos remains a mystery, and just as well, in all likelihood.



● Mark catches up on the latest developments in the ST World. Still waiting to see a UK-supplied Genlock for the ST...



Mark was keen to point out that they had developed all their techniques quite independently, being isolated both by their pioneering work with the ST and by the remote location of the town.

Mark: "I think that what happened was, basically, we were closeted together, me and Steve, and we had no outside contact. We bought this software, sat there with the manual, and that was that. And we never spoke to anyone else because there was no-one else to speak to." But it soon became obvious that they would need more software, and the Genlock they had seen at the show. They expanded their software range to include all the Cyber products, plus several paint packages and GEM object graphic software, Easy Draw.

In fact, Mark and Steve would spend all their time playing with the Cyber products, for which they have an enthusiasm bordering on the fanatic.

Steve: "We say it's absolutely essential. We actually said that in our adverts. If you've got an ST and you're interested in Desktop Video, then you must have Cyber Paint. In fact, Cyber Paint version two is incredibly good, with the anti-aliasing and pixel effects it has. And that's right up our street."

Mark (dramatically): "WIPES! Why buy dedicated wipes when you can get Cyber Paint?"

Steve: "Even the professional people we've spoken to

who are used to Quantel effects have been commenting on how smooth the animation is."

A crucial system

Without underestimating the contribution good software can make to a production, it's the way Elite Video are using the software, along with the other equipment, that really counts towards the impressive results they achieve. Their system is rudimentary but efficient, with a low-band U-Matic (3/4 inch video tape) VCR for picture origination and a 1040ST supplying the graphics or animations. Also in evidence was the Datavid ST PAL encoder, but the most crucial peripheral was hidden away inside the



ST. This was a custom-built Genlock/keying unit made for them by an engineer they had met at that same, eventful Scottish Computer Show. (For a more detailed explanation of Genlocks, see the DTV article elsewhere in this issue).

The ability to mix video footage with computer graphics immediately opened several creative doors for Steve and Mark. Once they had conducted some initial experiments with the Genlock, they quickly developed the attractive technique of keying captions over video footage, although they discovered this method contained a major drawback: copyright. If they were to produce commercial products, they would either have to pay royalties on the background footage, or find another source of material.

Steve: *"The easiest solution was to go out and buy a Camcorder. Then you can get out and about; you can film anything. We found that for titling, the most unusual things provide good backgrounds. With the Macro function (on the lens of the camera) you can shoot virtually anything and it'll look good in the right place. That way, you build up a library of backgrounds."*

Because ST Genlocks are not manufactured at this time, I suggested that Elite presently had a distinct market advantage, but they were adamant that they would like to see Genlocks made widely

● **Steve Rowan also displays remarkably good taste in reading material. Note also the sharp attire (well, shirt and tie then) owing much to his background and training in management. Elite Video and DTV Systems will benefit from his and Mark's collective business experience, something many small companies lack when they first start up.**

available in order to stimulate the general DTV market for the ST.

Steve: *"We've got one, so we're in a very privileged position. Well... if there are others using a Genlock out there, we don't hear about it. But as I say, we've got one, and really, we'd love for others to have one too, because, as you can see, the system is really as basic as it can possibly be."* The inference being, presumably, that the high quality of their work demonstrated how little you need to spend on capital equipment purchases.

Titles of distinction

Despite the distant physical location of Elgin away from the mainstream of video and advertising work, the media reduce that distance to insignificance. In the eight months since the company became a full-time going concern, they have completed around fifty productions, many of which come from south of



the border.

Steve: *"We advertised in the national magazines, for titling work. We got a reasonable response to that, but we were fortunate in that we landed a very good customer, a company in the south of England called Vidcam UK who, on a regular basis, requires advertising from us, usually two or three times a week. But the biggest project we have ever done is a video for Tennants, the brewery. They phoned us up to do a promotional video; we used three cameras shooting on low-band U-matic. That was a big job and they were certainly happy with it. Later, we got a really nice letter from*

Tennants saying they thought the job was excellent and that they'll be using us again."

It seemed to me that their success must have seemed rather unpredictable at the start. How did they know there was going to be a market for their work? It turned out that they were motivated by a powerful desire to create animations, which seemed to be enough.

Mark: *"It was never really researched properly at all. We found out, to our cost, that we should have found out if there was a market there, and developed a real product for it rather than just an ability to do graphics. But we just loved it."*

Steering under pressure

Financial pressures always seem to tell in a business founded on idealism. The ability of the company to survive may depend on its ability to adjust to financial realities. In this instance, Steve and Mark have sensibly taken advantage of the lack of computer expertise in their area by forming a new company called DTV Systems, a retail outlet for ST hardware and software, obviously with leanings towards DTV applications. I wondered if they also catered

● **Nothing fancy here. No mainframes, no transputers, not even a drinks cabinet. Elite Video don't have time (or money) for frivolities, preferring to add to their equipment. Latest addition is the portable U-Matic VTR, although I was surprised to find they worked the ST system off floppy disks. Animation files are often large, so they must have an inexhaustible reservoir of patience.**



for passing trade.

Mark: "We're hoping to do that by mail order, build up a service to people who don't necessarily want to get into desktop video, but might be interested in it. We can certainly tell people about it, put people right. When it actually comes to putting graphics onto video, maybe there's not a lot of people who know about that. We've got expertise there, so we can provide an excellent customer service and any problem they've got, we can help. For instance, one of the biggest problems we had was finding out which was the most suitable software for a particular job. But our customers - well, we can steer them right."

Their own use

And of course, they practise what they preach in a fine demonstration that the medium is the message.

Mark: "We are a video production company. Desktop video is what we're supposed to be about, and so the obvious thing to do is to use video tape, and the Atari graphics on tape, as a means of getting the message across... to customers. When a customer rings up and asks what Cyber Paint

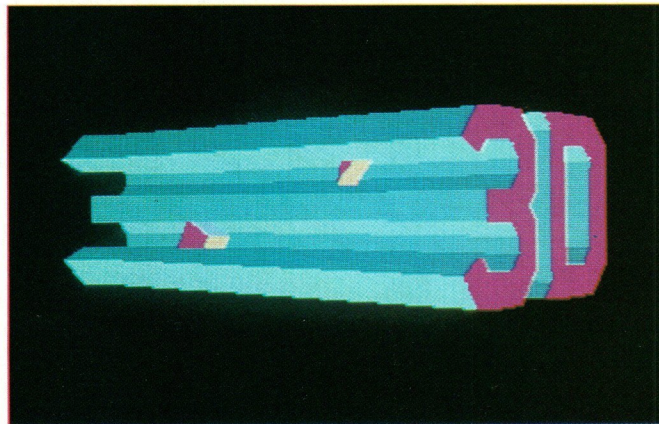
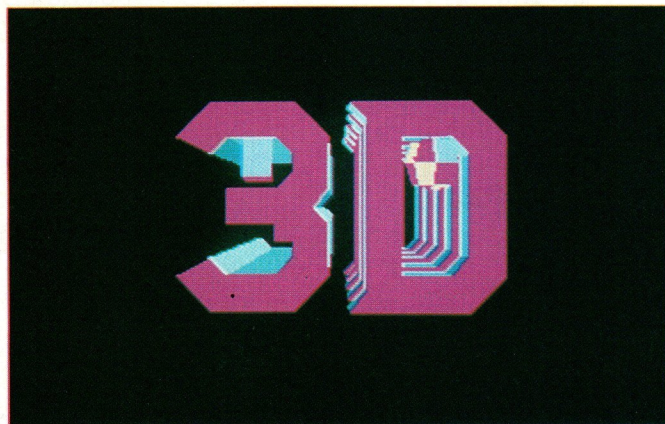
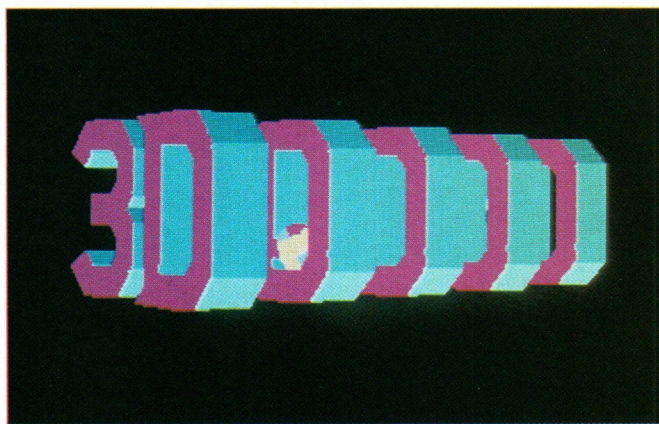
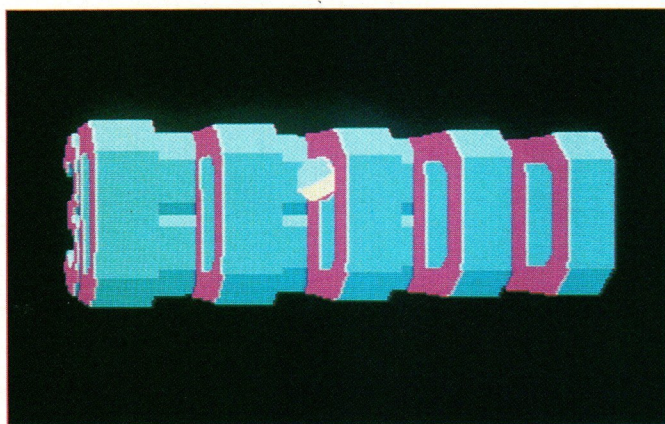
can do, we can send him a video and he can see exactly what it can do." Of course, video tapes don't grow on trees. DTV Systems make a nominal charge for the tape, which is refunded if a purchase is made.

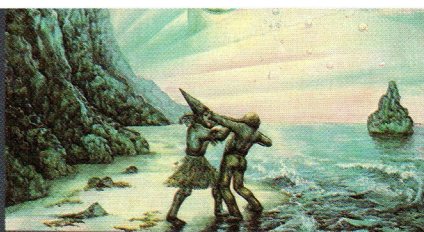
Recent user stories featured in ST World have all concerned large companies with vast hardware budgets and massive computer systems, to which the ST is sometimes simply an accessory. Elite Video have taken a basic system and exploited the power of imagination and invention to

produce DTV products of high quality. By combining their production skills with professional retail support, this small Scottish company may well spearhead a DTV invasion of the south. But only if they manage to stay away from that lethal whisky.

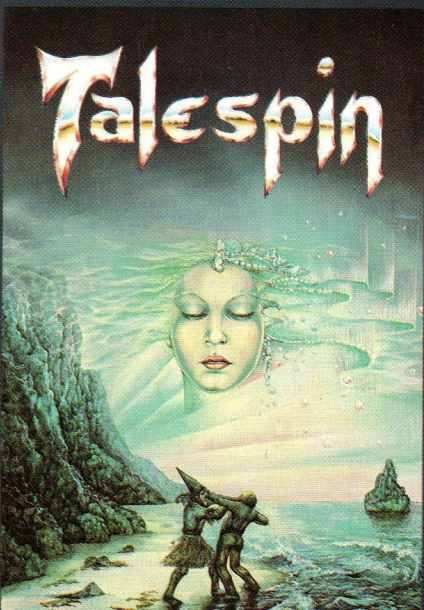
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Elgin,
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Phone: (0343) 44581**

● In a simple demonstration of keying to produce special effects, Mark created this title on screen, while Steve ran a video of sunlight on rippling water which was keyed into the ST picture by the built-in Genlock. The actual effect, however, was more like a liquid chrome finish to the characters. It's too bad the photographs can't do justice to moving images.



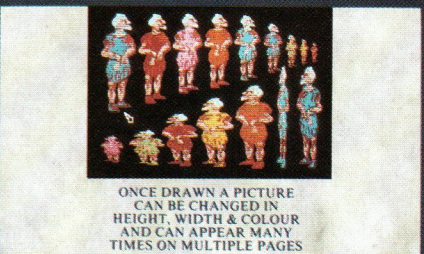


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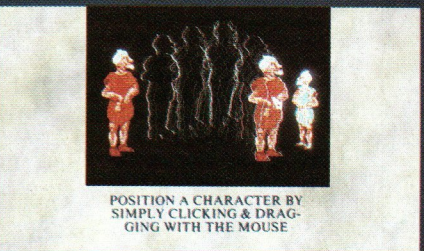
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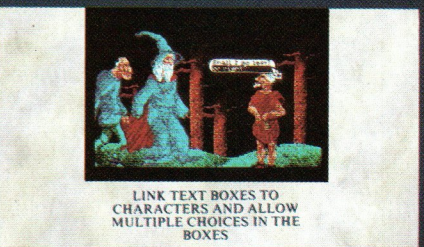
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AND CAN APPEAR MANY
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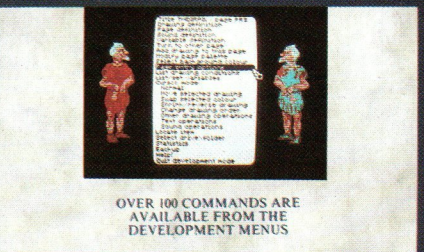
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24



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WHAT IS IT FOR?

It can be used to create interactive adventure games, for profit, pleasure or instruction. Or in business to create a sales demonstration, or product servicing manual. Or in education: either using Talespin itself to teach the design and logic of computer systems in a non-technical way, or using Talespin as a vehicle for the teaching of any other subject. Or create an expert system with it. Or a school magazine. Or...

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Once you've finished developing your program whether it's an adventure, an educational program or other you can lock your program so no one can enter the development mode.

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The manual comes as a complete Tutorial with a scaled down version of "The Grail" adventure and also a comprehensive reference guide.

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REVIEW FOR TALESPIN

ST USER: 'Microdeal is putting its money where its mouth is and exhibiting justifiable faith in a very good product.'

MICRO COMPUTER MART: 'Talespin in my opinion, is a highly commendable program.'

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COMPUTER GAMES WEEK: 'Talespin gives the programmer all the scope he could possibly need.'

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Updating a Desktop causes problems, and Multiple events are handled in what has turned out to be a quiet month at the clinic. Mathew Lodge takes the helm once more.

PROGRAMMER'S CLINIC

Spring is sprung, but here at the clinic the Summertime Blues still exist for some, though others provide enlightenment and a helping hand. The amount of correspondence was down on previous months - could it be that not printing my address at the end of the column put you off the scent? (Don't worry, we were just checking to see if you noticed).

Desktop dilemma

From Beckton in London comes a letter from one, Paul Catmull, who has had problems constructing a desktop-like environment.

"Alongside normal windows, I have a set of icons displayed and available for selection (similar to a palette). The problem comes with redrawing these icons if they are temporarily covered by a form or window. All that used to happen when the form was erased was that the desktop was redrawn, minus the icons.

I have put extra code in the window redrawing section of my program to redisplay the icons upon receipt of a redraw message with coordinates that intersect with the icons. The problem now is that I do not always have any windows open, and so there are certain circumstances when I do not seem to receive a redraw message from GEM at all. GEM also does not seem to send any redraw messages for the desktop (i.e. window handle 0).

I have tried making the set of icons into a window. I get the redraw messages but can't select the icons as, I presume, their window is not 'topped'. If I 'top' the icons window every time I open a normal window, then the normal window is

shown as not 'topped' and I cannot select the items within that window.

What is the solution? I know there must be one because software such as 1st Word Plus and K-Resource do similar things successfully."

An interesting problem which I feel sure has a straightforward solution. This area is at best skimmed over and usually not mentioned at all by the available ST reference books. Elsewhere in his letter, Paul mentions a new book that I have seen recently called, "Atari ST Applications Programming" (published, I think, by Bantam). It seems to be very good, and although all the example code is in C it appears to be easily convertible to other languages.

The clinic's most regular contributor, Lloyd Patton commented on the standard of GEM books available, and those in particular that he has come across.

"I agree with you that most GEM reference books leave a lot to be desired. The most frequent criticism I hear concerning them is that although they document the GEM functions, there are precious few examples in how the routines are tied together to produce an actual working GEM program.

The worst reference book that I've encountered (apart from the original Megamax C manual), is "GEM On The Atari ST" originally by First Publishing, but now part of the Abacus series and called, "The Programmer's Guide To GEM". It is this book that is probably responsible for programs crashing when GDOS is installed, as the examples in the first half of the book neglect to call graf_handle prior to opening a virtual workstation. Granted that

in the second part, after 250 pages, it uses graf_handle but by then it is probably too late.

The best book, in my opinion, is also called the "Programmer's Guide To GEM", but is published by Sybex. Unfortunately, this book is written with the PC programmer in mind and uses the MACHINE.H definitions which can be confusing to novice C programmers. Indeed, the book does assume a good grounding in C generally, and neglects to mention a couple of the more obscure GEM routines. However, it does present a full working program, Doodle, as an example, and gives a good dissection of the code. Additional information is presented on the GEM philosophy, program structure and metafile output."

Basic problems

Nicholas Ekins-Daukes from Kraainem in Belgium would like to load up a normal TOS or PRG program and run it from ST Basic. He is aware that returning to ST Basic will be impossible once the program has started. Having tried various combinations of the BLOAD command and then calling the code, he has reached an impasse because he doesn't know where the code should go in memory.

To explain why Nicholas's method doesn't work, it is necessary to explain a little about machine code. Back in the days of the eight-bit micro, all machine code (with a few exceptions, like code for the 6809) had to be absolute. This meant that it was written to run at a certain memory location and would crash if loaded anywhere else. With the advent of faster and more capable processors like the 68000, code could be written to be position independent - i.e. it would run wherever it was put. Also, advanced operating systems required that a program can be loaded at any memory location. This is because the actual load address depends on a number of criteria, like how many OS buffers there are, and whether there are desk accessories or resident programs loaded in memory.

To solve this problem, TOS, like other operating systems, provides a function called relocation when it loads a program. Simply stated, the compiler (or assembler) produces absolute code as if it were to be placed at memory location zero when run (i.e. all offsets and jumps are relative to the start of the program). The compiler also provides TOS with a list of the memory locations (addresses) that must be relocated when the program is

loaded. The relocation process simply adds on the address of the start of the program to each address that must be relocated. For example, if a program containing the instruction JMP \$001000 was loaded at \$410004, then after relocation the jump instruction would be JMP \$411004. When all the necessary addresses have been relocated, the program can be started and will run properly.

This explains why a program which is simply BLOADED into memory will not run - it has not been relocated and so will crash. Having said all that, I can't offer a solution to Nicholas's problem in ST Basic. My advice would be to buy a BASIC which provides full TOS access, such as HiSoft Power BASIC or GFA Basic, as they provide a TOS call, Pexec, for loading and running other programs.

Desk accessory dialogue

A quick note from Quentin Rice in Lower Kingswood, Surrey about the problem of mouse clicks 'dropping through' dialogue boxes drawn by desk accessories.

"I sweated blood over this one, and I finally got it working 100%. You do need to open a window if you want to avoid other applications stealing your events. There are certain rules, though :

- 1) The use of wind_update is dubious, but I put them in for good measure.*
- 2) I have opened a window with no elements (not even a title bar) and drawn a mat for the accessory. You must ensure that you do not cover the menu bar. You can make the window oversize to compensate for different screen resolutions. For some reason, if you cover the menu bar with your window, the whole thing freezes.*
- 3) Do not take other events from the main loop such as window update.*
- 4) The screen resolution is only available when the desktop is present via the VDI FNresolution call.*

The example given (Program One) is written in HiSoft BASIC and uses a file selector and loads a resource file as readers may find this useful. The program only uses AES and VDI calls, so conversion to C or assembler should cause no problems."

File structures

Tomasz Kasperkiewicz, a clinic regular whose name gives my spelling checker apoplexy (it

PROGRAM ONE - Desk accessory dialogue example

```
' Note this program is only an example and needs the
' correct resource file to run without crashing.

'Quin's accessory shell
'Q.Rice 1989

rem $option j 30 'leave loadsamemory

library "gemacc","gemvdi" 'MUST be included
id=peekw(peekl(CB+4)+4)
if id<0 then system
mpos=FNmenu_register(id," My Accessory ")

'install on menu

defint a-z
dim shared inv(10),outv(57),message(10) 'global vars
dim shared ok%
dim shared wx%,wy%,wv%,wh%
dim shared pa$,fi$
dim shared fad%

pa$="A:\*.*" 'set path name
if not exists("My_acc.res") then system 'save a crash
a=fnrsrc_load ("My_acc.res") 'load res file

' No resource file, no joy.

repeat main
  evnt_mesag varptr(message(0))
  wind_event=message(0)
  select on wind_event%
    =40:do_accessory

'NO OTHER EVENTS TO BE CAPTURED!!

end select
end repeat main

sub do_accessory
  mode=FNresolution 'screen mode using VDI
  for i=0 to 9 'load workstation params
    inv(i)=1
  next i
  inv(i)=2
  old_handle=FNgraf_handle(x,x,x,x) 'get old handle
  new_handle=old_handle 'swap
  v_opnvwk me(1),new_handle,gr(1) 'open workstation
  my_wind=FNwind_create(0,0,0,0,0) 'create window
  a=FNwind_open(my_wind,0,10*mode%,639,199*mode%)

' open window with absolutely NO components

vsf_interior 2 'set fill
vsf_style 4
v_bar 0,10*mode%,639,199*mode% 'draw mat
a=FNwind_update(3) 'note: MCTRL
doform 0 'do dialog
a=FNwind_update(2) 'end MCTRL
a=FNwind_close(my_wind) 'close window
a=FNwind_delete(my_wind) 'delete window
v_clevwk 'close workstation
change_handle old_handle 'restore old handle
```

suggested 'tomato kayak', by the way) has problems with the many different file formats that inevitably proliferate with the growth of software for any computer.

"As I understand it, at present there are only three linker formats for the ST: Digital Research (DRI) format used themselves, GST format used by almost everybody else, and the format used by Mark Williams C. I would like to write a conversion program for all of these modules, but for this I need to know the storage methods used. The main use of this would be to allow the use of other people's libraries by anyone with a compiler/linker which can deal with at least one of the above formats. It might be an idea to publish a list of formats which popular packages use, for example Lattice, Laser, and Prospero Cs and various Pascals etc.

Another very useful group of file formats which you could publish are the vector font formats: i.e. PostScript, Publishing Partner and Calamus.

Finally, could you tell me the specifications for GDOS: i.e. which bits of GEM the program patch, what format do the device drivers take and what parameters are passed to them? Can anybody show me a working example of the TXTBLT Line-A routine - I have been trying to get this to work without much success."

That's quite a lot of information requested there - each of those topics really deserve an article or three to themselves. As Richard Seel pointed out in a recent article, PostScript fonts are actually a collection of PostScript programs that describe each letter in the font. Font design is not easy, a fact that others and I will testify to, and Bitstream fonts retail from about £100 to £300. Therefore, I would recommend one of the several PostScript books available, such as the PostScript Cookbook if you really want to get to grips with that language.

The GST linker format is very well documented in the Metacomco Macro Assembler manual (version 12), but I can't just copy that into the column for the obvious copyright reasons. Can anyone who has working knowledge of linkers and libraries shine any light on this?

Also on the theme of file for-

mats, the first mention of STOS in this column in issue 39 prompted a letter from Alan Goulding in Penylan, near Cardiff.

"Does anyone know the format of STOS sprite files? This would be extremely useful to me - for example, one could read previously designed sprite files off disk and draw them using GEM. I've tried dissecting them but I'm afraid with no great success.

I mainly program in Modula-2. Since you ask for opinions on programming guides, I can thoroughly recommend 'Problem Solving And Structured Programming In Modula-2' by Elliot B. Koffman, and published by Addison-Wesley. Although obviously not specifically written with the ST in mind, it is an excellent guide to the language from first principles to quite advanced concepts."

Multiple events

Lloyd Patton also sent in a well-written explanation of the event_multi call as requested in issue 39 by Craig Margrove.

"Practically all programs process data in response to user requests. Under GEM these requests are known as events. They can come under a number of guises: the user hitting a key on the keyboard; pressing or releasing a mouse button; or moving the mouse; or messages to your program from GEM e.g. menu selection or windowing events. Now event_multi is the function that can be programmed to wait for any of these events to occur and it returns along with the event the current state of the keyboard and mouse buttons, and the mouse's position.

Essentially, if the 68000 is the heart of the ST, then event_multi is the heart of your GEM programs. So, how do we use event_multi? The calling sequence (in C) is shown in figure 1.

First we need to decide which of these six events we need to wait for: keyboard, mouse button, mouse movement (two of these), message and/or timer. We can wait for any combination of these events by setting the appropriate bits in the eflag parameter. If we want to accept mouse clicks then the parameters

```
cur_evnt = evnt_multi (eflag, /* which events to look for */ FIG.1
  clicks,bmask,bstate, /* button state to look for */
  mlexit,m1x,m1y,m1w,m1h, /* first mouse rectangle */
  m2exit,m2x,m2y,m2w,m2h, /* second mouse rectangle */
  msgbuf,timerlow,timerhi, /* message buffer & ms delay */
  smousex,smousey,smbutton, /* mouse state when event occurred */
  skbstate,skcode, /* keyboard state when event occurred */
  sbclicks) /* number of times mouse was clicked */
```


clicks, bmask, and bstate determine the state of the mouse button which will trigger a return from evt_multi. Also, if clicks is set to two, then the value returned in bclicks will be two for a double click and one for a single click.

The next two groups of parameters are used to set up two rectangles where an event will occur if the mouse pointer moves into or out of the rectan-

useful if a low-level routine performs any calculation which affects a window display (e.g. scroll bar usage) as it allows you to handle all window updates at one place in your program by simply responding to WM_REDRAW messages."

Get your kicks on CIX

The modem-users among you may well know that a program-

```
(In C code :)
cur_evt = evt_multi ( ... etc ... )
if (cur_evt & MU_MESAG)
    handle_messages(msgbuf)
if (cur_evt & MU_BUTTON)
    handle_button()
etc.
(In Power BASIC:)
cur_evt=FNevt_multi ( ... etc ... )
if (cur_evt AND MU_MESAG)=1 then
    handle_message msgbuf
end if
if (cur_evt AND MU_BUTTON)=1 then
    handle_button
end if
```

FIG.2

gle. The m1exit/m2exit parameter is set to one if the event should be triggered by the mouse leaving the rectangle or zero if the event is triggered by the mouse entering it.

Msgbuf is an eight word buffer where the values returned by a message event are stored. Timerlow and timerhi are the number of milliseconds and delay for timer events. They are converted by GEM into a signed longword and therefore timerhi should not be greater than 32767, otherwise you will be telling GEM to wait for a negative number of milliseconds!

Mousex, mousey and mbutton are the addresses where GEM will store the position and state of the mouse when any of the events occurred, and kstate, kcode are the addresses where the current keyboard state (Ctrl, Alt, Left-shift, Right-shift) and the value of any key press are stored.

One additional point to note is that the kcode stored by GEM contains the ASCII value of the key pressed and the scan code of the key. This allows you to distinguish between keys that return the same ASCII value. The ASCII value is in the low byte of the word, the scan code in the high byte.

Evt_multi returns the event that occurred and it is possible for more than one event to occur at the same time. You must determine the events that happened by looking at all the bits in cur_evt (see figure 2).

Finally, you can trigger events by sending messages to yourself with appl_write. This is

mers' clinic conference now exists on the Compulink Information eXchange (universally known as CIX). By the time you read this it will have been running for about four months, and I may have access to a modem. I hope it will be seen as an extension of this column, but with a much faster answer time! Many people have raved on about how wonderful CIX is, so dig out your modem and credit card, dial 01 399 5252 or 01 390 1255 (9600 HST on this line) and 'join stworld/progclinic' now!

A few CIXers commented on the P_EXEC memory problems mentioned in the previous issues. A message from Mark Tilley (mtlley) mentioned that if using Lattice C, the variable _MNEED must be set to the amount of memory your program requires, or Lattice will grab all the memory available and leave none for a Pexec'd child program.

Winding down

That's all for another month. Keep the letters rolling in - especially the solutions and comments on other people's problems and ideas. Don't think that something is so obvious that others are bound to write in with the answer - the continuation of this clinic depends on your support! Remember to include your full name (or title, if preferred), give your phone number if possible.

It amazes me that hardly anyone who writes to the column lists what they would like if they win the monthly Best Contribution prize. Enough of this modesty - tell me what you

end sub

'Note: The window and mat must not cover the menu bar. If they do, then the screen doesn't seem to update correctly.

```
SUB doform(index%)
a=FNsrc_gaddr (0,index%,fads) 'index is data structure
form_center fads,wx%,wy%,ww%,wh%
form_dial 0,0,0,0,0,wx%,wy%,ww%,wh%
drawform
do
result=FNform_do(fads,fe%)
select on result
=71: 'exit buttons
=72: 'use your values
=73:
=74:
end select
loop until r=80 '80 was my "DONE" button
deselect 80
form_dial 3,0,0,0,0,0,0,639,399 'Update the WHOLE screen
end sub
```

```
sub drawform
a=FNobjc_draw(fads,0,4,wx%,wy%,ww%,wh%)
end sub
```

```
sub deselect(x)
b=FNobjc_change(fads,x,0,0,0,0,0,0)
end sub
```

```
sub get_filename (fe%) 'My file selector
n$="" 'fe% is the file extender
pd%=pa%+fe% 'Adds it if it's missing
fse%input pd%,n$,ok% 'ok% is the result
fi%=left$(pd%,(instr(pd%,fe%)-3))+n$
if n$="" then ok%=0
if instr(fi%,fe%)=0 then fi%=fi%+"."+fe%

'fi% is the global filename
end sub
```

would like if you win! You can have one or two items of ST soft/hardware with a total value of up to £80.

Please - don't write and ask for individual replies; I haven't got time to deal with them, and I don't want to disappoint you. It will be a minimum of two months before your letter gets into print. Some contributions may have to wait longer; I have to try to get a good mix of topics, and it may be better to keep yours for the next issue.

If you have a listing longer than about 15 lines then please include it on a disk - I don't have time to type long listings in. I know this can be difficult for overseas readers and I do make an exception for them. If you want the disk and/or listing back, also include a stamped addressed envelope. No SAE, no disk. If you are sending a complete program, then I also

like to see it running before putting it into the column, so please include a double-clickable version of your program if at all possible.

**Mathew Lodge,
"Programmer's Clinic",
"Maen Melin",
Holmes Chapel Road,
Lach Dennis,
Northwich,
Cheshire,
CW9 7SZ.**



The GEM bit-image file format (.IMG) has for many years been kept a loosely guarded secret. ST users have been kept in the dark about its exact specifications. Did the ST developers know any better? Dimitri Koveos sheds some light.

CLINIC SPECIAL THE MISUNDERSTOOD IMG FILE FORMAT

The graphics capabilities of the Atari ST have been praised by many, scorned by others. In the pre-Amiga days, hardware look-up palette registers offering a total of 512 colours, software-defined screen memory and non-sense pixel-addressed graphics made the ST one of the best entertainment machines for the price; furthermore, its excellent, Mac-beating, High Resolution mode also established it as a credible business machine. Inevitably, raster-based paint packages started appearing, with Dave Staugas of Atari USA (NEOchrome) and Tom Hudson (DEGAS) leading the way. Many others followed, ranging in quality and overall appeal from excellent to appalling, and with the notable exceptions of Degas Elite, Art Studio and Art Director most of them bit the dust before the year was out...

As a direct result of the totally uncoordinated assault on the ST software scene of a multitude of paint packages, the ST community has been plagued by a large number of different (and incompatible) picture file formats: NEO, PI1, PI2, PI3, PC1, PC2, PC3, ART, PIC etc. The only thing these formats have in common is that they only cater for standard screen-sized pictures (32000 bytes) plus one or more 16 colour palettes; small sections of the screen ('blocks') or larger-than-the-screen images produced by scanners or digitisers were simply not catered for. Such was the disarray and lack of communication amongst developers that Tom Hudson - failing to see a universal standard emerge for the ST - imported and adopted a file format prevalent in the Amiga paint package world, the Interchange File Format (IFF), pioneered by

Electronic Arts. Tom did a lot to promote the IFF standard which he saw as an ideal vehicle for clip-art and picture exchange between ST and Amiga users. However, although an excellent idea, it is hampered by the disk incompatibility between the two machines, the only way of exchanging picture files being a Comms package and an RS-232 lead! Unfortunately (if not inevitably), Degas Elite is still - to my knowledge - the only paint package to support it!

Right under our nose...

However, the solution to the common standard problem was closer at hand than a lot of people imagined: The ST - as every ST user can't fail to notice - supports Digital Research's Graphics Environment Manager (GEM) which, in addition to being a very user-friendly 'shell' sitting on top of TOS/CPM-68K, is also a complete graphics environment allowing its user access to, and control of, a variety of virtual and physical graphics devices. As such, it supports two graphics disk file formats, the Metafile (extension

.GEM) and the Bit Image (extension .IMG).

The Metafile can be thought of as a recording of a sequence of graphics commands which, when played back by different graphics devices, such as screens, dot-matrix printers, laser printers, plotters, cameras etc, produces output that fully utilises the resolution and other characteristics of these devices. The device-independent nature of a Metafile makes it appropriate for use by object-based software packages which construct and store complex, inter-related graphics structures by means of their descriptions rather than their pixel representations on some screen device. Programs such as GEM-Draw, Easy-Draw 2 and HyperDraw can import, create, edit and export Metafiles to other programs (TimeWorks DTP, HyperChart, LDW etc).

The Bit Image or IMG is, by comparison, a much simpler affair: it is a plane-by-plane representation of a rectangular area consisting of picture elements (Pixels). Unlike a Metafile, an IMG is made up of discrete pixels the number of which does not change from device to device, that is a 10 by 10 rectangle will contain 100 pixels whether it is viewed on a screen device or printed on a laser printer. Obviously, scaling algorithms are normally used to strategically remove pixels (scaling down) or interpolate (scaling up) so that different device resolutions can still produce similar visible results.

The IMG file format offers a very efficient way of storing bit-image graphics blocks of virtually any size. It utilises a variety of encoding techniques to minimise the amount of disk space taken by the file and these are fully defined by Digital Research.

DRI initially designed quite a complicated bit-image standard based on pixel rather than byte runs. Although this was soon replaced by the current format (unbeknown to Atari), the DRI

documentation on which Atari based their Developers Pack wasn't updated. As a result, the 'standard' described by Atari has long been dead and buried and no one seems to have noticed! I loathe to think of the number of ST developers who were led up the IMG blind alley only to find that their code wouldn't even load the ubiquitous GEM-Paint Tiger!

I suspect that this problem didn't affect Software Houses who were porting from or to the IBM PC as, chances are, they got hold of the up-to-date GEM documentation straight from DRI. For a lot of others, working out the IMG file format was too much like hard work and the subject was finally dropped. A journey into the world of disk tracks and file sectors using that bug-ridden but so very Green and Good-For-You Tiny Tool reveals a totally different file header to the one found in the 'official' documentation - let alone the different encoding schemes used. The outdated GEM documentation looked credible enough to even fool ST book writers into including the old IMG format in their publications; the excellent K.D. Peel reference book, 'The Concise Atari 68000 Programmer's Reference Guide' is no exception.

The IMG file format

Before describing the format of an IMG file I would like first to point out that in DRI's specification the choice of number of planes also determines the set of colours that can be used and there is, therefore, no provision for storing the ST's variable palette. This is quite a serious omission as it restricts the user to either sticking to monochrome or always working with the machine's default palette. The reason for this seems to be the fact that the format was designed before GEM was ported onto the ST, in the dark ages of PC and fixed palette domination! However, it is perfectly pos-

Why should we use it?

Well, why not? Seriously now, the IMG file format is as important a component to GEM as the VDI, the AES and GDOS. Whenever GEM is ported across to another host environment, it takes its standard components with it. Furthermore, a standard format which is effective, efficient and easy to program should be welcome by both developers and users; after all, hasn't the lack of standardisation caused the computer industry enough damage already?

All serious Desktop Publishing packages like Fleet Street Publisher, Time Works and Calamus support IMG files as their only vehicle for genuine bit-image clip art (although they still accept

DEGAS etc screen files which must then be 'cropped' to eliminate unwanted areas).

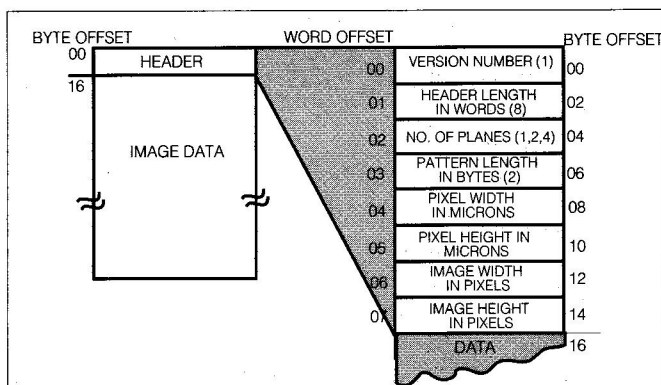
First Word Plus allows you to import IMG files and merge them with your documents.

Most 200 and 300 dpi image scanner software packages produce an IMG file as their output.

Paint packages such as Flair Paint and HyperPaint can create IMG files or edit existing ones of any size (memory permitting).

Last but not least, IMG picture files produced on an IBM PC by some GEM application can be read straight into your ST, thanks to the remarkable similarities between the TOS and MSDOS disk formats!

The IMG Header



(ABOVE) The standard IMG header consists of 8 words (16 bytes) written in processor-specific format. On the ST, this format is Motorola's 'high-byte first, low-byte second'.

WORD	BYTE
0	\$0001
1	\$0008
2	\$0004
3	\$0002
4	\$0152
5	\$0174
6	\$008F
7	\$008E

(ABOVE) For example, a non-extended IMG file describing a 4-plane block, 143 pixels wide by 142 pixels high, coming from the standard Low-res colour screen will have this header. Where the pixel dimensions in words 4 and 5 are the values returned by GEM VDI after opening a virtual workstation and are best used to establish correct aspect ratios rather than overall physical dimensions.

08	EXTENDED IMG FLAG (\$0080)	16
09	PALETTE COLOUR 0	18
10	PALETTE COLOUR 1	20
11	PALETTE COLOUR 2	22
	PALETTE COLOUR 3	24
23	PALETTE COLOUR 14	46
24	PALETTE COLOUR 15	48
	DATA	50

(ABOVE) To extend the header to include the ST's hardware palette, I have chosen the following simple scheme.

No Application program should make assumptions about the length of the header. A well-behaved graphics application will read the header length, extract all the information it needs from the header and then, if it doesn't support the extended format, it will go straight to byte 51 and start decoding the image data; otherwise, it will check the validity flag to make sure that the header has been extended in order to accommodate palette information and not something else, read (and probably set) the palette and then proceed to decode the data.

sible to amend the 'standard' in an entirely permissible way (provided that all applications that use IMGs adhere to the modified format) to include palette information. This will be shown below and is exactly the method adopted by HyperPaint.

An IMG file consists of a header (describing the various parameters of the image) followed by the raw image data encoded in a variety of ways. The header is organised as a sequence of 16-bit values (WORDS) stored in 68000 format (High byte precedes Low byte). An IMG generated on an IBM PC is likely to have a header whose WORDS are stored in the Intel form (Low byte precedes High byte) and a certain amount of sector editing might be necessary to reverse them.

The IMG data format

The image data is stored on a scanline-after-scanline basis and in standard form ie all the line information for Plane 0 is stored first, followed by that for Plane 1, then Plane 2 etc. The normal mode for the ST is device-specific and results in the familiar word-interleaved screen where groups of 16 pixels are represented by sequences of 16-bit values, one for each plane; in fact, a word-aligned group of 16 pixels - all belonging to the same scanline - will look the same in both standard and device-specific forms.

Each scanline is analysed and one of three encoding methods is chosen to best compress the data. If a number of consecutive scanlines (up to 255) are identical, they are only encoded once and are preceded by a vertical replication count. The vertical replication count is coded as 4 bytes:

00, 00, \$ff, count (less than 256)

The encoded data for the scanline that has to be repeated follows the replication count. Every plane specified in the header must be encoded even if all pixels of a plane are zero. The data is encoded in byte-wide packages and therefore the number of pixels described for each plane is always a multiple of eight and not necessarily the width specified in the header (in fact, it is the true width rounded up to the nearest byte boundary).

The three encoding modes are:

•SOLID RUN •PATTERN RUN and •BIT STRING

A Solid Run is a single byte which describes both a state (0

or 1) and the number of consecutive bytes for which that state is true. The Most Significant Bit (bit 7) reflects the state (1 = pixels ON, 0 = pixels OFF) while the lower order 7 bits define the run length. As a result, lengths of 1 to 127 bytes can be encoded by this method.

For example, a 4-plane line of 320 pixels all set to colour index 15 (ie each pixel = 1111 binary) will produce, in standard form, 40 x 4 \$ff bytes. This will be encoded as:

\$a8 \$a8 \$a8 \$a8 (\$a8 = 1 010 1000)

or 128 (bit 7 set) + 40 (number of identical bytes).

If we now assume that the complete screen (200 lines) consists of lines like the one above, a vertical replication count will be inserted in front of the encoded data:

00, 00, \$ff, \$c8, \$a8, \$a8, \$a8, \$a8

It has thus taken 8 bytes to encode a complete blank screen (a screen set to a single colour) excluding the header. I must emphasise here that pixel value = 15 only means that the combined bits from each plane will address the ST hardware palette register 15; what RGB value that register is set to is unknown unless the extended IMG header is used. To confuse things further, the way you specify colours to GEM VDI is not by means of the palette register but via a device-independent system of indices where, for instance, colour index 1 corresponds to a pixel value of 15 (default colour = Black).

The Solid Run is a very efficient method of encoding runs of pixels which have values of 0 or 15 (in the default palette, these correspond to White and Black). The next mode caters for runs of byte patterns, the pattern size in bytes being dictated by WORD 3 of the header (normally 2 for screen devices). The format for this mode (PATTERN RUN) assuming a pattern size of 2 is:

Byte Contents

0 00
1 length of run (1 to 255)
2 First byte of pattern
3 Second byte of pattern

For example, let's now cover our low-resolution screen in a fine checker-board pattern similar to the 'grey' desktop on a monochrome system:

The patterns involved are:

0101010101010101 (\$5555)
and 1010101010101010 (\$aaaa)

There are 20 16-bit patterns for each plane of each scanline and these patterns alternate from one scanline to the next:

1st line: 00,\$14,\$55,\$55, 1st plane
 00,\$14,\$55,\$55, 2nd plane
 00,\$14,\$55,\$55, 3rd plane
 00,\$14,\$55,\$55 4th plane

2nd line: 00,\$14,\$aa,\$aa, 1st plane
 00,\$14,\$aa,\$aa, 2nd plane
 00,\$14,\$aa,\$aa, 3rd plane
 00,\$14,\$aa,\$aa 4th plane

and so on... (also see figure 4)

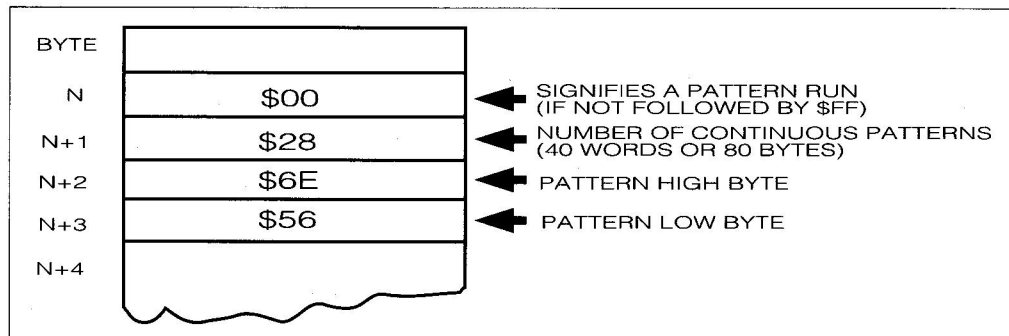
Unfortunately, the vertical replication mode only deals with repeated scanlines, not repeated groups of scanlines and, therefore, this compressed screen occupies 16 x 200 = 3200 bytes excluding the header; this is the same size of file that the compressed DEGAS mode, PC?, produces!

A BIT STRING is used to encode pixel runs which cannot be encoded efficiently as solid or pattern runs; it stores the plane data in its raw (ie not compressed) form:

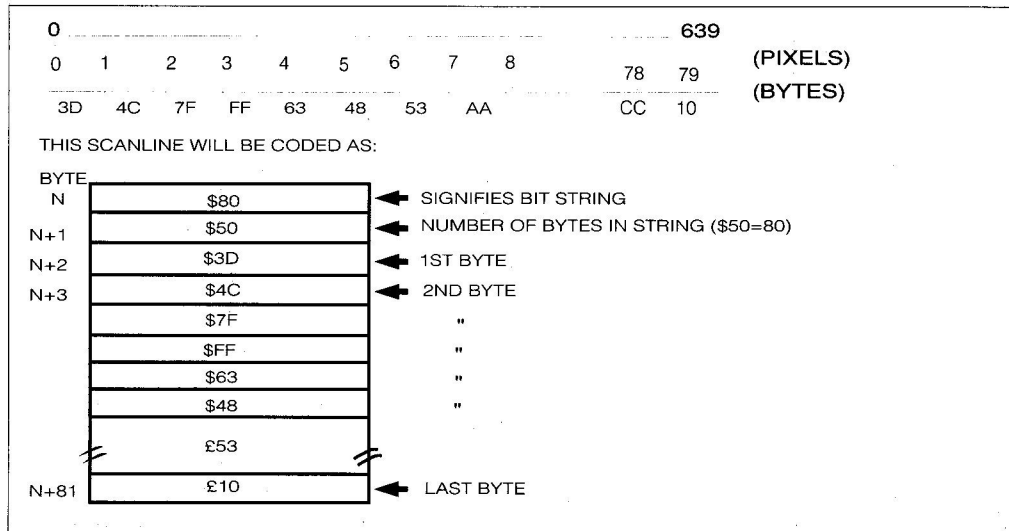
Byte Contents

0 \$80
 1 Byte count, n (1 to 255)
 2 1st byte of string
 3 2nd byte of string
 .
 .
 .
 n n-th byte of string

As there is no compression involved it is possible to end up with an IMG file which is larger than the data it was produced from, because of the overhead of the 2 byte header for each plane. Admittedly, this is the 'quick and dirty' method of



The PATTERN RUN. If a 640 pixel line of a monochrome screen consists of repeats of the above pattern (40 patterns), it will be coded like this.



A BIT STRING is very simple to encode especially for the Hi-res mode where no conversion from device-specific to standard form is required. A single-plane, 640-pixel scanline will occupy 82 bytes in the IMG file.

knocking up IMG files as it only involves converting the screen into lines stored in standard form, saving the \$80, n header in front of each plane of each scanline and saving to disk until all lines have been dealt with. You might find that certain (pricey!) scanners use this cop-out to generate their IMG files since the latter are guaranteed to be read by any application which han-

dles the full standard. Typically, I have come across images scanned at 300 dpi and occupying about 420K on disk which, when loaded into a paint package and resaved using the full IMG standard, shrunk to 160K!

Conclusion

This is more or less the full description of DRI's .IMG stan-

dard for bit image storage and, as you can see, there is really nothing to it! If you are an accomplished programmer, writing routines to read and write IMG files is really quite a simple task; newcomers to software writing can still get great enjoyment and satisfaction by trying to devise algorithms to handle at least the BIT STRING mode - the rest can be bolted on later.

ANSWERS TO YOUR PRAYERS!

PROGRAMMERS CLINIC

Pipped with programming problems? Baffled by techno babble? Don't let the boffins hog 'The Programmers' Clinic'. It's there to help anyone who programs their ST, at any level. If it's VBI from C, or Arrays from Basic, then try the Clinic.

ADVANCED GRAPHICS DISK

With the 'Advanced ST graphics programming' series drawing to a close, perhaps you might like to save yourself the effort of keying in those incredibly useful program listings - see page 71 for full details of how to order the software disk.

ST WORLD I/O

If it's bugging you, then don't just sit there, put pen to paper or finger to keyboard - and get into print! If you don't make an input, you won't get any output! Letters, views opinions, questions: ST World I/O is your space, so use it!

SOFTWARE DEVELOPMENT STARTS HERE

Here are some suggestions for potential ST programmers given by Les Player, former Technical Manager for Atari Corp, now with GFA, and how he thinks GFA Basic 3.0 Interpreter can help you.

1. Don't jump straight into the deep end. Don't attempt to fully understand the Atari ST hardware, TOS, GEM, GDOS and a new language all at the same time. Learn and experiment with each in isolation.
2. Technical Documentation is essential. Ensure any software development system you use is well documented with examples.
3. Learn from documented source code.
4. Don't use a compiler. The compiler's main strength is to produce programs that run fast. You will learn slowly. Use the compiler when you have completed your software.
5. Technical Support is essential. You will need support from the development system authors, not the dealer or distributor. Join a user group dedicated to the software you are using.

The GFA Basic 3.0 Interpreter manual documents the GEM (AES and VDI), BIOS, Line-A and all other features of the Atari ST hardware and software that are supported.

The GFA Basic 3.0 Interpreter manual is 496 pages of documentation. In addition there are several books published supporting advanced GFA Basic development.

Most commands are fully explained with a sample program, explaining the functions and parameters.

GFA Basic 3.0 Interpreter enables you to quickly identify and rectify those syntax and program errors without the need of compiling the program each time an error is found. GFA Basic 3.0 Interpreter code is FAST. (For those that need the code to be faster, the GFA Basic 3.0 Compiler will be available in July 89.)

GFA offers technical support both via CIX (Compunet Information Exchange) and from GFA programmers.

The independent GFA User magazine is also available to developers interested in practical hints and tips.



GFA Basic 2.0, for the Atari ST, with over 80,000 sold world wide, was voted Software of the Year 1988 by US Atari specialist ANTIC magazine. GFA Basic 3.0 is now even more powerful, and is suitable for both novice and professional programmers.

Atari ST GFA Basic 2.0 to 3.0 upgrade £29.95

Atari ST GFA BASIC 3.0 Compiler available July £29.95

Atari ST GFA Assembler available July £49.95

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Box 121
Wokingham
Berkshire, RG11 9LP

Tel: (0734) 794941

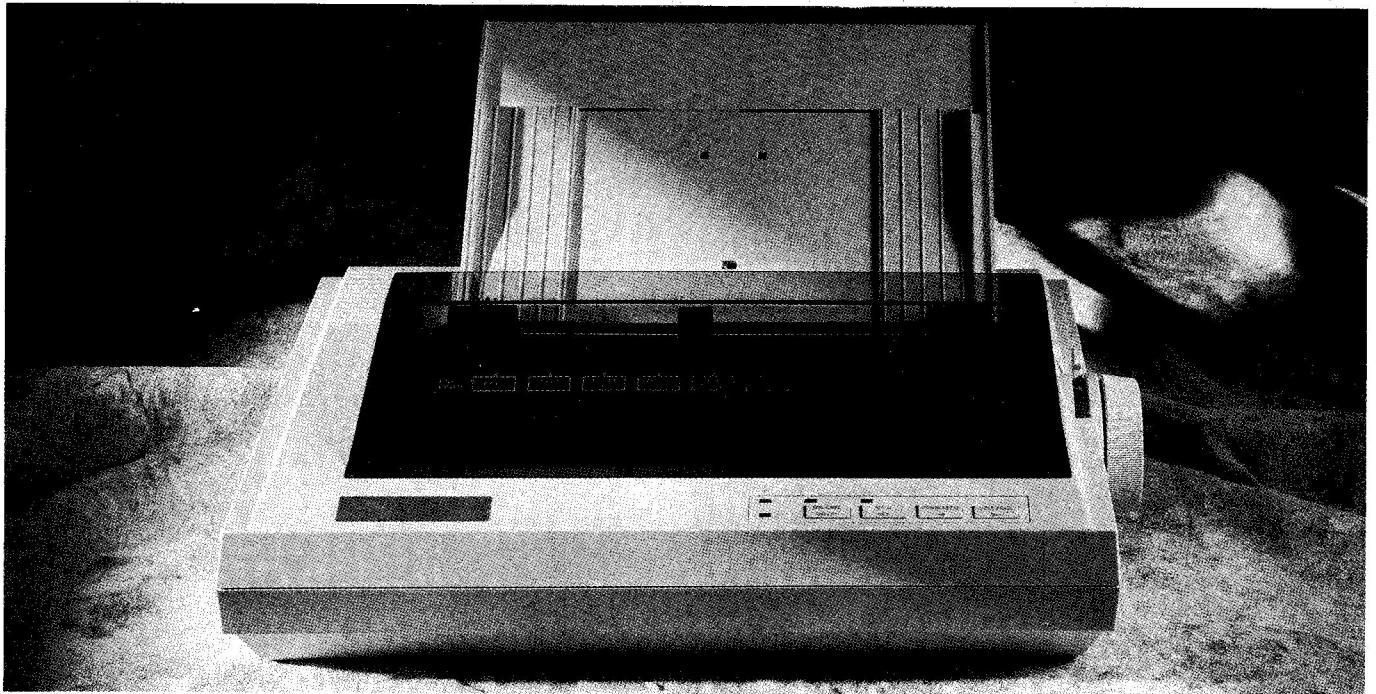
GFA Basic 3.0 for the Atari ST

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Signature		Expiry Date	
<input type="text"/>		<input type="text"/>	
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Address			
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SECOND GENERATION DTP PAGESTREAM

The ST has always had enormous potential as a platform for professional desktop publishing, but until recently, the available software has not fully lived up to the power of the hardware. Will this change now that the second generation of DTP programs is upon us? PageStream, has been hyped as "one of the most powerful DTP programs available for any microcomputer". Günter Minnerup examines its pretensions to the DTP crown.

Not so long ago, desktop publishing on the ST meant simply the ability to combine page make-up in several columns with pictures. Even products such as Easy Draw professed DTP ambitions on the strengths of its object graphics and text frames and its ability to use a range of GDOS fonts. Then Publishing Partner, Fleet Street Publisher and, some time later, Timeworks DTP offered the sort of sophisticated typographical features associated with desktop publishing on the Apple Macintosh: precise leading, tracking, kerning and H&J (hyphenation and justification) together with a reasonable choice of professional-looking serif and sans-serif typefaces in a range of

point sizes. Depending on their respective design philosophies, however, all these "first generation" DTP products suffered from serious shortcomings in some way: the versatility of their graphics tools, their ability to handle multi-page files, their printed output quality or the precision of their typographical controls.

The adoption of the PostScript page description language as an output option by all these packages was a first step in the direction of truly professional abilities, dot matrix printers being quite inadequate for anything more than the most rudimentary requirements. But few ST owners own or have access to

expensive PostScript printers, and having to post disk files to one of the mushrooming PostScript bureaux created new problems: the difference in resolution between a computer monitor (even one as good as the Atari monochrome) and a 300dpi laser, let alone a phototypesetter, made it difficult to precisely predict the output until the postman returned with the printed pages. Kerning, for instance - the fine adjustment of the white space between individual pairs of letters - was made almost futile by the differences between the blocky screen fonts and the eventual PostScript printout.

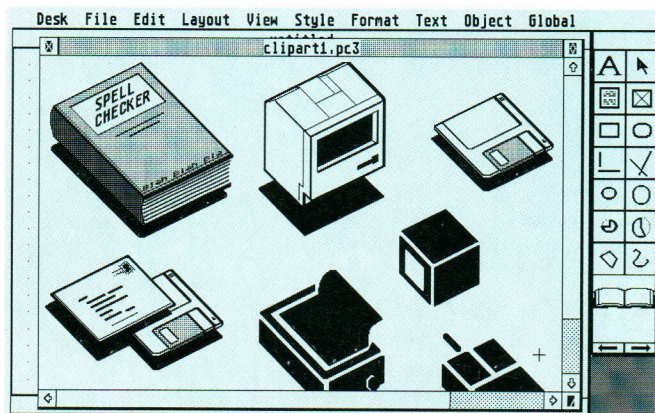
A basic checklist of desirable features and qualities for the ideal "second generation" DTP package is therefore easily arrived at on the basis of the shortcomings of the earlier offerings and the characteristics of the Atari hardware platform: precise typographical control, multi-page file handling, versatile graphics and image processing tools, as much WYSIWYG as possible, professional-standard typefaces and first-class output on the Atari laser with dot matrix and PostScript as viable alternatives.

First impressions

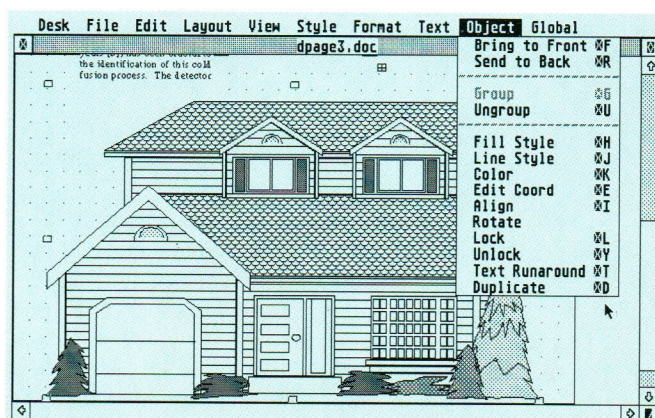
The version reviewed here was still in a pre-release form (v1.55), although PageStream has been available in the US for nearly a year now and Silica Systems, its British distributors, consider this version as more or less the one to be released, bar a few minor improvements. It must be said that PageStream's reputation has been somewhat tarnished by obviously premature release in the States: most reports received here have heavily criticised its flaky, unstable condition. I can-

GRAPHIC INPUT

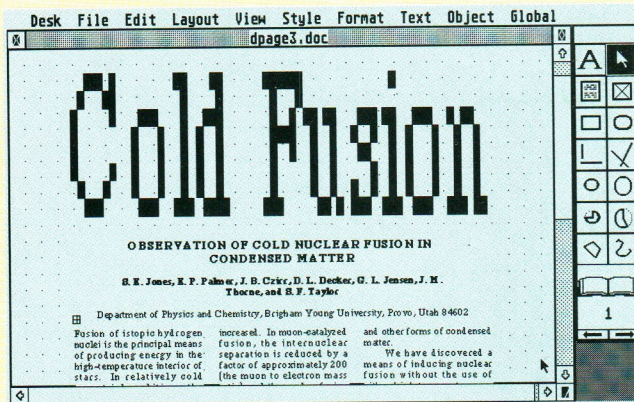
Graphics can be imported in a number of different file formats. Bit-image graphics such as Degas drawings or .IMG scans are first loaded in a separate window, where they can be cropped before being pasted into the document. To avoid the familiar 'moire' or 'tartan' effects and other distortions when resizing graphics, the X/Y proportions can be protected.



GEM Metafiles (object-oriented graphics) are catered for extensively by PageStream. In fact the object draw facilities almost amount to a built-in EasyDraw package - very useful indeed. Object art can be imported directly into a PageStream document, at which point it can be re-sized, ungrouped, re-grouped, rotated and fully edited or modified.

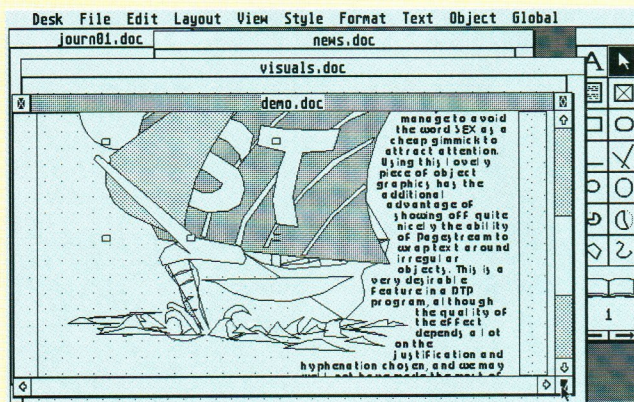


USING PAGESTREAM

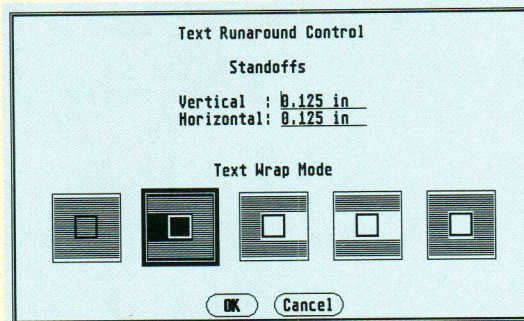


1 Like most DTP programs, PageStream uses frames as the basic building blocks for page make-up. It is only necessary, however, to explicitly draw text frames since graphics, boxes and lines can be placed anywhere on the page via the toolbox icons or a pulldown menu. The clean, uncluttered user interface feels quite Mac-like, down to the use of cut, copy and paste (with standard keyboard shortcuts) for moving objects around within a document or between documents.

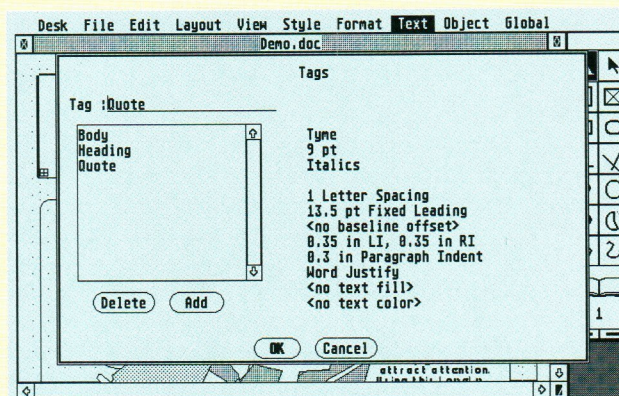
There is no separate text editor: text can be imported as an ASCII file or straight from several dedicated word processors, but it is also quite quick easy to type straight into the columns on screen. In fact, the ability to use keyboard shortcuts and user-defined macros instead of selecting menu items makes it possible to produce a document without taking your hands off the keyboard and reaching for the mouse too often - the program only slows down appreciably when many different fonts, styles and graphics are used in a fairly long document. Once that stage has been reached, "greeking" (the substitution of stylised bars for readable text) helps speed up layout operations.



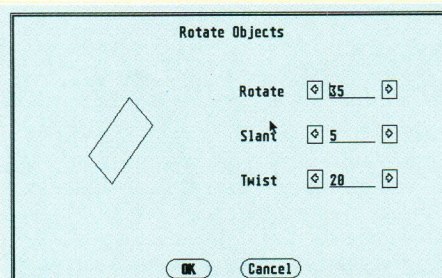
2 PageStream can handle multi-page documents of up to 255 pages each, with imported text flowing automatically between columns once the "text routing" has been defined. Up to six documents may be open at one time.



3 A number of options regulate the flow of text around graphics: this can be channelled to pass both regular and irregular shapes on the left, right, or all around and is dynamic, that is it adjusts automatically to any repositioning of either text or graphic frames. Text and graphics can be grouped together into one large object and cut, copied and pasted to any other position within the same or another document.



4 Tags - a sophisticated form of keyboard macros - allow you to set point sizes, leading, attributes, indents and even colour for standard paragraphs and text formats across the document. When one of these definitions is edited, all identically 'tagged' elements will be altered accordingly: elegant, and very useful indeed.



and freehand lines. The 'Rotate' item in the Objects menu allows not only the precise rotation, but also the slanting and twisting of graphics and text objects.

5 The toolbox provides a good collection of object-oriented drawing facilities: boxes, circles, polygons, ellipses, arcs, straight

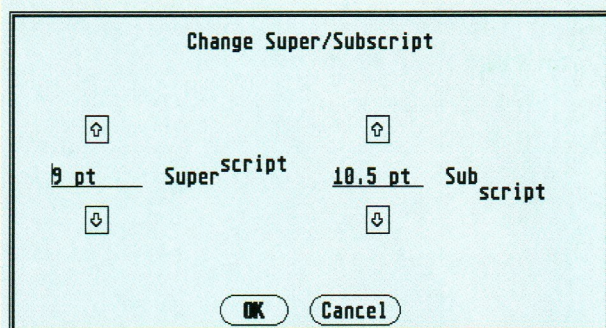
not truthfully claim that the review version was entirely bug-free - it worked, and did not crash any more frequently than some other highly respectable products I could mention, but many of its features had some rough edges, leaving the cursor in unpredictable places, corrupting the screen display, not always behaving in a rational or calculable manner. It would be unfair to go

into too much detail on this score as both Softlogik and Silica are working very hard to hunt down the bugs and will undoubtedly have slayed quite a few more by the time the UK release hits the market.

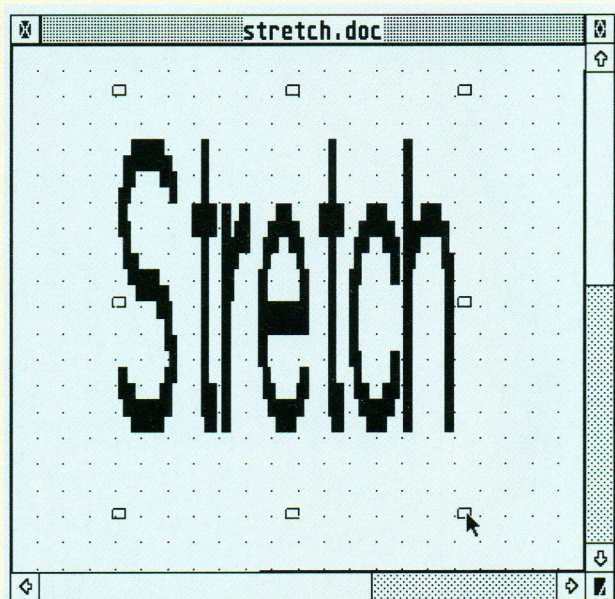
Installing PageStream is simplicity itself. All that needs to be done is to copy the master disks - three of them - to working floppies or your hard disk,

and to click on the relatively trim 210K .PRG file. Once inside the program, the directory paths for the default fonts, printer drivers, import-export modules etc. need to be defined and saved, and off you go. Curiously, owners of the Atari laser must install the Diablo daisy-wheel(!) emulator before attempting to print, because PageStream's Atari SLM 804 laser driver cannot initialise the

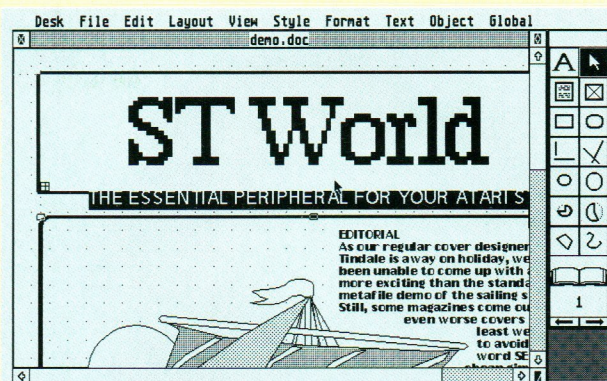
TYPOGRAPHICAL CONTROL



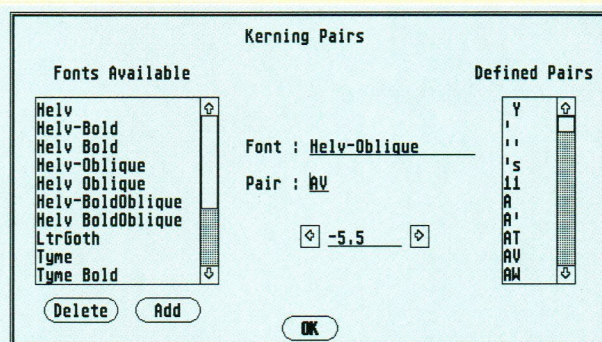
1 PageStream is very strong on typographical controls, and these are nicely implemented. In most cases as, for example, the fine tuning of subscript and superscript, paragraph indents, line and character spacing - the effect of any changes are immediately displayed in the dialog box before you return to the main document screen.



2 One interesting novelty is what the manual calls "text objects": you need not draw a text frame for small items such as: page numbers, picture captions or headlines, but can enter these anywhere on the page. Once entered, they can be edited like ordinary text frames but are treated by the program as object graphics - just click on one of the handles and you can stretch, squash or otherwise distort your text object.



3 Kerning and other fine-tuning operations require that you can see what you are doing. Unfortunately, the quality of the screen fonts employed by PageStream is so poor that WYSIWYG remains little more than an ambition. Just contrast the appearance of the 'ST World' logo in this screenshot, after a considerable amount of manual kerning to approximate the original with the printed output, where characters which appear reasonably well spaced out on screen overlapped quite badly. To be fair, all existing DTP software that uses different fonts for screen and printer is affected by this to a greater or lesser extent, even on the Apple Macintosh and irrespective of whether the output is dot matrix, "dumb" laser or PostScript. The exception, of course, being Calamus.



4 One of the most important functions of any DTP program is the ability to "kern" certain combinations of characters when these occur in very large point sizes, as in headlines. Default kerning pairs have already been defined in the font widths files supplied, but you can modify these, or add the definition of a new kerning pair, in the dialog box pictured here. The spacing is measured in units of one hundredths of an "em" (a traditional typesetters' term based on the width of the letter m in a given font) - obviously this is one operation which the dialog box cannot instantly display with its Atari system font, so you will have to go back to the screen to gauge the effect.

printer without it.

Mixed feelings

I am torn between admiration and doubt. Admiration for the design concept, which is everything that desktop publishing on the ST should be, and the awesome specification. This really is a monster of a program, permitting

almost any conceivable text, graphics and layout operation from within the application, and - equally important - doing so in a user-friendly, ergonomic fashion.

One major doubt is that of print quality. PageStream only delivers anything like professional output quality when used in conjunction with a PostScript printer. The soon-to-be-

released UltraScript PostScript emulator for the SLM804 may well alleviate this particular problem, but until then, it is back to the bureau. The screen fonts are nothing short of a disgrace: fine-tuning work like kerning, even the accurate positioning of text objects, is quite impossible with such blocky caricatures. Silica promise that there will "soon" be a version with screen vector

fonts, producing true WYSIWYG. Until then, much of the impressive on-screen and in-manual functionality of this product will be negated by the frustrations of ending up with a disappointing result on paper.

Conclusion

PageStream is undoubtedly the most user-friendly desktop publishing package available for the ST. With only one small block of toolbox icons to worry about, you can concentrate your efforts on page design. The program is packed full of useful features - far too many to cover here - with only a small amount of gimmickry to distract. It is unfortunate that the quality of printed output is not quite up to scratch for the more discerning DTP'er. This is particularly noticeable with Laser output.

With an improvement in output quality, more accurate on-screen representation, and better program stability, PageStream could be described as truly outstanding. For now, though, it is an affordable alternative to Calamus which is also brilliant, but flawed.

Product:.....PageStream

Version:.....1.55, pre-release

Price:£149 plus VAT

Distributor:.....Silica Systems

Phone:01 300 3399

PRINTED OUTPUT

Print Driver: Atari SLM804 laser v1.5

Copies 1 Print Density 1 2 3 4 5 6 **7** (300,300)

☒ All ☐ From 1 To 1

☒ Scale 100 % ☐ Form Feed

☐ Thumbnails ☐ Manual Feed

☒ No Separation ☐ Tiling

☐ 4-Color Separation ☐ Crop/Registration Marks

☐ Mechanical ☐ Transparency

☐ Write White

Print **Cancel**

Printer support is good, and extends to full PostScript output. It is also possible to produce four-colour separations when printing to a PostScript device. These separations are colour components from which it is possible to print full-colour pages.

A good number of fonts is provided, to which a range of attributes (bold, outline, reverse, shadow, upside down, etc) and typographical controls (expansion, compression) can be applied. A separate font editor and conversion utility allows customisation and the use of the wide range of fonts made available for PageStream's predecessor, Publishing Partner. Unfortunately, some of these fonts are of dubious use and quality with poorly designed shapes and irregular letterspacing, particularly in the larger point sizes. It is likely, however, that better fonts will quickly become available once PageStream is more widely used. In the meantime, PostScript output using the standard Adobe fonts should satisfy even the most discerning users.

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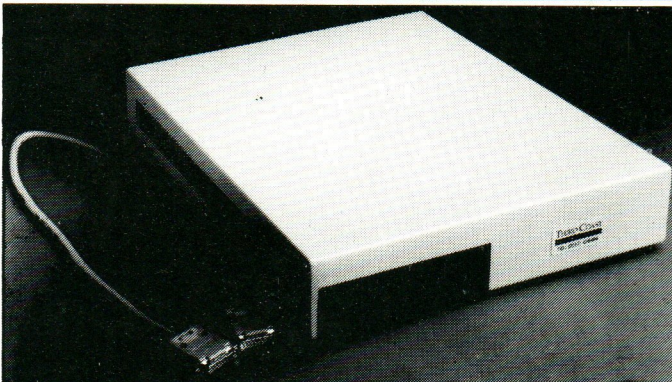
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PAST, PRESENT AND FUTURE CUBASE

After a bit of a dry period, there have been several really major software releases for the ST. First came Calamus, hotly pursued by PageStream. Now, in their wake comes another second generation product, a sequencer called Cubase. We asked Graham Wayne to explain why he thinks Cubase will also have a profound effect on the ST music market, on users and on other software developers.

Cubase can be described from two perspectives - past and future. On the one hand, the program is a distillation of all the popular graphic representations and midi handling systems on the market, driven by a superb front end that obviously draws on the wealth of knowledge and feedback Steinberg must have acquired since virtually founding the ST sequencer market all those (four?) years ago. Nothing really new in terms of graphic representation though, and most of the functions are improved or extended versions of previous techniques, although there are a great number of them.

On the other hand, there is MROS. Only 42K in size, this potent little file overlays the operating system of the ST, providing control of all midi timing and setting up a communication system governed by a message manager, which will talk to other STs running under MROS. But more immediately, MROS allows the user to operate any program utilising it without disturbing another program in memory. In other words, true realtime performance and multi-tasking on an ST. The major impact of MROS for the Cubase user is that any operation - load/save to disk, record, swap tracks, rewind, fast forward, open and close windows, edit data, quantise - all these functions and many more can be performed while the sequencer is playing. And if you have another Steinberg product and the memory to get it in the ST using the switcher program that comes with Cubase, you can access and use it without stopping the sequencer.

But there are some pitfalls for the unwary. To start with, if you have more than one Steinberg program you will need the dongle expander, costing an

extra £120. Needless to say you will require substantial amounts of memory (Steinberg suggest 2 meg as a minimum). If you want to take advantage of the communication between two or more STs made possible by MROS you will have to buy a unit to expand the number of midi ports on your computer, since MROS requires both in and out midi communication between machines, using up the built-in midi ports. However, the good

news is that Steinberg are licensing the operating system to third-party developers, so that other editors or even, dare I say it, sequencers may be compatible with the timing and message system control incorporated in MROS.

The greenhouse effect

Not heating up the biosphere, but the number of windows and menus that pull down, pop up and materialise at unexpected moments. The main working area is the arrange window, in which parts (néé sequences) are created and placed on tracks. Parts can also be grouped, chained, copied and so on, and arrange windows can also be chained to form songs. As Steinberg themselves point out in the copious and clearly written manual, the way you construct pieces of music depends on taste and method. Several arrange windows can be open at once, each containing 64 tracks of data, and new arrangements can be loaded while others are playing.

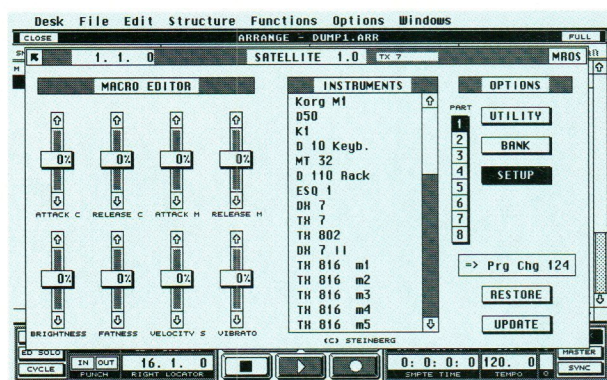
There are four edit displays: Key, Score, Drum and Grid. Of them, only Key is new to the Pro-24 user, although they all have improved functions and use the new window system. Key edit, the new-comer, is of course the piano roll display that everyone else seems to have these days, although this one is particularly useful as several parts from different tracks can be seen in the same window.

The whole system has, in many respects, moved closer to the operation of an analogue tape recorder. Rewind

THE SATELLITE

● **The Satellite utility is also included on the Cubase disk. This program can be run as an accessory or from the desktop (concurrently with Cubase using Switcher) and serves as a super-librarian/system exclusive dump facility taking advantage of the MROS pipeline system. Satellite supports many major types of equipment and will display Synthworks files for loading or saving singly or in banks.**

● **Sound data (sys-ex) can be saved on sequence tracks which can be loaded automatically when the sequence is first played, system dumps can be stored of an entire studio setup, and each synth editor page has 8 common and useful editing controls for that device on faders that can be used for rudimentary editing of the sound.**



and fast forward operate while the sequence is playing (the manual often reminds the user that a function being described works without having to stop the sequencer) and the sequence can be cued using FF or rewind while the sequencer is stopped, causing the music to play at high speed in the manner of cuing a tape. In addition, there is a really useful magnifying-glass pointer tool that can be "scrubbed" over any part display in any editor or arrange window, making that part play at the speed the pointer is dragged over the graphic representation of the part.

And there's so much more: sophisticated looping, mute macros on function keys to set up combinations of muted/unmuted channels on the function keys. Cubase will record four tracks simultaneously and chase controller events, human sync where the sequencer will track the tempo of live midi input, full SMPTE implementation with SMP24 or Timelock, compatibility with Pro-24 files including track names, settings and the drum map. Then there's the Satellite accessory and the Switcher and...and so on.

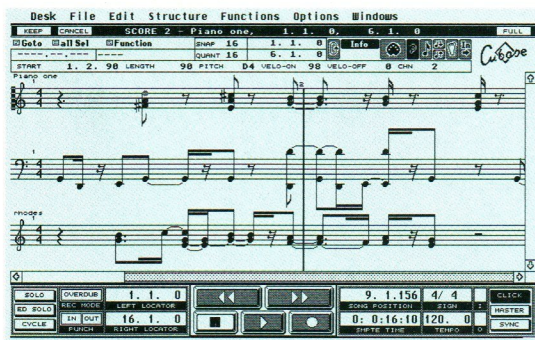
First impressions

This can't claim to be a comprehensive review; I've only scratched the surface of this all-singing all-dancing sequencer. It is the best behaved piece of software I have looked at for ages although I witnessed a conflict, as yet unresolved, between Cubase and my Fostex 4050 autolocator/Midi clock generator which normally works without a hitch. But I can offer a few subjective comments about my impressions so far.

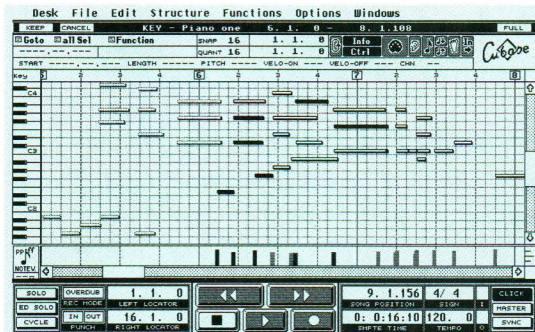
Primarily, Cubase provides an environment in which virtually any kind of data can be viewed and edited in any of the popular formats. The user-interface is really excellent, with pop-up menus offering logical selections and a range of sophisticated tools for manipulating data. The fact that all these functions work in realtime means the rate of work increases quite rapidly, so although Cubase is really quite complex, even the learning process is made expeditious by the efficiency of the interface. The way all the functions and windows interrelate demonstrates the experience Steinberg have brought to Cubase, the MROS operating system and the improved Gem environment demonstrates their vision.

The price for Cubase is set at £500 (including VAT) and although this is the most expensive ST sequencer, it does offer value for money, to the professional Midi musician. Compared to Notator, which is very popular and closer in price than most of the competition, Cubase offers considerable advantages, although users will have to wait for the free scorewriting upgrade that will be

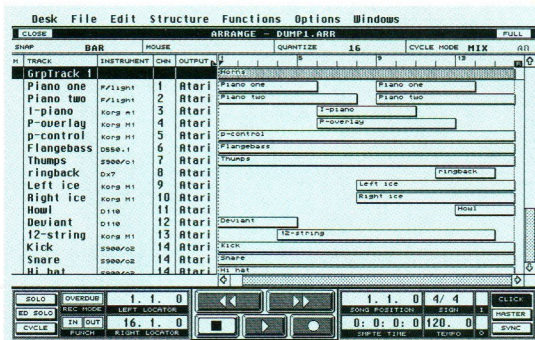
CUBASE IN ACTION



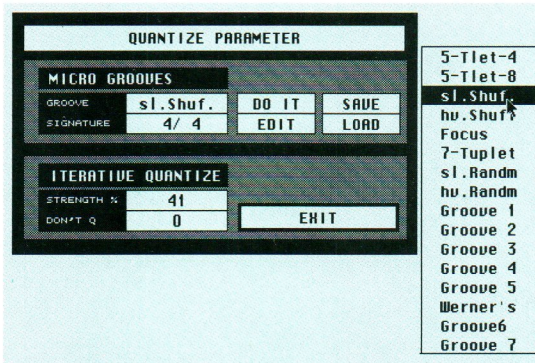
● A nice aspect of the arrange and edit windows is that you can try the most complex edits and rearrangements without affecting the original. New versions can then be saved to disk (without stopping the sequencer) or any changes can be scrapped simply by closing the window using the cancel option. Clicking on Keep will write the changes back into the original sequence.



● All the editors will allow you to display as many parts as you wish at one time. The part you are currently working on is shown highlighted; other parts are displayed in grey but can be selected for editing by clicking on any note of the required part, thus making it active.



● The window functions are most impressive. By clicking with the right mouse button on the arrows at either end of the scroll bar, the contents of any window (with the exception of the score editor) can be expanded or reduced either horizontally or vertically, including any text. This applies equally to the way split information displays operate.



● Quantising, like so many of the editing operations, does not evoke a permanent change in the sequence data. Instead, Cubase stores the changes and applies them when a sequence is played. However, it is possible to undo any or all changes to a part at a later date, unless the edit is applied directly to the part using the Freeze feature. As you would expect, there is a sophisticated range of quantise options as well as a groove quantise feature which facilitates the building of quantising maps, like templates, that can be applied to any part.

sent to all owners by the end of July. There is also an upgrade path for Pro-24 owners and an upgrade subscription service costing £25. The most pungent criticism I can muster is that after all the work on the user-interface, it's too bad they didn't implement a file-selector that allows button selection of disk drives. Other than that, I'm hard put to criticise.

I have only two regrets about Cubase: one is that there isn't anywhere near enough space to tell you about all the functions contained in the program; the other is that this article will leave my credit card weeping, for I find myself

compelled to buy Cubase as soon as I can afford it.

Product: Cubase
Version: 1.0
Price: £500 inc VAT
Distributor: Evenlode Soundworks
Phone: 0933 898470

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"Actually using the program is very simple, everything is under the control of simple menus, generally operating through a split screen, which has options and prompts on one half and a working area on the other. Even people who know nothing about accounts or PC's should have few problems . . . If you're running a small business, SBA Xtra should be just fine for you."

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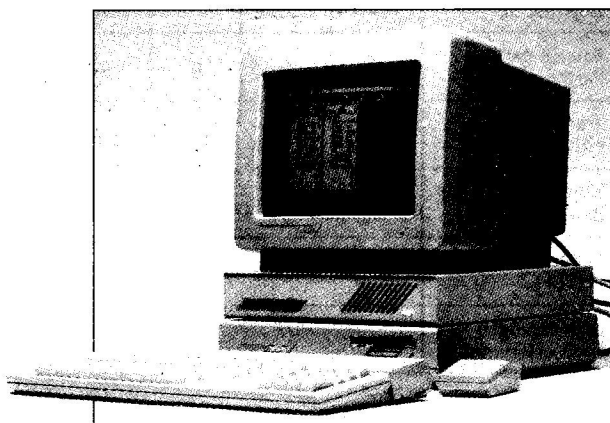
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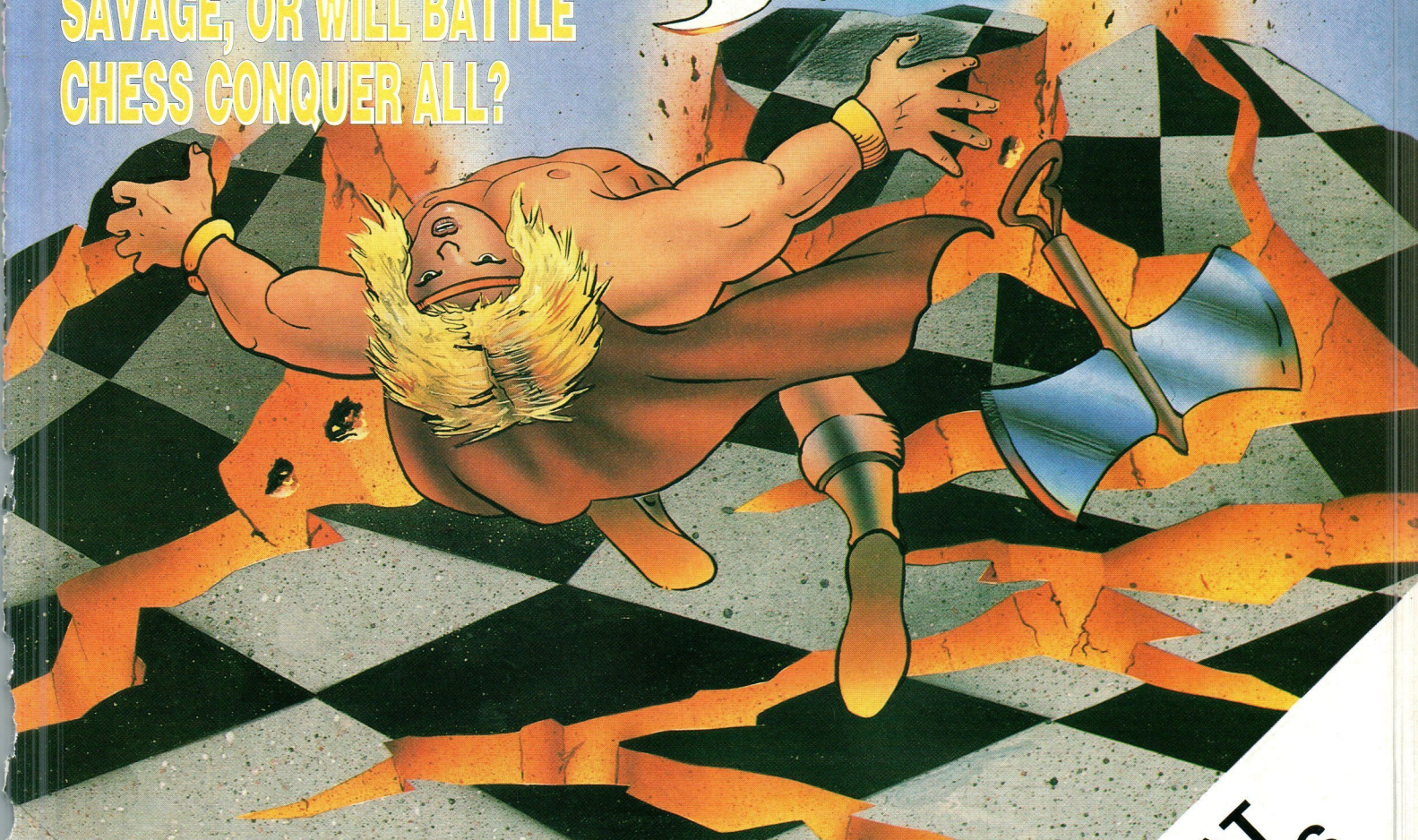
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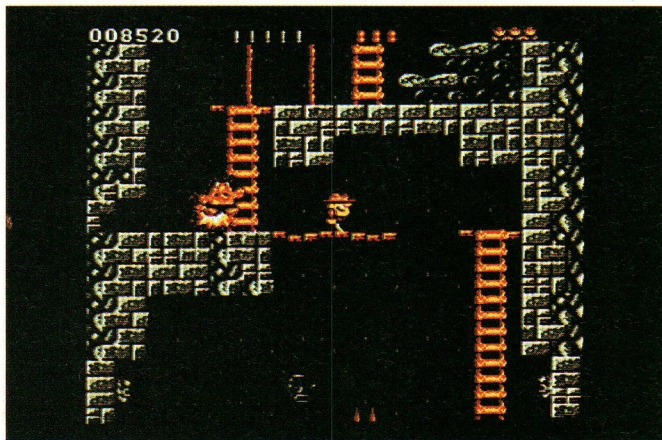
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For those of you that don't know, ST Action is ST World's sister magazine which every month does an A1 job of covering the exciting ST games scene. Issue 15 of ST Action must be the most impressive issue yet. Jason Spiller reports on the antics of software producers Psygnosis who have no less than seventeen games scheduled for this year. Giving the Game Away comes in the form of a sixteen page pull-out supplement, featuring tips for Pacland, Populous, Cosmic Pirate and Gunship. In addition to all the other features we also have three incredible competitions. Win a Pool table, STOS add-ons or a deluxe joystick. ST Action is in the shops now. For a mere £1.50, can you afford to miss it?



Rick Dangerous

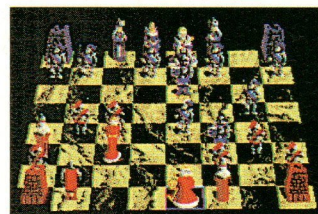
Whilst in search of the rare Goolu tribe, archetypal Boy's Own hero, Rick Dangerous, has crash-landed his plane in a dark forest, somewhere in deepest Gooluland. Scrambling unscathed out of the wreckage, Rick dusts himself down and wanders into the unknown - straight into the path of a bunch of angry Goolus!

As he progresses through Gooluland, Rick must crawl or jump to avoid traps such as falling portcullises, spiked floors, spear-spitting emplacements, and any wildlife that is lurking. After

Rick has made his way through Gooluland and collected all of the valuable masks that adorn the walls, he returns home. Once back, the British Museum then send him on another escapade, this time to collect a jewel from Egypt. Instead of the rampaging Goolu, this time Rick's life is endangered by the fanatics who guard the jewel - and they too have set a multitude of traps! After this, the saying: 'no peace for the wicked' proves true, as Rick is sent off to explore a distant rain forest.

Battle Chess - Electronic Arts

Pawns are pushed out into the Battlefield allowing stronger pieces to attack. The computer elects to move its Rooks, and the castle strongholds clump over the board. A Knight pushes his way into a dangerous position and a cheeky Pawn challenges. The cowardly Knight takes flight, but the cunning Pawn blocks the way with his pike and the Knight turns to smite the urchin, who swiftly brings up a bony knee into sir knight's groin. In blinding agony, he realises he has forgotten to put on his armoured cod piece and bows down. The battle rages on, a heraldic moves to take his opposite number, he chops off his arm, his leg and finally, his noble head. Finally, Queen attacks Queen - the enemy King and his wrecked kingdom is yours. His battered crown slipping ignobly to one side.



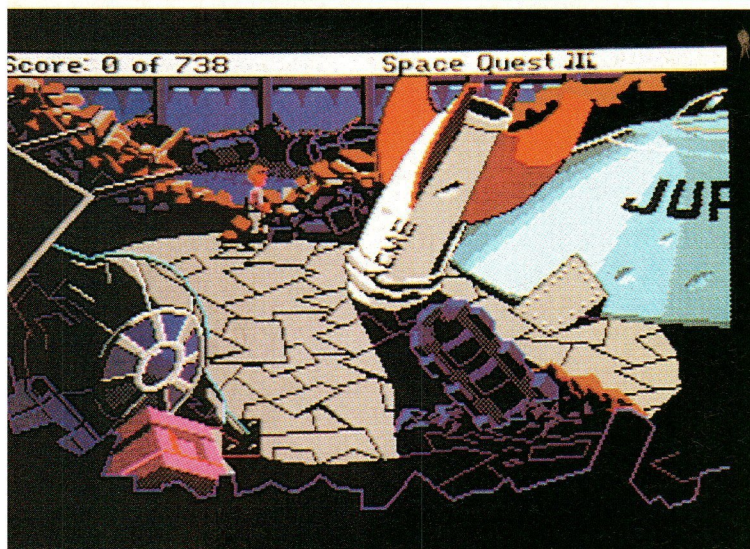
Silkworm- Virgin Games

Silkworm is a shoot'em-up of what you could call 'the old school' - i.e it features extra armaments and the obligatory end-of-level giant ships. Like most arcade games, Silkworm doesn't have a scenario. In fact, the only reason that you are entering the war-torn battlefield is for the accumulation of points!

The accumulation of these points is set over eleven levels of hectic horizontally-scrolling action, where either one or two players can participate. In addition to the onboard weaponry, extras such as double fire, temporary invincibility and smart bombs can be collected by shooting down specific types of the enemy craft and collecting the icon they leave behind.



However, any extra weapons gained are instantly lost if your vehicle comes a cropper at the hands of the enemy. Of course, there is the alternative to dying, and that is firing back! Both of the vehicles have their advantages and disadvantages in this respect, but generally, both can deal with the attacks admirably. For instance, the helicopter is more adept at shooting the flying assailants, yet its missiles aren't quite as accurate for destroying the ground-based silos as the jeep's cannons are.



Space Quest III

Having foiled the evil plans of 'Sludge Volhaul', our hero made his escape by sealing himself into a suspended animation capsule and blasting off into space. With luck, and a following space wind, Roger hoped that his tiny ship would drift across the vast reaches of space to be picked up by a passing ship. Unfortunately, luck is as rare as rocking-horse manure around this neck of the galaxy, and it's into the vast maw of a gigantic garbage collector that our hero's ship has been vacuumed.

The only note of caution that must be voiced regarding this game is that it is not difficult to complete. The game designers have elected to keep the fun and the action flowing at breakneck speed, for this reason the problems tend to be easier than any so far encountered in a Sierra adventure. Points are awarded for carrying out certain actions which may not be essential to the completion of the game and it is therefore possible to complete the game with a very low score.

Deja Vu II - Mindscape

You've already had plenty of excitement in the last 48 hours. You've been abducted by two thugs from Chicago, grilled by the notorious Las Vegas mobster, Tony Malone, knocked senseless, and tossed into a bathtub in a cheap Vegas hotel. It couldn't get any worse than this - or could it?

This game is the latest of



the Icom Simulation adventures which include Shadowgate, Uninvited and Deja Vu I. All of these games have been immensely popular with the middle-of-the-road adventurer as they are fully mouse-driven and feature splendid graphics with digitised sound-effects. Like its predecessor, this game's storyline concerns your efforts to escape from a tangled web of shady money and trigger-happy gangsters. Unless you can recover a large sum of money from one violent punk, another violent punk is going to make you an offer of a pair of cement boots, which you will find very hard to refuse!

Total Eclipse MicroStatus

Hot on the heels of Darkside comes Total Eclipse, a game which exploits the ancient Egyptian's bizarre and fantastic architecture and their fascination and worship of astronomy, in particular the strength of the sun and moon. Incredibly, they built their massive structures in symmetry with astral movement, predicting eclipses which darken, then light up the inner most sanctums of a king's tomb on one specific day in the astral calendar. In Total Eclipse, experts have found hieroglyphics which say that a certain pyramid has been built to predict and cause Armageddon, in line with an eclyptic day... today is that day! Your task is to enter the pyramid and stop global destruction.

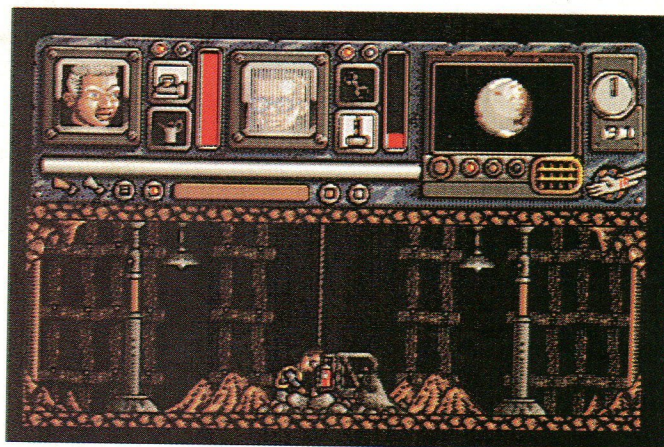
Your equipment includes: a watch, pistol, compass and torch, all of which are mouse activated. Your progress is governed by how quickly you can find the akhs which will gain you access to deeper recesses in the pyramid. Of course, there's all that sacred treasure to find as well. Don't hang around too long, however, as you've only got two hours to complete the mission.



Savage - Firebird Software

Savage is essentially three different games squeezed into one package. The story behind the game is that a group of Savage's friends have been kidnapped by an evil force and are being held in the bowels of a massive castle. Because our muscle-bound hero is so aptly named, only he can save them, and using his magical ability to change into an Eagle, you must guide him through the three dangerous levels.

The first level begins as Savage runs through the dungeon's catacombs, the evil kidnapper's hordes begin to attack you. Pressing fire causes our bronzed hero to lob a volley of axes at your assailants. Level two's action is viewed through Savage's eyes and involves moving Space Harrier-style across a striped landscape, avoiding any collisions with Savage-flattening stationary objects and shooting giant creatures with your cross-hair sighted weapon. Level three sees Savage transform into his Eagle form as he attempts to free his incarcerated friends.

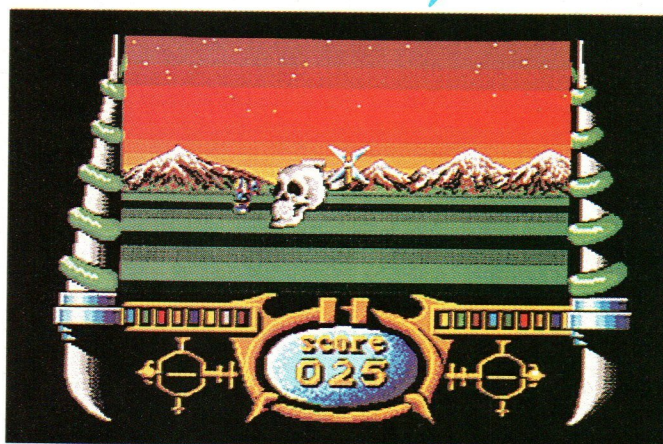


Thunderbirds

Grandslam's Thunderbirds game actually features the Tracys, Lady Penelope, Parker and Brains. Thunderbirds features a myriad of object-related puzzles which require pairs of the International Rescue team to solve them. The adventures the team face are full of dangers, such as falling rocks or rising water, but, in true Thunderbirds fashion, the heroes never die, but are always retrieved by International Rescue - effectively, game over!

There are four missions for International Rescue to tackle: Mine Menace; Submarine Crash; The Bank Job and

Countdown to Disaster, but you can only access the latter three missions if you manage to gain the password from the previous one. In Mine Menace, the first mission, two miners have been trapped in a rapidly flooding mine and it is up to Brains and Alan to stem the water's progress and rescue the miners. Although both characters hold two objects, should the other character need something the other one is holding, pressing space swaps characters, allowing you to take the object down to where the other person needs it.



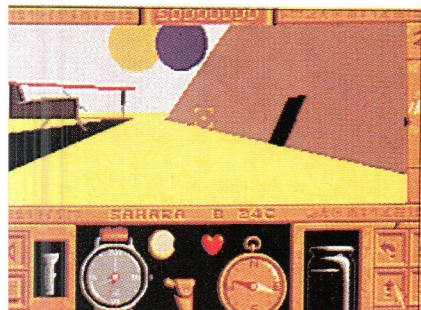
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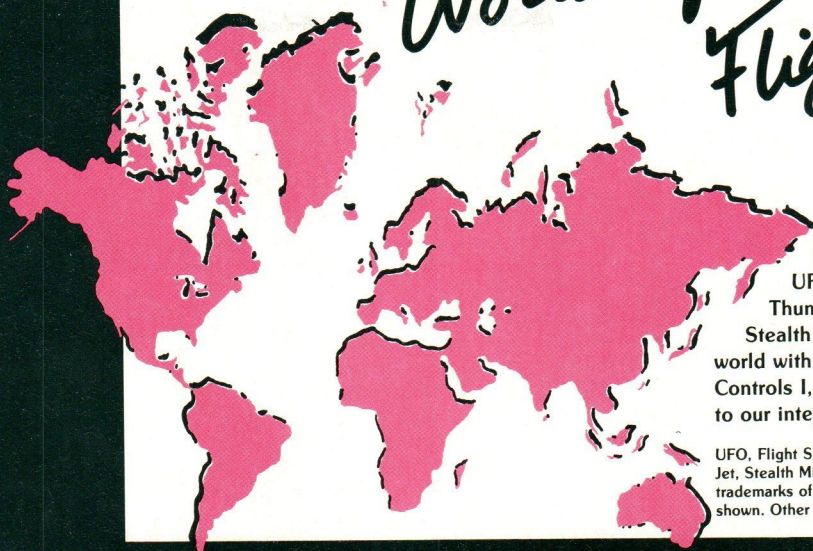
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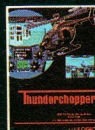
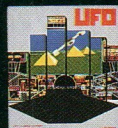


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PERSPECTIVE • ANIMATION • MULTI-FACETED OBJECTS

Last month, Jeff Lawson dealt with three-dimensional transformations: viewing a polygon in any arbitrary angular attitude. This month perspective and multi-faceted objects are covered.

Perspective is the illusion that objects grow smaller as they recede from the viewer's eye. In order to understand this, imagine a line, or normal, drawn out along the direction in which an eye is looking. Any given object can be supposed to transmit a number of point light sources over its entire (illu-

minated) surface. Consider the angle between the normal and an imaginary line connecting such a point with the eye (the path of the light ray seen by the eye). As the object recedes, in a direction parallel to the normal, the angle grows smaller. This results in the corresponding location at which the light

ray impinges upon the eye's retina getting closer to where the normal passes through the retina. Hence, an object's apparent size decreases in inverse proportion with the distance from the eye (or more precisely, from the focus which lies just behind the eye).

For a geometrical object to be displayed on a monitor screen each vertex needs to be adjusted for perspective. A straight line bounded by two vertices becomes another straight line bounded by the vertices after transformation and perspective adjustment. Thus we need only adjust the vertices of an object after 3D transformation then draw each facet in the usual way.

The crux of this discussion lies in how to make the perspective adjustment. The key to discovering this lies in the realization that all objects must finally be viewed on a monitor that sits about half a metre from the eye. The monitor screen can be referred to as a viewing plane. What is needed is the two-dimensional position (coordinates X,Y) that lies in the viewing plane and corresponds

to the point at which the light ray from the vertex to the eye cuts the viewing plane. This position is easily found by proportion as shown in Figure 6.1.

To a close approximation, a pixel occupies one square millimetre so the distance between the eye and the viewing plane is about 500mm. A left shift of nine places is equivalent to a multiply by 512 (2 to the power 9) which will do fine. The coordinate quotients x'/z' and y'/z' , appearing in the perspective equations of Figure 6.1, are clearly dimensionless quantities. Hence, you may choose any units for the coordinates of your 3D objects provided they don't cause a signed-word overflow, of course.

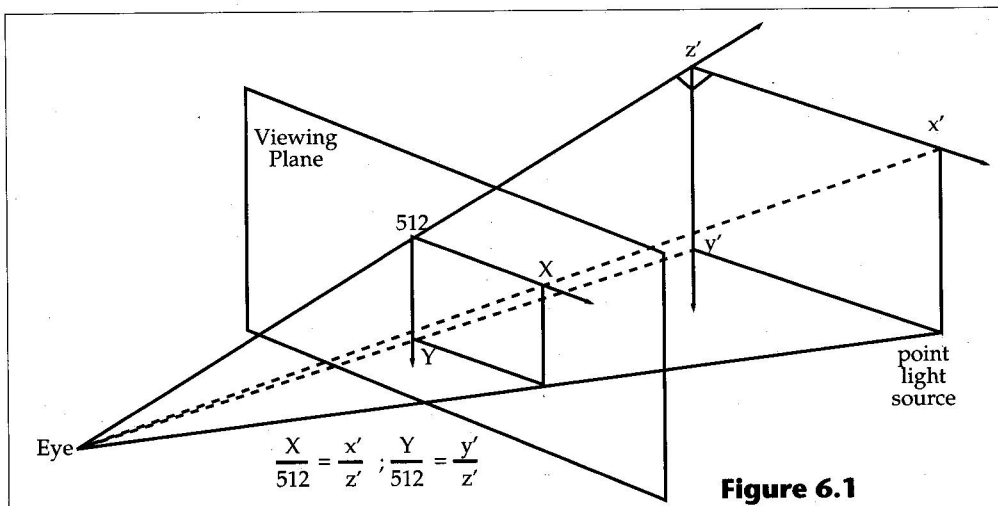
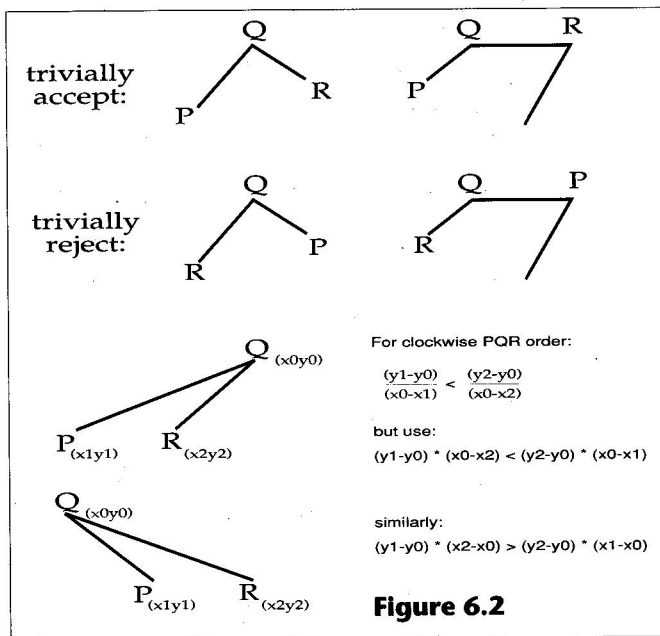
'TransVerts2' in Listing 6.1 gives all three transformed coordinates (x',y',z') in contrast with 'TransVerts' given last month. 'Perspective' in Listing 6.2 makes the perspective adjustment to any number of transformed coordinates giving screen coordinates as offsets from the top-left corner.

Multi-faceted objects

The most straightforward objects are convex i.e. all lines connecting any two points on the surface of the object lie entirely within the body of the object. To handle a general convex object we need a data structure listing all vertex coordinates and all facets in terms of their vertices and colours. Listing 6.3 shows such a structure with a cuboctahedron and icosahedron as examples. Notice that the vertex indices are multiplied by four since this produces the correct offset for addressing the screen coordinates (X,W,Y,W).

There are two methods for drawing multi-faceted objects once their screen coordinates have been found. The obvious way is to order the facets by depth drawing them in order of farthest away first. This depth ordering can be done by finding the average z' coordinate from all the vertices that define the facet or by defining an extra vertex at the centre of each facet and using it alone for depth ordering. This is somewhat of a sledge hammer approach, though, since not only are unseen facets drawn but extra calculations and depth sorting are necessary.

The better method is to define all facets with their vertex offsets in clockwise order as seen from outside the object looking in toward the centre of



LISTING 6.1

```
* Listing 6.1.
* Routine to transform D6.W verteces using the 3x3 word
* matrix pointed to by A0. A4 points to the coordinates of
* the centre of the object.
* Entered with A1 pointing to the vertex list and A2
* pointing to the store location for the resultant coords
* (x',y',z'). D0-D6/A3 smashed, A1 returned pointing just
* past the end of the vertex list, A3 returned pointing to
* new workspace.
* x' = x*M(1,1) + y*M(2,1) + z*M(3,1)
* y' = x*M(1,2) + y*M(2,2) + z*M(3,2)
* z' = x*M(1,3) + y*M(2,3) + z*M(3,3)
*
TransVerts2 MOVEA.L A2,A3
          BRA.S next_T_V
T_V_lp    MOVEM (A1)+,D0-D2    x,y,z coords of vertex
          MOVE    D0,D3
          MOVE    D1,D4
          MOVE    D2,D5
* calculate x':
          Muls    (A0)+,D3      x*M(1,1)
          Muls    (A0)+,D4      y*M(2,1)
          Muls    (A0)+,D5      z*M(3,1)
          ADD.L   D4,D3
          ADD.L   D5,D3      x' (as int.W/fract.W)
          ASL.L   #2,D3      adjust for dec point
          SWAP    D3          integer part
          ADD     (A4)+,D3     coord of object centre
          MOVE    D3,(A3)+    x'
* calculate y':
          MOVE    D0,D3
          MOVE    D1,D4
          MOVE    D2,D5
          Muls    (A0)+,D3      x*M(1,2)
          Muls    (A0)+,D4      y*M(2,2)
          Muls    (A0)+,D5      z*M(3,2)
          ADD.L   D4,D3
          ADD.L   D5,D3      y' (as int.W/fract.W)
          ASL.L   #2,D3      adjust for dec point
          SWAP    D3          integer part
          ADD     (A4)+,D3     coord of object centre
          MOVE    D3,(A3)+    y'
*
* calculate z':
          Muls    (A0)+,D0      x*M(1,3)
          Muls    (A0)+,D1      y*M(2,3)
          Muls    (A0)+,D2      z*M(3,3)
          ADD.L   D1,D0
          ADD.L   D2,D0      z' (as int.W/fract.W)
          ASL.L   #2,D0      adjust for dec point
          SWAP    D0          integer part
          ADD     (A4)+,D0     coord of object centre
          MOVE    D0,(A3)+    z'
*
          SUBQ.L  #3*2,A4      restore centre coords ptr
          LEA     -6*3(A0),A0   point to M(1,1)
next_T_V  DBRA   D6,T_V_lp
          RTS
```

LISTING 6.2

```
* Listing 6.2.
* Routine that takes the transformed coord data (x',y',z')
* pointed to by A1 and places the equivalent screen coords
* (X,Y) in memory pointed to by A2. N.B. no dist may be
* greater than a signed word will allow.
* Entered with no. of verteces in D7.W. D0-D3/D7/A1/A2
* smashed.
Perspective MOVEQ    #9,D3      left shift count
          BRA.S next_Persp
Persp_lp    MOVEM (A1)+,D0/D1    x',y' (sign extended!)
          ASL.L   D3,D0          *512
          ASL.L   D3,D1          *512
          MOVE    (A1)+,D2      z'
          DIVS    D2,D0
```

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the object. Then only facets with screen coordinates running clockwise are visible, the rest are ignored. The order in which the valid facets are drawn is of no consequence.

How do we determine whether a given set of facet screen coordinates are ordered clockwise or not? It's simple, we first find the top-most vertex, Q, then compare the x coordinate of vertices, P and R, either side of it. If P lies to the left of Q and R lies to the right, then the vertices describe a clockwise facet. However, if both P and R lie on the same side of Q, then we need to consider the relative gradients of the lines PQ and QR. For both P and R to the left of Q, line QR must be steeper than line PQ for clockwise ordering. For P and R to the right of Q, PQ must be steeper than QR. If the facet has a flat top then a simple left/right test is sufficient.

Figure 6.2 shows the facet clock-sense test. The gradient inequalities are not used since they involve division; instead, the equivalent inequalities involving (faster) multiplication are used. 'Draw_ClkW_Poly' in Listing 6.4 tests for and draws only clockwise polygons.

Animation

The example program in Listing 6.5 projects two objects along linear paths, tumbling them as they travel and changing direction on 'collision' with the walls of an imaginary tunnel. The objects are drawn on the screen in order of farthest away first. This simple animation occurs over the background of a Degas screen. Object-object collision is not detected. When running this program ensure that the 'TRIG.DAT' file from last month plus a screen file called 'DEGAS.PL1' are present in the root directory.

More sophisticated animations may be achieved by devising more sophisticated object paths, velocities and rotations. More significantly, complicated objects can be defined using a more flexible object data structure but the 3D code must be changed accordingly. Such 'macro objects' may consist of several convex objects which rotate independently. Lines projecting out from an object or lying on the surface of a facet may be added, too. In addition, one or more convex objects may be defined

several times, each one showing an incremental change from the previous one, thereby producing an animation sequence such as walking.

Special limiting cases

If an object is free to move through the viewing plane, three effects may occur: (i) z' may become zero so a 'divide by zero' condition must be tested for in 'Perspective' and handled separately (force z' to unity), (ii) facets lying entirely on the eye's side of the viewing plane are not visible and are therefore ignored, and (iii) those facets 'cut' by the viewing plane must be treated differently, pseudo-vertices being calculated where polygon edges meet the viewing plane. It is best to avoid the aforementioned cases where possible.

Another special case arises when objects are located at a great distance from the eye. Facets become dots and they remain as dots even though they shouldn't be visible at all, being so far away. Clearly, a cut-off point is needed here. This situation is exemplified in flight simulators when a runway as a black strip has white stripes down its length. When the runway is far away it becomes a slim facet one or two pixels wide, unfortunately the stripes are one pixel wide too, and the runway looks white! Hence, the cut-off point for the narrow white stripes must occur before that for the runway itself.

Advanced Graphics Programming software disk.

For those of you who would like to benefit from Jeff Lawson's machine code graphics routines, but cannot find the time or the patience to type in the listings, we have prepared a disk which contains the source code from all seven parts of the series. The disk costs £5 and can be obtained from:

**Advanced Graphics disk,
ST World,
10 Theatre Lane,
Chichester,
West Sussex.
PO19 1SR.**

(make cheques payable to 'Gollner Publishing Ltd.)'


```

ADD    #160,D0      centre of screen offset
MOVE   D0,(A2)+      screen x coord, X
DIVS   D2,D1
ADD    #100,D1       centre of screen offset
MOVE   D1,(A2)+      screen y coord, Y
next_Persp DERA D7,Persp_lp
RTS

```

LISTING 6.3

```

* Listing 6.3.
* This polygon routine first checks to see if the 'screen
* verteces' are ordered in clockwise fashion before
* drawing. Entered with A0 pointing to D7.W screen coords;
* facet colour in D0.W. D0-D7/A1-A3 smashed.
* N.B. this code will only function correctly for genuine
* polygons i.e. those for which D7 >= 3.
* 'Polyfill' in Listing 4.2 followed by 'Clip_Poly' in
* Listing 4.1 should be appended to the end of this
* listing.

Draw_ClkW_Poly MOVEA.L A0,A1
* Prepare to duplicate coords in order to traverse back from
* top-most vertex:
MOVE D7,D4
LSL #2,D4 count -> offset
LEA 0(A1,D4),A2 duplicate list goes here
* Find top-most vertex:
MOVE D7,D5
MOVE #$7FFF,D2 dummy y coord
BRA.S next_CS1
CS_lp1 MOVE.L (A1)+,D1 y coord in LSWord
CMP D2,D1
BGE.S not_top
MOVE D1,D2 new high
MOVEA.L A1,A3 near here
MOVE D5,D3 counter for flat top chck
not_top MOVE.L D1,(A2)+ duplicate
next_CS1 DERA D5,CS_lp1
MOVE.L (A1),(A2) allow for right-most read
* Move forward for possible flat top
MOVEQ #0,D2 set Z
BRA.S next_CS2
CS_lp2 MOVE.L (A3)+,D5
CMP D2,D5
next_CS2 DBNE D3,CS_lp2
BEQ.S CMP_valid
SUBQ.L #4,A3 counter-act invalid CMP
* counter-act postincrement and point to corresponding
* place in duplicate list:
CMP_valid LEA -4(A3,D4),A3
MOVEA.L A3,A2
CMP -2(A3),D2
BNE.S pointed_top
MOVE D7,D5
* adjust for 'D7-1' iterations and DBNE:
SUBQ #1+1,D5
CS_lp3 CMP -(A3),D2 (flat top)
SUBQ.L #2,A3
DBNE D5,CS_lp3
BEQ.S CMP_valid2
ADDQ.L #4,A3
* A3 and A2 point to the coords of opposite ends
* of a flat top
CMP_valid2 MOVE (A3),D5
CMP (A2),D5
BGT.S AntiClkCase
BLT.S Polyfill
* (coincident screen vertices)
* We have 2 verteces either side of the top; before: x1,y1
* and after: x2,y2.
pointed_top MOVE -(A3),D4 y1
MOVE -(A3),D3 x1
MOVE (A2),D1/D2/D5/D6 x0,y0,x2,y2
CMP D1,D3
BGT.S CS_1 x1>x0
BLT.S CS_2 x1<x0

```

```

CMP D1,D5 (x1=x0)
BLT.S AntiClkCase x2<x0, ie x2<x1
BRA.S Polyfill
CS_2 CMP D1,D5
BGE.S Polyfill x2>=x0 & x1<x0 so x2>x1
* Both x1,y1 and x2,y2 lie to the lhs of the top-most
* vertex. If (y1-y0)*(x0-x2) > (y2-y0)*(x0-x1) then
* anti-clockwise:
SUB D2,D4 y1-y0
NEG D5
ADD D1,D5 x0-x2
MULU D5,D4
SUB D2,D6 y2-y0
SUB D3,D1 x0-x1
MULU D1,D6
CMP.L D6,D4
BLE.S Polyfill
AntiClkCase RTS
*
CS_1 CMP D1,D5
BLE.S AntiClkCase x2<=x0 & x1>x0 so x1>x2
* Both x1,y1 and x2,y2 lie to the rhs of the top-most
* vertex. If (y1-y0)*(x2-x0) < (y2-y0)*(x1-x0) then
* anti-clockwise:
SUB D2,D4 y1-y0
SUB D1,D5 x2-x0
MULU D5,D4
SUB D2,D6 y2-y0
SUB D1,D3 x1-x0
MULU D3,D6
CMP.L D6,D4
BLT.S AntiClkCase
* (fall through)
* (Polyfill)

```

LISTING 6.4

```

* Listing 6.4.
* Example 3D objects.
* Convex object data format:
* DC.W 0,0,0 theta/phi/psi
* DC.W 0,0,0 centre x,y,z coords used
* as location in world
* DC.W n number of vertices in object
*
* /-DC.W x vertex offsets
* n * -- DC.W y from centre
* \-DC.W z of object
*
* DC.W m number of facets -1
*
* /-DC.W c colour of facet
* m * -- DC.W v number of verteces for this facet
* \-DC.W i*4 v instances of offsets to all
* vertices (index i) for this
* facet (clockwise order)
*
*
Cuboctahedron DC.W 0,0,0
DC.W 811,522,9033
DC.W 12
DC.W 0,-400,400
DC.W 400,0,400
DC.W 400,-400,0
DC.W 0,400,400
DC.W 400,0,-400
DC.W -400,-400,0
DC.W 0,-400,-400
DC.W -400,0,400
DC.W 400,400,0
DC.W 0,400,-400
DC.W -400,0,-400
DC.W -400,400,0
*
DC.W 14-1
DC.W 13,3,0*4,1*4,2*4
DC.W 14,3,9*4,11*4,10*4

```


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```

DC.W 13,3,4*4,8*4,9*4
DC.W 14,3,1*4,3*4,8*4
DC.W 13,3,3*4,7*4,11*4
DC.W 14,3,0*4,5*4,7*4
DC.W 13,3,5*4,6*4,10*4
DC.W 14,3,2*4,4*4,6*4
DC.W 15,4,0*4,2*4,6*4,5*4
DC.W 9,4,4*4,2*4,1*4,8*4
DC.W 11,4,0*4,7*4,3*4,1*4
DC.W 9,4,7*4,5*4,10*4,11*4
DC.W 15,4,8*4,3*4,11*4,9*4
DC.W 11,4,6*4,4*4,9*4,10*4
*
*
Icosahedron DC.W 0,0,0
DC.W -544,-855,11066
DC.W 12
DC.W 0,-250,500
DC.W 500,0,250
DC.W 250,-500,0
DC.W 0,250,500
DC.W 500,0,-250
DC.W -250,-500,0
DC.W 0,-250,-500
DC.W -500,0,250
DC.W 250,500,0
DC.W 0,250,-500
DC.W -500,0,-250
DC.W -250,500,0
*
DC.W 20-1
DC.W 1,3,1*4,2*4,4*4
DC.W 14,3,1*4,0*4,2*4
DC.W 15,3,2*4,0*4,5*4
DC.W 1,3,2*4,5*4,6*4
DC.W 10,3,2*4,6*4,4*4
DC.W 11,3,4*4,6*4,9*4
DC.W 13,3,4*4,9*4,8*4
DC.W 10,3,1*4,4*4,8*4
DC.W 1,3,3*4,1*4,8*4
DC.W 9,3,0*4,1*4,3*4
DC.W 10,3,7*4,11*4,10*4
DC.W 13,3,0*4,7*4,5*4
DC.W 1,3,10*4,5*4,7*4
DC.W 10,3,6*4,5*4,10*4
DC.W 9,3,6*4,10*4,9*4
DC.W 14,3,9*4,10*4,11*4
DC.W 15,3,8*4,9*4,11*4
DC.W 10,3,3*4,8*4,11*4
DC.W 1,3,3*4,11*4,7*4
DC.W 11,3,0*4,3*4,7*4

```

LISTING 6.5

```

* Listing 6.5.
* Routine to draw the convex object whose data is pointed
* to by A5. Assume everything smashed.
Draw_Object MOVEA.L A5,A3      theta, phi, psi
          LEA  workspace,A2
          BSR  Matrix
* Convert .L matrix to .W matrix:
          LEA  -9*4(A1),A1      beginning of matrix
          MOVEA.L A1,A0          (prepare for Trans_Verts)
          MOVEA.L A1,A2
          MOVEQ #9-1,D1
conv_mat_lp MOVE.L (A1)+,D0
          BMI.S neg_factor
          LSR.L #2,D0
          BRA.S pos_factor
neg_factor LSR.L #2,D0
          NEG  D0
pos_factor MOVE  D0,(A2)+
          DBRA D1,conv_mat_lp
* (A2 now points to workspace)
* Transform all vertices:
          LEA  6(A5),A4          'centre of object' coords
          LEA  12(A5),A1          pass angles & centre coords

```

```

          MOVE  (A1)+,D7          no. of vertices
          MOVE  D7,D6
          BSR  TransVerts2
* (A3 points to new workspace)
          MOVEA.L A1,A4          ptr to 'no. of facets-1'
          MOVEA.L A2,A1          transformed coords
          MOVEA.L A3,A2          workspace
          BSR  Perspective
* A1 points to screen coords (X,Y) of each vertex
* A2 points to (another) new workspace
* A4 points to 'no. of facets-1' in object data structure
          MOVEA.L A2,A0
          MOVE  (A4)+,-(A7)      no. of facets-1
object_lp MOVEA.L A0,A2          workspace
          MOVE  (A4)+,D0          facet colour
          MOVE  (A4)+,D7          no. of vertices
* Copy vertex coords for current facet into workspace:
          MOVE  D7,D2
          BRA.S next_vertex
vertex_lp MOVE  (A4)+,D1          vertex offset (index*4)
          MOVE.L 0(A1,D1),(A2)+ vertex screen coords
next_vertex DBRA D2,vertex_lp
* draw only 'clockwise' polygons:
          MOVEM.L A0/A1/A4,-(A7)
          BSR  Draw_ClkW_Poly
          MOVEM.L (A7)+,A0/A1/A4
          SUBQ  #1,(A7)
          BPL.S object_lp
          ADDQ.L #2,A7
          RTS

```

LISTING 6.6

```

* Listing 5.6.
* Program illustrating how 3D routines may be used to
* bounce a tumbling object inside an imaginary cuboid
* over the top of any Deags screen.
min_speed EQU 11
max_speed EQU 11*64
angle_increment EQU $430
* Include the macros 'INITIALIZE' and 'TERMINATE'
* from Listing 5.7 here:
          INITIALIZE
* Load trig file:
          MOVE.L #32*1024,D7      file length
          LEA  trig_name(PC),A0
          LEA  trig_data,A4
          MOVE.L A4,-12(A6)
          BSR  Load_File
* Load Degas screen:
          MOVE.L #32034,D7        file length
          LEA  Degas_name(PC),A0
          LEA  Degas_data,A4
          BSR  Load_File
* Store Desktop palette:
          MOVEQ #0,D4
          LEA  26(A6),A5
str_pal_lp MOVE  #-1,-(A7)        indicate read only
          MOVE  D4,-(A7)          logical colour
          MOVE  #7,-(A7)
          TRAP  #14                setColor
          ADDQ.L #6,A7
          MOVE  D0,(A5)+          store physical colour
          ADDQ  #1,D4
          CMP  #15+1,D4
          BNE.S str_pal_lp
* Set palette for screen:
          LEA  2(A4),A0
          BSR  Set_Palette
*
main_loop BSR  Bkgrnd_Scrn
          BSR  Animate
          BSR  Toggle_Screens

```


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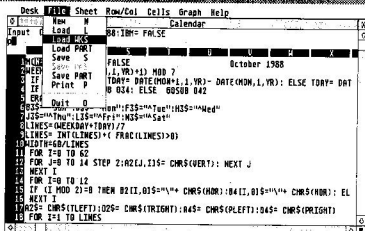
MEGAPACKS

Mega Packs consist of 3 single sided disks for only £9! Fully inclusive!

MEGA 1: Starter pack for the new ST. Disk 1 has a 250k test file of the book 'Your 2nd Atari ST manual'. Disk 2 has ST Tour a tutorial. Disk 3 has RAM disks, spooler, picture converters, desktop accessories, monochrome emulator. Auto loader GEM, extended disks formatters and loads of other utilities.
MEGA 2: Clip Art Pack 1. Full of clip art. Also available as AP36, AP37, AP77.
MEGA 3: Clip Art Pack 2. Full of clip art. Also available as AP78, AP79, AP80.
MEGA 4: Graphics Pack. Graphic packages and utilities. Disk 1 contains Neochrome a colour only paint package and Master Painter which is also on GR3. Disk 2 is full of picture converters. Disk 3 has Public painter a fabulous monochrome package.
MEGA 7: Games Pack 1. Diamond, Football and Blitz III.
MEGA 8: Games Pack 2. Othello, Darts and Doctor Boris.
MEGA 9: Games Pack 3. Tycoon, Money Spinner and Ace Invaders.
MEGA 10: Games Pack 4. Zenith, Speculator and Maelstrom.

SINGLE SIDED

APPLICATION DISKS



The spreadsheet on A96.

- A5 - Archiver II field disk compacter version 1.91 excellent.
- A6 - AutoGEM - auto boots any GEM program on booting the ST 1.09 compatible.
- Xformat2 - Extended disk formatter, VC spreadsheet - non GEM spread sheet.
- A13 - Publishing Partner disk 1. Public domain fonts for non postscript printers. Hudson, Columbia, Devol, Thames, Spokane and Saturn. There are colour and Monochrome screen drivers and printer drivers. Font editor - create your own fonts, very complex.
- A24 - AstroLab German astronomy program. Monochrome only, version 0.7 latest version - much improved!
- A29 - SkyMap monochrome only star system - 1500 stars are included excellent astronomy program.
- A30 - DEC edit done for the ST (editor). Disk engineer version 3.01, allows you to do anything to any disk is GEM based can give you a complete report on any Disks, format, copy, listings and FAT info. Includes source code.
- A31-40 1st Word printer drivers - all Epsoms, Panasonic, Atari and Atari Laser, NEC Pinwriter, Star, Olympia, Toshiba P321 SLF etc.
- A35 - Compunet fully working supplied by Compunet themselves, version 3.01 documentation on how to get started.
- Home accounts - Payschedule, Accounts (ST Basic program and manual), LoanCalc (ST Basic program).
- A36 and A37 - Clip Art 1 and 2, dozens of monochrome pictures and clip art suitable for any package that uses Degas or Tiny fonts pictures.
- A38 - Publishing Partner disk 2.6 fonts for PP Caligary, Elegance, Courier, Roman Bookface, Westside and Avant Garde.
- A40 - Harddisk 1. Disk full of hard disk programs - including Turtle version 2.8 and UnTurtle - Turtle restorer.
- A41 - Monochrome emulator version 5. Run monochrome programs on a colour monitor. TOS 1.09 compatible.
- CMFontis converts Macintosh fonts to ST GDOS format. Delomattor - this program delamats your disks! A Virus killer and disk immuniser.
- A44 - ST Net Bulletin Board System a very good BBS system. Virus killer version 2.
- A50 - Beginner disk 250k test file for people who are new to the ST or are having problems with aspects of the machine i.e. RAM disks, spoolers, Desktop Accessories etc.
- A51-12 communication packages and utilities etc. All Archived to fit onto a single disk. Disk contains Archiver II and help doc.
- A52 - Hard disks disk 2. Eight hard disk utilities.

ARTISTIC 1234567890

Broadway 123456

Gothic 1234567890

Oriental 1234567890

Ultra Block 1234567890

Wilkes-Barres 123456

The six new Publishing Partner fonts on A95.

- A63 - Fontik 3.31 by Jeremy Hughes - Epsom, ST screen and Degas font editor - excellent, needs A64 as well.
- A64 - Fontik 3.31 by Jeremy Hughes - Fonts and utilities for A63 - excellent, needs A63 as well.
- A65 - Clip Art 3 - 1930's trademarks in tiny format can be used with most DTP and WP packages.
- A66 - Unix disk 1 and A67 - Unix disk 2 - Full of Unix Utilities all with docs.
- A75 - Nicholas Elms-Dewkes collection of programs: Shares Program, High scores, Weather 1 and 2, Weather 2 variation of Weather 1.
- Beat Box and Beat Band drum sequencer and beat box file merger. Graph plot for plotting line charts.

Most of the disks in this advert actually contain more files than is listed. The ad also only shows a small portion of our catalogue, so for details of the service and a free copy of the catalogue send a Stamped S.A.E. (if you are ordering you will get the latest catalogue). ALL individual disks, whether single OR double sided, are £3.00 for 1 to 5, £2.75 for 6 to 10 and only £2.50 for 11 or more!

SONY blank disks: 10 2DD branded double sided including labels £15, 10 bulk double sided including labels £10. All prices are fully inclusive.

Your Second Atari ST Manual: at last the manual Atari should have given you when you bought your ST. Essential reading for ALL ST users. £3.95 or £2.95 if purchased with Mega Pack One. ST Virus Destruction Utility from Excel Software £6.95.

Port and save ZX Spectrum graphics to the ST via the RS232 interface. Printer server allows a computer connected to your ST via the RS232 port to use the ST printer.

- A86 - The Labels disk, packed with programs to print labels.
- A87 - Home Accounts: v1.0 by David Pullin. Up to 3 different Statements in memory at once. Up to 100 entries per statements. Regular Income/Outcome Section with automatic updating. A note pad feature with up to ten different notes. An alarm clock. Able to give sections passwords. Saved files are encrypted for extra security. Keeps check of the time and date. Colour only, written in STOS.
- A88 - Double Click Format v3.03 THE ST disk formatter 9/10 sector, 80/82 tracks, regular/fast format. Can format Magic disks, place MSDOS boot sector, it can write an executable bootsector to do things like bypass HD autoboot, set time, run a program that you write and call COMMAND.PRGM and loads of other things, it will also automatically copy any disk, including MAGIC disks. ByteFree v3.3 the hard drive free space checker, CSS Format and Disk Copy v2.36. Hack'n Copy v1.0, HyperCopy/Formatter v2.0 excellent does it all utility from New Art.
- DiskMod - writes MSDOS boot sector, Meg A Minute Elite v2.1, TOS 1.09 compatible 1Mb a minute HD backup. Megavisc v1.195 - boot utility, reset resistant RAM disk, printer spooler, memory checker, screen saver, auto desktop accessory selector, warm and cold start ST with a key stroke etc. excellent.
- A90 - Superboot v5.1 THE ST Boot program - chooses desktop accessories, AUTO programs to run, DESKTOP.INF, GDOS ASSIGN.SYS, display a welcome screen, date/time setter, inforce a password on booting and loads more including even stopping Super Boot from running with a 'key hold' includes a 50K document file, excellent. Evert ST v1.0 convert 8-bit ATASCII files to ASCII etc. Fast Find. FSCK v1.1 file system checker and repainer very thorough, FSRepack v1.1 file compactor, Reloc speed improver utilities, ScreenDump v2.0 AM/Help screen dump to Epson L8000 or compatible - configurable.
- A91 - File Selector v6.0 replacement for the GEM file selector excellent select drive, sort, print, get full info on selected file, rename, shows time or size in selector very good TOS 1.09 compatible, Virus Killer v2.01 excellent virus detector and killer looks for the 6 different kinds that are currently known of very easy to use because of a novel idea of using quite large pictures instead of standard GEM buttons. FileSpy v1.0 file displayer very good, Format2X v1.0 a multi disk drive formatter, MacMenus ST drop down menus become MAC pull down, Mouse 2/4 - increase speed of mouse X2/4, M DOS v2.0 disk utility. UnTurtle restore from Turtle (A40) HD backup.
- A95 - Publishing Partner disk 3. Six new fonts - Arial, Broadway, Letter Gothic, Oriental, Ultra Block and Wilkes-Barres. PageStream import modules for Degas monochrome and colour, IMG files, Metalities, NEOchrome, 1st Word, ASCII, Word Perfect and Tiny pictures. Page Stream Printer drivers for colour postscript laser printer and Linotronic L100300/500 etc.
- A97 - Sticker III. THE disk label program full GEM includes dozens of icon graphics that can be included in label. Excellent. Monochrome only.
- A102 - ASTRO v6.4 a Dutch Astrology program excellent!! Produces diagrams showing the positions of the heavenly bodies at any moment, also biorthyths. Excellent full featured astrology program. All text is in Dutch but does contain SWSWLS Dutch to English and German to English translation files. Monochrome only.

DESKTOP ACCESSORY

- DA1-14 DAs including: the excellent Intasect RAM disk. Texas instruments calculator and Tiny Tool.
- DA2 - Dozens of DAs including 5 Calculators, Screen protector, RAMdisks, RAM free plus.
- DA3 - Dozens of DAs including W/P tools, Diskman - disk utility, X - utilities, the very useful New Word (word processor).
- DA4 - Dozens of DAs including Caps On/Off, Read Only Control Panel, the World famous Rat Trap by Alan Thomas which controls menu selecting. SpeedMouse - sets the speed of mouse movement - excellent.
- DA6 - Nigel Smiths ST 68000 Reference Guide v2.0. A pop-up reference guide to the Assembly Language of the 68000 processor. All the info that you need about 68000 assembler at a press of a key while in any GEM based program.

GAME DISKS

Budgie UK P.D. games:

- G17 - Diamond colour only. G18 - Football speculation game.
- G19 - Blitz III colour only. G20 - Othello.
- G33 - Doctor Boris colour only. G36 - Tycoon colour only.
- G38 - Money Spinner colour only. G39 - Ace Invaders colour only.
- G40 - Zenith colour only. G41 - Maelstrom colour only.
- G42 - Speculator colour only.

And some of the rest:

- G11 - Azarian full colour asteroids space invaders game - excellent shoot 'em up! Farm yard colour memory and guessing game very very nice. Invader - colour space invaders. Bridge-It computer version of the 'September' board game - excellent.
- G23 - BOLO! Brilliant game in the Arknoid mould, requires 1Mb RAM.
- G30 - Quiz - Trivia game creator editor, Runners Revenge - Lodgerunner lookalike mono only.
- G34 - PickPocket the slot machine, ST Breaknoid - cross between Breakout and ARKnoid colour only.

GRAPHICS DISKS

- GR1 - The classic NEOchrome version 1, DR doodle, Palette setter. Degas converter, Neo Effects, a 3-D designer, draw images and make them move! Sprite designers.
- GR3 - MASTER Painter - excellent graphics program works in ALL resolutions in NEO Degas and Doodle formats. Has multiple screens 6 on 1/2 Mb, up to 24 if you have enough RAM, animate between these multiple screens, all the usual tools plus rotate to any angle, skive-horizontal and vertical, zoom, twist, built in converter, very well laid out and designed - full GEM but this does not slow it down in the way maybe Degas Elite is. This is a truly brilliant program.
- GR6 - Degas disk - 155 files, 10 brushes, 7 fonts, 20 printer drivers including NEOCP and P6, Epson JX80 colour (you should be able to use this for STAR LC-10), plus programs to manipulate Degas Elite.
- GR13 - 11 picture converters and utilities - PICswitch 0.7, NEO to mono etc.
- VanGoGo - Studio and VanGoGo - two excellent colour only art programs. VanGoGo includes a sprite editor - German but easy to pick up.
- GR14 - Public Painter Mono only absolutely fabulous!

LANGUAGE DISKS

- L3 - ADVSYS adventure writing language.
- L5 - 'C' Compiler including Test Editor, this disk contains all that you need to compile C source code. Version 5.0.
- L6 - Toy Prolog - German full documentation, demos and source codes.
- L7 - Xisp version 1.7 includes documentation.
- L8 - Bradley Forth includes EMACS.
- L9 - ST ICON version 6.3, based on SNOBOL4. Complete documentation.
- L10 - Little Smalltalk. Includes Smalltalk language, full manual, example programs, and editor. See Jan and Feb 1988 issues of Personal Computer World for tutorial etc.
- L12 - C MAKE incredibly like Unix Make utility.
- L13 and L14 Module 2 Development System version 1.0 from ana-systems. Consists of the M268 Compiler, Linker, Libraries, Development Shell and Micro Emacs editor. Requires 520K with 2 disk drives OR 1040K with 1 disk drive. Also available as a twin set disk - STUK 111.

MIDI MUSIC DISKS

- M2 - Casio CZ series data librarian, Casio CZ voice manager. Orch-play includes files generated using the commercially available Orchestrator includes midi and ST sound chip support. Midiogi allows you to play the ST's internal synthesizer using your midi synth, ST synthesizer Casio CZ-101 preset transporter.
- M4 - Midi sequencer excellent play and record etc. very good.
- M5 - CZpatch, DXpatch, YAMAHA DX100 voice editing program, colour only.
- M7 - MidiDrum and MidiPlay - 2 great midi prog - midi drum is a drum machine, and midiplay a sequencer fully programmable - mono and midi only.
- M12 - IRDS - Internal Randomizing Octave Sequencer v0.5 and MIDI CHANNEL SCOPE V1.0 both by Computer Concepts.

WORD PROCESSING

- W1 - 1st Word with document files, tutorial and 18 printer drivers.
- W2 - STWriter with document files, tutorial etc 2 versions 1.75 and GEMtext based 'Elite' version of STWriter the same program that can be switched into GEM mode and back to original non GEM version, useful full manual and quick reference etc. with new features, very good word processor.
- W7 - SIGPIC v2.00 great program from Germany that converts a mono screen image into a one page SIGNUM document, this can be inserted anywhere in the doc. Inl - generates a table of contents or an index of a document written with Word Plus.
- W9 - Newsletter Maker - Allows you to make a GEM Disk magazine - very good.

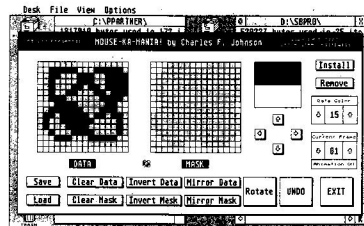
DOUBLE SIDED

LANGUAGE

- L15 - Sozobon C Compiler. A complete implementation of the C language as defined by Kernighan & Ritchie and prevailing practice. The package includes a compiler, optimizer, assembler, and linker, as well as several other associated utilities.

APPLICATION

- A96 - DOUBLE SIDED Sheet v2.0. Powerful all features spreadsheet, includes documentation and tutorial. WKS compatible. 1280 rows by 280 columns.



The mouse pointer editor on DA8, includes animation!

TWIN DISK SETS

The following are some of the single sided disks from the catalogue that have been paired together onto one double sided disk. Note to use double sided disks you must have a double sided disk drive for your ST.

- A13 + A38 - STUK1
- A36 + A37 - STUK2
- A24 + A29 - STUK29
- A40 + A52 - STUK30
- A35 + A51 - STUK33
- A50 + DEM51 - STUK34
- A41 + A44 - STUK88
- A5 + A6 - STUK44
- DA1 + DA2 - STUK11
- DA3 + DA4 - STUK12
- A63 + A64 - STUK90
- A71 + A72 - STUK93
- L7 + L9 - STUK23
- A83 + A84 - STUK95
- A26 + A74 - STUK 99
- A58 + A59 - STUK 101
- A75 + A7C - STUK 103
- G10 + G13 - STUK 105
- L13 + L14 - STUK 111
- G11 + G12 - STUK56
- G17 + G18 - STUK57
- G19 + G20 - STUK58
- G29 + G30 - STUK71
- GR2 + GR11 - STUK38
- GR1 + GR3 - STUK36
- L5 + L6 - STUK22
- IM + M6 - STUK25
- W1 + W2 - STUK17
- IM1 + IM2 - STUK10
- A66 + A67 - STUK91
- G33 + G34 - STUK94
- L10 + L11 - STUK24
- IM3 + IM10 - STUK 98
- A57 + A65 STUK 100
- A61 + A62 - STUK 102
- A81 + A82 - STUK 104
- G28 + G31 - STUK 106

To order please send a cheque, postal order payable to ST UK or credit card details to:

ST UK, 1 Bartholomew Road, Bishop's Stortford, Hertfordshire, CM23 3TP.

Telephone 0279 757692 any time.





Music Publisher is a brand new publishing system designed for music. It represents the first serious program of its kind for the ST, and will be of interest to musicians, composers, orchestras, music copyists and publishers.

Unlike existing, MIDI based packages, Music Publisher is a page layout oriented product, intended for producing high quality printed work. Full orchestral scores may be produced rapidly and with ease, using up to A3 size paper.

For more details, or to place an order, phone:

(021) 706 6085

or (021) 308 5380

or write to:

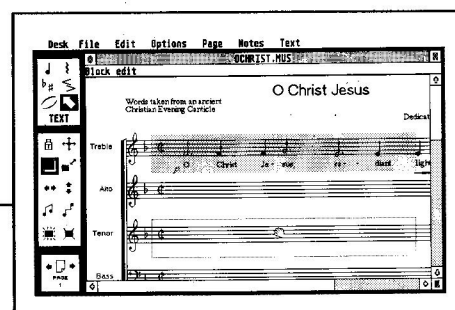
**Take Control,
Jonic House,
Speedwell Road,
Hay Mills,
Birmingham. B25 8EU.**

Real Music Publishing

from **£290** + VAT
(£333.50 inc. VAT and p&p)

by

Take Control



- **GFA Basic V3.06 • Market Breaker**
- **Time Keeper • HiSoft's Tempus Two**
- **STOS Maestro & STOS Maestro Plus**
- **Flexcessory • TCT Tape Streamer**
- **Sun Crossword Vol 5 & Times Vol 6**

JUST IN - CHECKED OUT

Tape Streamer Third Coast Technologies

As ST hard disks get bigger, cheaper, and more plentiful, the prospect of having to back up megabytes of data on to dozens of floppies becomes less and less appealing.

Suppliers of low-cost ST hard drives, Third Coast Technologies, can stake a claim to having one of the first tape streamer peripherals designed specifically for the ST. The TCT tape streamer is based upon a standard tried and tested streamer mechanism, the Teac MT2ST/N50-00-U, using 155Mb CT-600N tapes which look like beefed-up compact cassette audio tapes.

It is thanks to ICD that a complete ST-compatible tape streamer is available; the hardware has always existed: SCSI tape drives and SCSI adapters for the ST. The missing link, however, has been the driver software - the utility program which actually allows the ST to read and write to and from the tape drive.

The tape backup software is fairly basic, yet GEM-driven. It has options to back up a partition as a set of files, as a binary image, or to back up and restore selected files and folders. Performance is quite impressive; it takes between two and three minutes to back up 20Mb of data.

The TCT tape streamer can be supplied with an integral hard disk or can be fitted with an HD at a later date. Alternatively, it can be supplied in a small-



The TCT Tape Streamer uses a standard casing. With this version, the Streamer is built in to the same box as the hard disk unit.

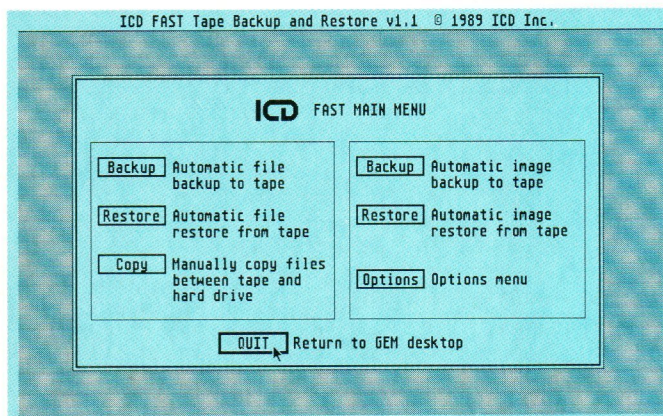
er and neater casing than the standard TCT box. Our test model had a built-in 65Mb hard drive, with the streamer mechanism set to DMA device 7 - this clashes with the Atari Laser printer's device number. The unit had to be dismantled to give access to the jumper pins so that the device number could be changed.

Third Coast say that their tape streamers will now be fitted with an external DMA address switch allowing the streamer's device number to be easily changed. The hard drive uses device 0 and the SCSI host adapter's clock, device 6. In addition to the DMA in and out ports, the tape

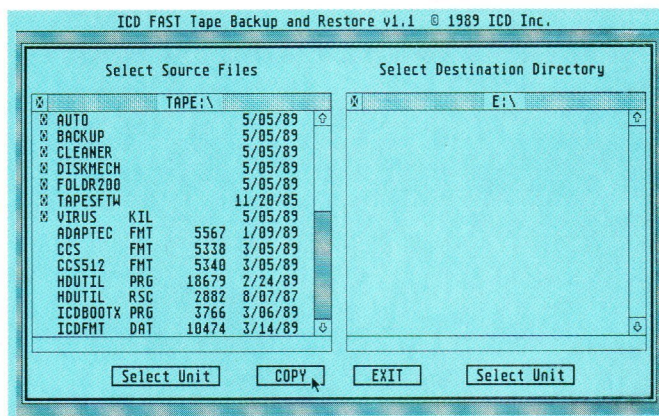
streamer is equipped with a standard SCSI output port which should allow it to be connected to any other SCSI device, assuming that suitable drivers exist.

Although the TCT tape streamer is rather expensive, users who could stand to loose large volumes of data from their hard drives would be wise to consider acquiring such a device. However, if you've got less than 40Mb of data to cope with, then a streamer is probably not an ideal solution.

When the backup procedure becomes as quick and easy to perform as this, then it is more likely to get done. The rest of us,



The ICD drivers and backup software are comprehensive enough to do the job, but there is no intelligent backup mode which can read file timestamps or detect changed files.



The directory of files in a partition block of a tape. Files can be plucked off the serial tape as if they were still on a hard disk.

however, can still soldier on with floppies, be it selective and manual backup, or using one of the commercially available or PD backup to floppy utilities.

Product:.....TCT Tape Streamer

Price:.....£873 incl. VAT

(without integral hard drive)

Media cost:.....£15

Supplier:.....Third Coast Technologies,
Unit 8, Bradley Hall
Trading Estate, Standish,
Wigan. WN6 OXQ

Phone:.....0257 426464

GFA Basic V3.06 GFA Data Media (UK)

Reviewers and 'programmers' seem to think that programs on the ST should be in C, Pascal or Machine Code. What they forget, is that average users want to be able to write programs in a language as close as possible to English. In other words, a good Basic! But, it must be fast, easy to use, and be capable of doing everything you ask of it. A few years ago, you would have been wasting your time looking for a Basic which did all three. Now, there's fierce competition between Basics on the ST, nearly all claiming to fit the bill. Now, GFA Basic V3 has been upgraded to version 3.06e.

GFA Basic V2 has been established over a year now, and has been used to write many commercial programs. V3 has been reviewed before, so we'll just give a quick resume.

The editor has to be one of the better text editors for any language on the ST. Fast scrolling, good block commands, Wordstar compatible keyboard shortcuts, automatic indentation of lines (follow programs easier), syntax checking on line entry, structure fault testing, and 'folding' of procedures (hiding all but the procedure name in the listing).

Another feature of GFA Basic, is the 'direct mode', where you can type commands (including graphics) and have them executed immediately. Handy when program errors occur, as you can display the contents of variables. You will also find it hard to crash your ST, as GFA 'traps' what would have meant deep sleep for your computer, reporting what could be the problem - most helpful.

Useful features include: INLINE where you can set aside an area within the listing for machine code, pictures, sampled sound, or any sort of data. With the INLINE command you can load data from disk, save to disk, output to printer, or, if using GFA Assembler, you can assemble directly to the data area from the assembler.

DUMP gives you a list of variables and their contents, directed to any device, as can the tracing of a program using TRON#. Interrupts have Basic commands. You can set up a procedure to be operated every n 200ths of a second using the EVERY command.

Function keys can be assigned strings

**GFA Basic
has an
'intelligent'
editor.**

```

Save Save, A Quit New BlkStaReplac Pg 16 Direct Run 02:21:03
Load Merge LList Block BlkEnd Find Pg 16 Insert Flip Test!
ABSOLUTE h&,adr_mes%+14
~WIND_SET(handle&,3,CARD(SWAP(adr_inf%)),CARD(adr_inf%),0,0)
~WIND_OPEN(handle&,mx%,my%,mw%,mh%)
~WIND_GET(handle&,4,mx%,my%,mw%,mh%)
CHAR({OB_SPEC(tree%,4)})=default_time$
OB_STATE(tree%,2)=BCLR(OB_STATE(tree%,2),0)
~OBJC_DRAM(tree%,0,99,fx%,fy%,fw%,fh%)
~FORM_DO(tree%,0)
~WIND_GET(handle&,8,wf_hslide&,b,c,d)
e%=EVT_MULTI(&X10001,0,0,0,0,0,0,0,0,0,adr_mes%,100,d%,d%,d%,k%,d%)
SELECT msg_type&
CASE wa_arrowed&
  doit|=DPEEK(adr_mes%+8)
  ON doit+1 GOSUB page_up,page_dn,row_up,row_dn,page_lt,page_rt,col_rt,col_lt
  msg_type&=0
CASE mn_selected&
  ~WIND_GET(handle&,9,wf_vslide&,b,c,d)
  ~WIND_SET(handle&,15,1000,b,c,d)
  ~WIND_SET(handle&,16,1000,b,c,d)
  PBOX mx&,my&,mx&+mw&,my&+mh&
  handle_rsc
  IF EXIST("DEFAULT.SCR")
    command_file$="DEFAULT.SCR"

```

**Full GEM
programs
are possible
without too
much sweat.**

```

Desk Options Files Quit 02:21:30
Auto CIX DEFAULT.SCR
Date : 18.05.1988 Dial Time : 2345
;
;
BAUDRATE = 2400
command "atz" ; reset code
command "atd 013995252" ; dial cix
timeout 30 ; Set Waitfor timeout to 30 seconds
waitfor "Type 'cix' to login:"
send "qix"
waitfor "(Enter 'new' for new user)"
send "gfa" ; nickname
waitfor "Password:"

```

of text, and you can even simulate the user typing, with the KEYPRESS command. Output can be redirected to any device, so if you use a shell to run the program, you can direct output to a file (C users take note). For the more adventurous, Basic commands are available to use the AES libraries instead of using GEM commands. Basic commands will do such things as EVENT_MULTI, RSRC_GADDR, and FORM_DO. Version 3.06e takes account of TOS 1.4, and will give access to the file selector's title. Direct access to the RS232 and MIDI ports is implemented, all in Basic. The excellent GFA V3 manual is 500 pages long, and ring bound. The upgrade to 3.06 sees a few new commands added, mainly in the format of listings (the so-called dot commands), and the SSORT with an OFFSET. Yes, there are GFA Basic sort commands.

There is an independent magazine produced by users of GFA, for users. GFA User Magazine, 186 Holland Street, Crewe, Cheshire CW1 3SJ. Support is also available for modem owners in the form of GFA areas on many bulletin boards throughout the country. The GFA program shown in the screen shots, will log on to the CIX conferencing system, then collect and download your messages automatically. This is an example of how a complete application can be built with a modern Basic such as GFA.

GFA V3 gives both the beginner and the expert a full, easy-to-use programming tool. With improving UK support, the refinements to version 3.06 and the forthcoming compiler, GFA Basic will now enjoy a new lease of life.

Product:.....GFA Basic V3

Version:.....3.06e

Supplier:.....GFA Data Media (UK) Ltd,
PO Box 121, Wokingham,
Berkshire, RG11 9LP

Price:.....£59.95

Time Keeper Datel

Every ST has a built-in clock which keeps track of the time and date. Only the Mega STs, however, will keep the correct time even after the machine has been switched off. It is a nuisance, to say the least, to have to set the system time and date every time you switch on your ST, so what's the benefit of keeping your clock running day and night? For starters, the ST 'time and date stamps' disk files whenever they are created or modified. This is useful information and is particularly valuable to special programs such as hard disk backup utilities which often look at the date stamps on files.

With a non-Mega ST, keeping the keyboard chip fed with power normally involves stripping down the ST and fitting a special kit which consists of a circuit board which is sandwiched between the keyboard chip and its socket, and a pair of rechargeable cells to provide the power to keep the clock 'ticking'.

This sort of internal clock upgrade can be tricky to perform and invariably voids the guarantee on your machine. A safer and altogether more convenient alternative is to use an external clock module,



The Time Keeper clock cartridge is big, bulky and, despite having a convenient aperture, does not offer a duplicate cartridge socket.

such as the Datel Time Keeper.

Instead of powering the ST's own internal clock, Time Keeper contains its own clock circuit which is powered by a built-in, and non-user replaceable, lithium cell. In order to get the current time and date out of the cartridge and in to the ST, it is necessary to run a small program which reads the Time Keeper and sets the ST's clock. This can be placed in the auto folder of your boot disk, and when in use, does not make its presence known.

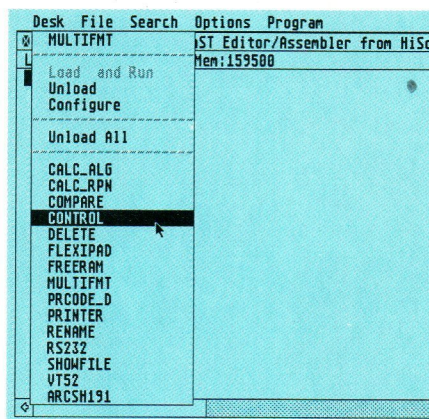
Datel also include a utility which allows the Time Keeper's clock to be set, and a useful little program which, when installed, will display the current time in the top right-hand corner of the menu bar.

The quality of construction and standard of presentation of Time Keeper are a little disappointing to say the least. Furthermore, the alarm clock facility mentioned in Datel's often misleading advert, was conspicuous by its absence. However, this is a relatively low-cost product which only has one simple function in life.

Product:Time Keeper
Supplier:Datel Electronics
Price:£29.95
Phone:0782 744707

Flexcessory, a commercial product from E. Arthur Brown company USA, is a novel cross between a switcher and a DA stuffer. It allows programs (.PRG, .TOS or .TTP) to be loaded and unloaded to and from the Flexcessory buffer. These programs can then be executed from Flexcessory's sub-menu at any time. This is very similar to the way in which normal desk accessories function - a kind of pseudo program switching.

Flexcessory itself occupies one desk menu option, but in turn, can offer up to



(above) Each Flexcessory installation takes up one desk accessory menu slot.

(Left) Several configuration dialogs facilitate boot-up customisation of Flexcessory. There is even a ramdisk and printer spooler built in.

15 of its own slots. These slots may contain almost any program, memory permitting, but NOT standard desk accessories. To help ease the DA limitation (one of the reasons for this utility coming into existence) a number of .PRG versions of popular DAs are supplied. There is a version of the Atari control panel, the printer setup dialog, the RS232 configuration dialog, and a range of other utilities including a floppy drive seek time setter, free RAM reporter, VT52 emulator, a couple of calculators, disk formatters, and more.

As well as installing small utilities, it is possible to load in more substantial applications. Unfortunately, there are some programs which react badly to being run from Flexcessory. As a rule, most cleanly designed and well-behaved programs will work, although applications which look for resource files or external config files, will probably fail. Some programs, even small utilities, crash when run from Flexcessory, so be prepared to find its limitations and work round them if necessary - it can be worth the experimentation to find a workable combination.

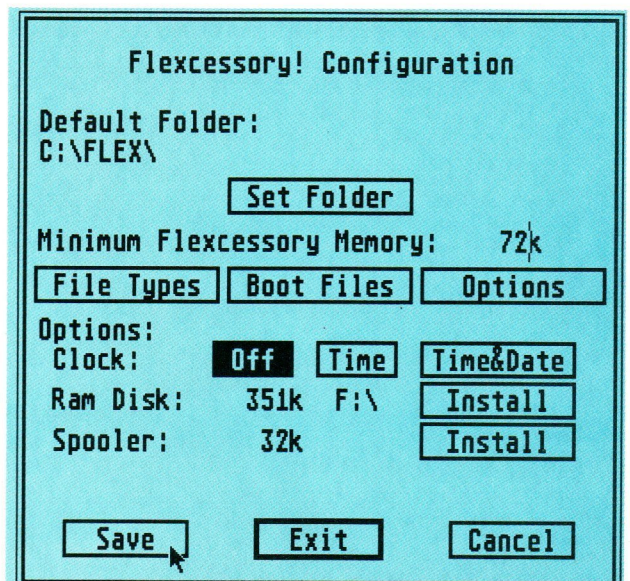
Flexcessory allows each installed program to have its 'environment' adjusted i.e. mouse and cursor suppression, parameter passing, window control etc.. You can even have a chunk of memory pre-reserved, so that programs which grab all available RAM do not leave you running on empty. All of this helps to increase the chances of your chosen setup working - but it can make Flexcessory tricky to use if you don't know your way around the system.

Other options include: a ramdisk; print spooler; real-time clock display; and the ability to have a chosen selection of programs automatically installed at boot-up time. There is currently no official UK distributor for Flexcessory, but it can be ordered directly from the USA.

Product:Flexcessory
Price:US\$29 + Shipping
Supplier:E. Arthur Brown Company,
3404 Pawnee Drive,
Alexandria, MN 56308, USA.
Phone:(0101) 612 762 8847

Flexcessory
E. Arthur Brown Co.

GEM will only permit six desk accessories to be installed at any one time. This is quite a limitation to impose upon a machine with such large reserves of memory, and such a wide array of utilities. There is no apparent reason for this limitation, but it has now become obstructive enough for a number of programmers to find a way round. Double-Click software, purveyors of fine PD and shareware software have developed DC Stuffer which stuffs up to 32 desk accessories into its own DA buffer. There are demo versions of this available from most PD libraries, although you have to register to the US to get a fully working version.



STOS Maestro Mandarin

Mandarin continue to expand the STOS BASIC range of products. Now they have released two versions of a sound sampler, designed to enable STOS programs to incorporate digitised sound samples. The two versions are the same, except that the Plus version includes the actual sampling hardware, whereas the junior version contains just the manual and software.

This may seem strange to release sampling software without the necessary hardware to make it function, but the disk also contains the necessary STOS BASIC extensions to integrate the samples with your own BASIC programs. The inclusion of many ready-made samples then make it a worthwhile proposition for anyone just wishing to 'dip their toe in the water' without going to the expense of buying the hardware. Also, if your friend has already got the hardware you can always coerce him, or her, to do you a few samples and save you the additional expense.

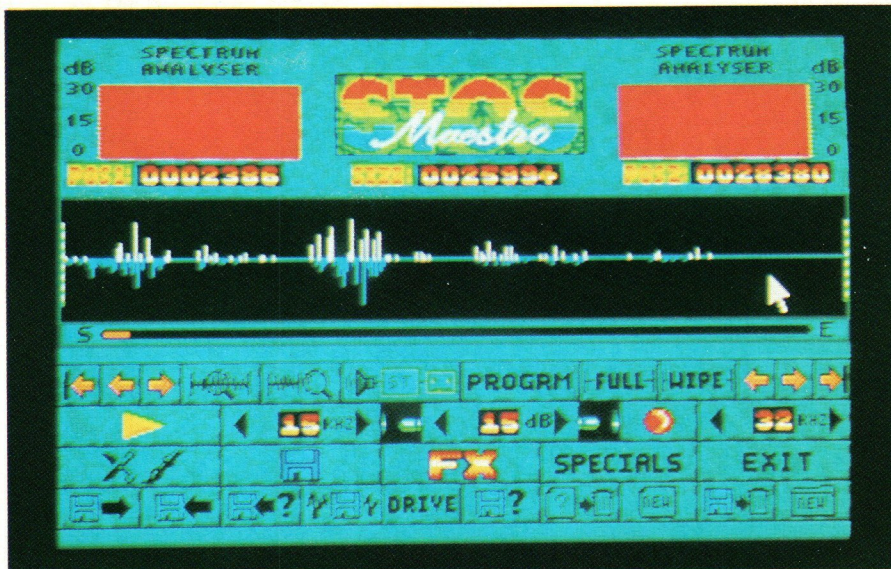
The cartridge may be bought later, by mail order, for £45. So, on balance, it is yet another example of Mandarin really thinking through their market, and being as helpful as possible to the end user.

The two disks are supplied with strange formats. Side one of each disk is a standard single-sided format, and thus able to be read by everyone. The second side has a special format that can only be read by double-sided disk drives. It is on this side that some additional demo's reside, that run from purpose-written STOS programs, supplied on side-A. What this means is that those of you with single-sided drives will never be able to gain access to these samples. If that makes you mad, blame it on Atari for foisting the things on the public in the first place!!

The fifty-one samples (available to all) range from laughter to piano notes, and from spoken phrases such as "game over" to synthesiser chords. They can all be loaded into the sampling software and played back and edited or incorporated into STOS BASIC programs.

The sampler software runs in low-resolution only and has one work screen. It doesn't say in the manual if it was programmed in STOS BASIC, but if it was, then it is a very slick piece of programming. The upper half of the screen is taken up with sample wave displays and memory indicators, and the lower half with an impressive selection of control buttons. Selecting any of the lower four main icons rolls a further eight buttons into view, specific to the command just called. A very neat way of having large multiple options without unnecessarily cluttering the screen.

The samples can be as large as memory permits. For instance, a 1040ST will deliver over 700k for a sample. The rate of sampling can be set from 5khz to 32khz, and thankfully, the play-back rate can be set over the same range, but indepen-



Excellent software, jam-packed with a vast range of features.

dently. The samples can then be subjected to a substantial range of editing and enhancement routines. There are too many to list, suffice it to say it is as comprehensive a selection as I've seen anywhere.

The STOS BASIC interface is straightforward and will produce interrupt driven sound samples, running in the background of any STOS BASIC program. The only complication is careful manipulation of any existing music must be employed if they are not both to fight over the ST's single sound chip.

The manual is excellent and takes you through everything you might want to know and it is well up to the standard of the other STOS products. The cartridge is small sized and has a single phono socket on the end. All samples are played back through the ST's sound system only.

Possible uses to which the package can be put are, to say the least, extensive. Speech synthesis and simple speech recognition are just two examples that the manual mentions. Included on the disks are assembler routines, for those wanting to get away from BASIC, as well as a drum kit simulator that runs from STOS BASIC.

Most STOS users will just want to

include samples into their programs. I can't think of a better way of doing it. Warmly recommended.

Product:STOS Maestro &
STOS Maestro Plus
Price:£24.95, (£69.95 for Plus)
Supplier:Mandarin Software,
Europa House, Adlington
Park, Macclesfield, SK10 4NP
Phone:0625 878888

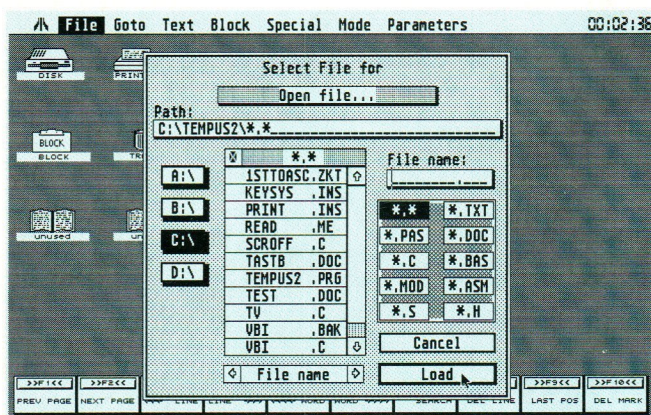
Tempus 2 HiSoft

When Tempus was first launched, back in 1987, it was greeted with great enthusiasm. As well as an excellent editor, packed with useful features, it was a shining example of what a good GEM application should look like. Not only was it extremely user-friendly but it was very fast - particularly the screen display and scrolling. At last, version 2 has been released, and HiSoft are the UK distributors.

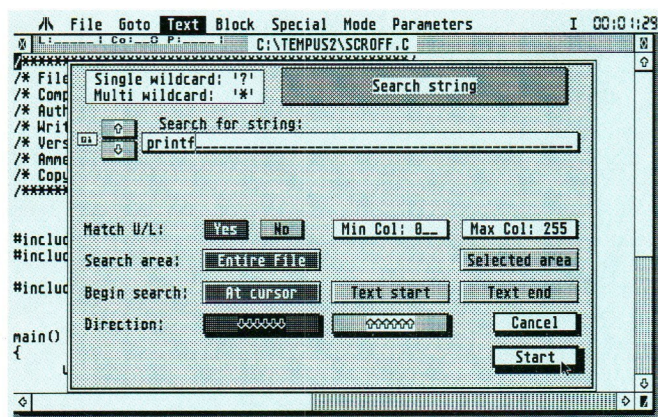
This new version of Tempus looks and feels very much like the old one, so existing users should feel right at home. Although Tempus is a text editor,



A neat little cartridge, but no audio output.



Tempus uses its own 'file select' dialog boxes, which are a distinct improvement over the standard GEM ones. There are ten user-defined search masks that can be selected, and double clicking on a 'drive' box brings up information about that drive, such as the amount of free disk space.



A powerful range of search and replace facilities. Wild cards can be specified as part of the search string, and they can be redefined as required. A buffer stores the twenty most recent search strings. The search can be restricted to just a particular part of a file, and can be case sensitive if necessary.

designed for editing programs rather than letters, it does have a special word-processing mode, that supports automatic wordwrap, as well as left and right text justification. This is ideal for writing simple text files, such as documentation and notes.

Tempus can work with up to four files at once, and the maximum size of these files is limited only by the amount of memory available. If required, Tempus can automatically re-arrange all open windows into a neat stack, or tile them vertically or horizontally. As with its predecessor, the screen display is extremely fast - holding down the mouse button on the vertical scroll bar causes text to shoot by at an incredible speed. There is even support for alternative DEGAS-generated display fonts.

From a functional viewpoint, Tempus has the usual block, string and file functions, all of which make good use of GEM dialog boxes. There are also a number of functions designed explicitly for program-

mers. Tempus can generate a cross-reference list of all occurrences of a particular string within a file. Clicking on one of these cross-reference entries with the right mouse button causes the cursor to move to that location in the file. There is also the ability to check for any unbalanced expressions, typically a missing parenthesis, but this facility can be extended to check for curly brackets or even matching 'BEGIN' and 'END' statements.

There is also a good range of miscellaneous facilities available. The character conversion utility allows the entire ASCII character set to be remapped, and these remappings can be saved for later use. One obvious use is to convert between upper and lower case, but this facility opens up a number of interesting possibilities. A sort facility allows a file to be sorted alphabetically into either ascending or descending order.

Although the ten function keys are pre-defined, the Shift and Alt function keys can be set by the user. Tempus has a

macro recording facility that enables it to 'learn' a sequence of commands, and then re-execute this sequence at the touch of a button. In fact, the entire keyboard can be redefined by editing the appropriate system file.

Although difficult to fault, there are grounds for some minor criticisms. The 'undo' facility is too limited to be of any real use; file size is limited by the amount of free memory; the block facilities could do with a general tidying up; tabs are not 'real' and the inclusion of a reverse-polish-notation calculator is rather odd. Despite these points, Tempus 2 is an excellent program, and maintains its position as one of the best text editors available.

Product:Tempus 2
Price:£39.95
Supplier:HiSoft, The Old School,
Greenfield, Bedford
Phone:0525 718181.

Times and Sun Crosswords Akorn

'Control of pleasures on the never-never!'. Obviously the answer is Joystick. If that was obvious then equally obvious is that this is volume six of the Times computer crossword and volume five of the Sun computer crossword (handsup all those who missed the previous volumes).

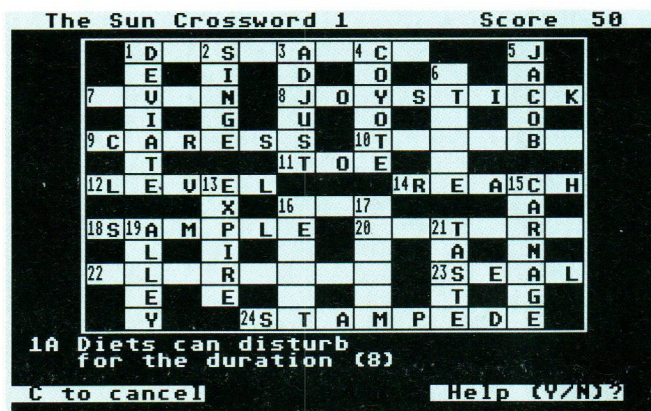
The programs are supplied on one single-sided disk and are accompanied by a glossy twelve-page booklet of a manual. They both work in mono and low resolution screen modes and, in fact, are near identical to each other in most respects - The Times version having many more cryptic puzzles to solve and no 'Coffee Time' clues, which the fortunate Sun reader is blessed with.

The only noticeable difference between the high and low resolution displays is that the text is colour coded in the low resolution display, otherwise the displays are close enough to each other to make no real difference which display you run it on. Or, to put it another way, neither display is really used to its best advantage.

On booting either of these programs, you are presented with some opening text, followed by some simple menu-driven options such as, to include sound or not and which of the sixty puzzles to try your hand at. The screen then clears and the puzzle appears with a prompt to ask for a clue. An invisible timer also starts which keeps track of your speed of completion. The overall time is revealed at the end of the puzzle.

Typing in a legitimate number reveals a corresponding clue. Then follows a clumsy sequence of five levels of response before you may, or may not, have got the right answer. Depending on the level at which you managed to get the right answer, the program will award you more or less points.

The five levels are: 1) Answering the original clue 2) The program will 'mark'



Not the most impressive of screen displays, that you might have thought would be possible with a 640 x 400 high resolution display. It is no better in colour, as it looks just as bland.

the correct letters in uppercase and the incorrect letters in lowercase 3) A hint of what type of puzzle is offered, in the form of a two-letter code that must be looked up in the back of the manual, where a list of the different types of puzzle is printed 4) The 'Coffee Time' clue is revealed (this level is missing in the Times crossword), and 5) The first letter of the answer is filled in for you. At each level you can have a stab at filling in the answer, or cancel out to have a go at another clue. The program will ultimately reveal the right answer if you consistently fail to get it right.

All this 'Yes/No' question and answer stuff can become tiresome, which is a pity, because underneath this spartan exterior is a good game trying to get out. As the game is produced across a broad spectrum of different machines, no attempt has been made to make use of the ST's attributes. The designers have ignored GEM, which is a pity as it would have made the games significantly more fun to play. A 'Team' mode doesn't really add much to the proceedings either.

One really good aspect is the inclusion of some fascinating insights into the minds of the puzzle setters in some of the chapters of the manual. Complete descriptions of how particular puzzles are contrived go a long way to aiding the crossword neophyte. Good fun for addicts.

Product:Sun Crossword Vol 5
& Times Crossword Vol 6
Price:Times £19.95, Sun £18.95
Supplier:Akom Ltd, (under licence
to Times Newspapers Ltd)
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London, SE13 5QW
Phone:01-852 4575

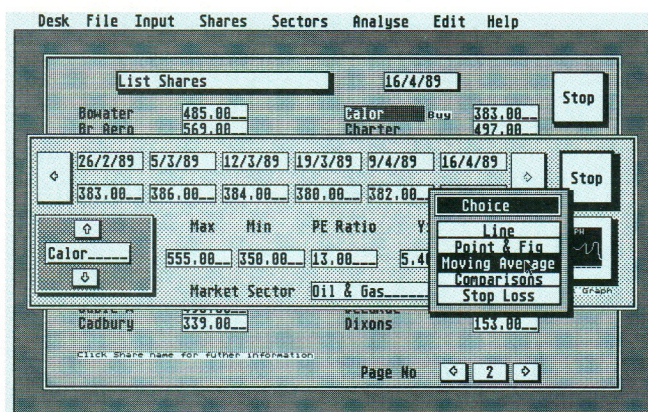
Market Breaker Robin Jewsbury

With three times more people owning shares than 10 years ago, and institutions like Abbey National's share issue creating 3-4 million new shareholders, share analysis programs are likely to emerge from their previous niche markets.

Market Breaker is aimed at the investor wishing to maintain up to four separate portfolios of up to 42 share holdings in each. Unlike the competition (Share Master, ported from the PC and twice the price), Market Breaker has been written specifically for the ST and makes excellent use of the GEM environment.

The program works in high-res monochrome mode and comes on a single-sided disk with pre-entered data for 168 companies entered on a weekly basis since the 16th October '87 (i.e. just before the stock market crash).

Data is input daily or weekly using your TV's teletext Ceefax shareprice service on page 130 (frames 1 to 6) which is updated five times a day. Each of the Ceefax frames are reproduced in the program which makes data input easy. A screen offering an additional 28 blank shares is also available for adding com-



This is page 2 of the share listing which corresponds to Ceefax frame 2, as Calor has been highlighted as a possible Buy, clicking on the name zooms in on the share providing more information. Clicking on the Graph icon allows you to check the performance in graph form.

panies of your own choice.

Although there's a menu option for automatic loading from Ceefax it is currently 'ghosted' and the author does not expect this feature to be implemented for several months.

Entering data from a newspaper listing is impracticable. Just one screenful of 28 shares took over 30 minutes and I still had a couple of entries missing. It is possible to enter just specific shares you're interested in but then much of the program's strength in graphical comparisons between individual shares and market sectors will be lost.

Disk access is disappointing: when booting the program from floppy it takes about two minutes, and one minute 10 seconds from hard disk. Fortunately, disk access is limited to booting up and then saving current prices; all other functions including the graphic displays and comparisons are performed in memory and are very fast.

The program's real power is in the graphing functions, the share analysis and portfolio reports. The graphs available are Line, Point and Figure, Moving Average and Comparisons and these are fast, informative, with configurable time periods, coarseness settings and Log and linear scales. The graphics are full of detail and any changes take less than a second to recalculate and re-draw. One notable feature is that the program looks for trends in price movements using a configurable formula giving recommended buy and sell times. Additionally, the program produces performance and prediction analysis by providing a list of top and bottom ten performers.

One niggle is the clumsy way in which some options are implemented. The

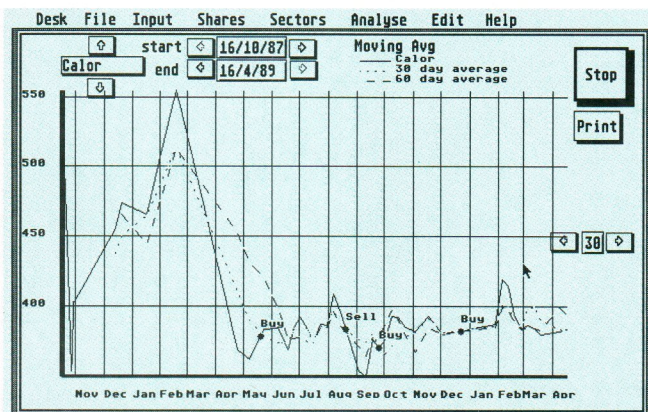
author has used GEM 'point and click' methods in preference to keyboard entry, but at times this can be frustrating. For example, when changing a range of dates it would be simpler to key in the required dates, rather than repeatedly click on left and right arrow icons. Also in data entry you must use the up or down cursor or Tab keys to move on and, annoyingly, on pressing the Return key you exit the current screen. These and a couple of other minor 'bugs' have been reported to the author who should have ironed out the problems by the time you read this.

In spite of this, the biggest plus is the GEM interface and on screen Help pages, making reference to a manual almost superfluous. The manual is 25 stapled A4 sheets printed on one side only, but all features are explained succinctly.

Whilst I have some reservations about the slow disk handling, its data format preventing use by other programs and the icon driven interface being taken to extremes, this program is otherwise a pleasure to use. Market Breaker starts to work for you from the moment it's first run. Anyone with an ST and a desire to dabble in shares would find it a very useful tool, and at half the price of the competition it deserves to do well.

Product:Market Breaker
Price:£49.95
Supplier:Robin Jewsbury,
190 Ellesmere Road,
Willesden Green,
London NW10 1JT.
Phone:01 452 2661

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Issue 2 of STUFFED is out now. It is many times larger than the pilot issue. We've kept the graphic based user interface and changed everything else. It contains the equivalent of over sixty A4 pages of ST info including an eight product word processor supertest. The Second Manual by Andreas Ramos is fully reviewed as is the Virus Destruction Utility by Richard Karsmakers in addition to a highly informative article on computer viruses. There are interviews with Budgie UK and The Music Matrix. Countless ST games are reviewed and many include screenshots. We feature a gallery section showing some STunning artwork with contributions from the UK and overseas along with many other features.

STUFFED runs in colour only and is compatible with all current models of the ST. It covers both games and serious software in roughly equal amounts. Our team of writers can all boast several years experience on the ST and many have also written for other publications. STUFFED is an independent disk-mag produced quarterly and costs £3.50. Cheques/POs payable to Floppyshop ST please. Remember to get STUFFED regularly.

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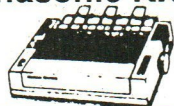
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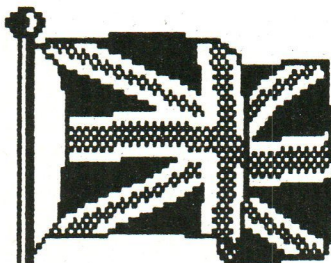
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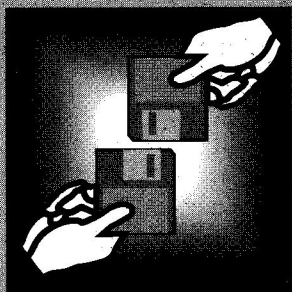
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Andreas Ramos, takes over the PD helm this month, kicking off with a brief excursion into the world of PD politics. There's also an updated version of FSELECT, the file selector improver, plus a number of utilities to customize your desktop.

THE PUBLIC'S DOMAIN

Is there a future for shareware/freeware in the UK? In the USA, shareware and freeware depends on an elaborate and well-developed free distribution system. Cheap telephone service, widespread use of modems, and the general American grassroots attitude has meant lots of easily available programs. The EXEC-PC BBS (Tlf. USA 414/964-5160) has 70,000 PC programs on a 3,000 megabyte system for downloading. There are few PD services; everyone gets their programs by modem. In Europe, however, shareware/freeware has not been doing too well; Europeans tend not to register, which bothers the Americans. Many American PC and Mac shareware authors in fact specify that their program may not be used in Europe.

A shareware program is a commercial program which is released in its entirety on disk;

all of the files are there, including the manual; copying is encouraged. The author keeps the copyright; everyone can copy it; those who use it must become registered users. Freeware authors, on the other hand, keep the copyright and permit copying and use within certain restrictions (no commercial use, for example). With freeware, there is no obligatory registration; you can send something as a 'thank you'. True public domain means that the author has given up all rights to his work: it can be sold, used, and changed by anyone.

So what's the problem on this side of the pond? Perhaps the difficulty in European shareware lies in the transfer of money across borders. Believe me, it is not a problem. You can send cheques, cash, international response coupons, disks, or anything else (once I traded a Danish cookbook for

an Austrian program). You must register with a shareware author: it is part of the condition of use. You'll also receive a manual. Freeware authors are always happy to receive recognition for their work; I have nearly always obtained updated versions, tips and tricks, or even customised versions. My version of Monomon, the disk editor, has options which were written for me. I have personal versions of a number of major programs, such as: Astrolabium, Sagrotan, and Sortplus. Programs, including commercial releases, are written by people who are interested in the ST and other users.

FSELECT.PRГ V3.89

Many of you may have FSELECT, the improved file selector. Martin Patzel, West Germany, has updated it again, and sent me the first copy. I've translated it into English and it is presented here for the first time anywhere, even before ST COMPUTER of West Germany (ach, nein!)

The ST file selector window, which appears whenever you are in a program and want to open a new file or edit a file, was poorly designed. Changing from one drive to another, or selecting one file out of several dozen, wasn't foreseen (why would anyone ever do that?). Martin has bypassed the entire problem and written a better mousetrap (FSELECT.PRГ, Version 3/89, 14,219 bytes).

Martin uses buttons extensively: you click on a button to change a drive or use an extender. Only the active drives are shown. The use of

extender buttons lets you "mask" the files so that only a "family" appears; this makes it easier to find a particular file. The clever thing about Martin's file selector is that you can easily change the extenders by doubleclicking on them. By saving the setup, you'll have your own set of extenders.

Programmers could learn a few tips from the box layout. The box is designed to show only what is needed. Useless information (drives which aren't used, etc) is suppressed. The main or most important items are gathered near the top left, where the (Western) reading eye will start.

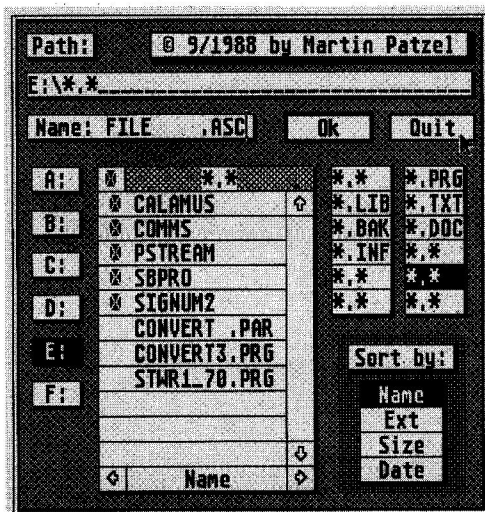
FSELECT lets you use keyboard commands as well. At the press of a key, you can select drives, files, or extenders; files and folders can be created or deleted. If you want your own keyboard combinations, a FSELECT.INS and PATCH program let you create your own layout.

FSELECT can display the files in various ways: either by name, size, or date. You can also choose to organize the files alphabetically, largest first, grouped by extender, newest first, or as an "unsorted" list. This last one shows the files in the order which they actually are stored on the disk. This lets you see the loading order of the programs in the AUTO folder and the accessories.

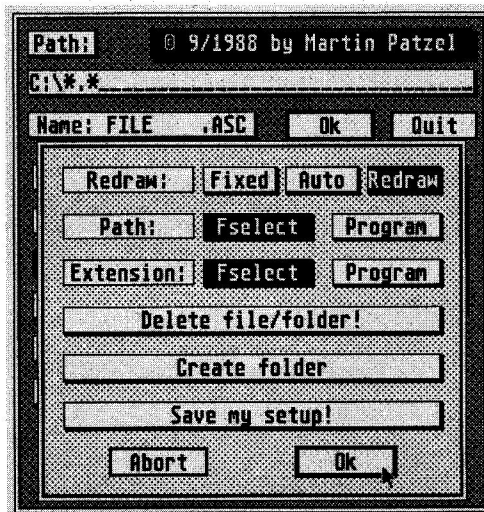
By clicking on the copyright message, we reach the options window; we can change various ways in which the file selector will redraw the screen or use the paths and extenders. Various programs, such as Redacteur, always show only their active work files or open only within a specific folder. Sometimes we don't want that: these options let you override this. It is here that you can create or delete files and folders; you can save your setup as well.

To use FSELECT, use the "Create Folder" option from the desktop, make a folder called "AUTO" on your startup disk and copy FSELECT into that folder. Press the reset button. Everytime you start up your ST, the FSELECT will be used. FSELECT is well documented: there is a ten-page file on disk which explains all of the options.

While we're at the AUTO



Martin Patzel's FSELECT



The Options window - many utilities built in

folder, a useful little PD program is ACACHE.PRГ (471 bytes large: the smallest ever). Put this into your AUTO folder and forget about it. It remembers your windows as you "go down" the folder hierarchy: if you enter three folders nested in each other and then exit, the ST needs to run the drive in order to "go up" to the previous level. ACACHE keeps this information and lets the window update instantly: the drive isn't activated. This saves you about 600 milliseconds.

ICONE.ACC

ICONE.ACC lets you create and use your own icons on a Mega ST (and only on Mega STs). It is a desk accessory; simply switch to "Display as icons" and your own icons will be used instead of the boring GEM icons.

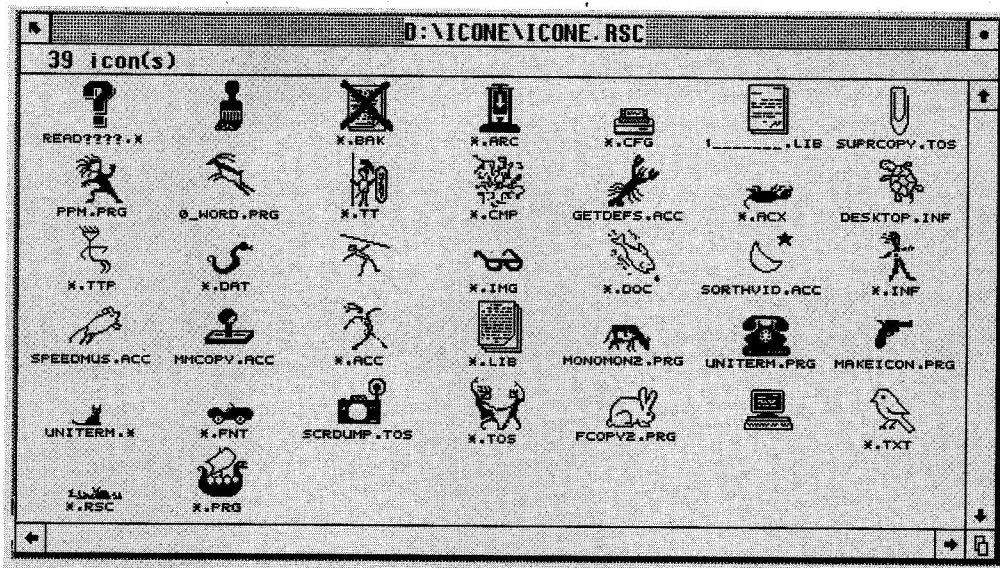
It is simply easier to spot an icon than to read text; the eye recognizes a unique picture easier than reading a row of text. My wordprocessor is a leaping Impala. RSC and INF files, which are totally uninteresting, have low, small icons so that they don't call attention to themselves.

The MAKEICON program is just that: a simple icon-drawing program. You load the icon RSC file, change it around, and save.

If you name an icon COPY.PRГ, then only COPY.PRГ will have that icon. If you name an icon *.PRГ, then all files with the similar extender will have that icon, e.g. COPY.PRГ, TRASH.PRГ, WRITE.PRГ. If you name an icon COPY.*, then all files with the similar first name, but different extenders, will have that icon, e.g. COPY.PRГ, COPY.RSC, and COPY.DAT.

I fooled around with MAKEICON for quite some time until I discovered how to have different icons for the members of a class along with a general icon for the class. The RSC file reads each icon in the order which they are in the MAKEICON screen. When it comes to a general icon (such as *.PRГ), then all further examples of .PRГ (e.g. COPY.PRГ, WRITE.PRГ) are ignored. Even if you make a special icon for these, they will use the *.PRГ icon. So... place the general class icon at the end! To move the icons, open a second window for the same ICONE.RSC. Move the *.PRГ icon to the

Your new icons installed and visible in a desktop window



first window, it now appears as the last in the series. Click on the first copy of it and use the delete option. In a similar way, you can copy the same icon several times, which lets you make changes, etc. instead of drawing them again.

There are more tricks. When you click on an icon, it turns black. Actually, this is a second icon in an inverted state. You may use a totally different picture from the first icon, this allows a bit of animation.

A useful tip which I picked up from Claus Brod at CeBIT: I was playing around on his system and noticed that he had a rubbish bin in each corner of the screen. This is easy to do: use a text editor (or 1st Word with WP Mode switched off) and open the DESKTOP.INF file. Simply copy the rubbish bin line several times; give

each of them a different name, if you like; save and reset. The new rubbish bins will be stacked on top of each other; move them into the corners and save the desktop. You can also make multiple drive icons. No matter how many windows you have open, or where they are, you can nearly always get access to a drive or rubbish bin.

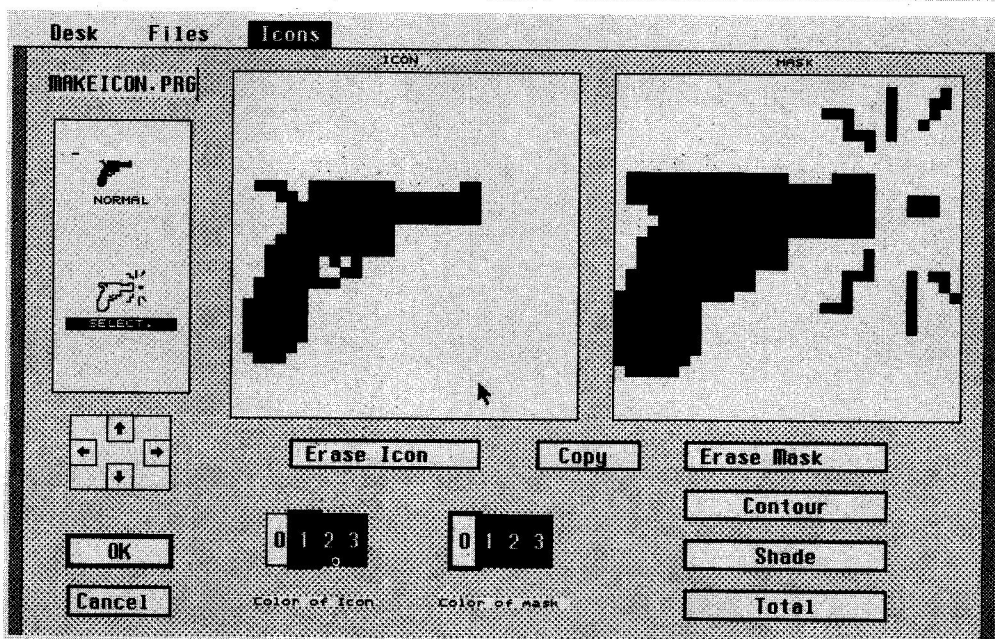
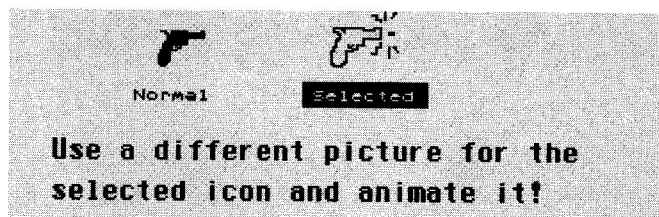
If you or your UG operates a PD service, please send me a note so that I can put together a full list for a future article. And I am looking for UG magazines, newsletters, and diskzines.

The software from this month's article is available from the following PD services:

ST CLUB (Paul Glover, 49 Stoney Street, Nottingham, NG1 1LX, Phone: 0602 410241);

Floppyshop ST (Steve Delaney, 50 Stewart Crescent, Northfield, Aberdeen, Phone: 0224 691824);

ST/UK (Andy Bishop, 1 Bartholomew Road, Bishop's Stortford, Hertfordshire, CM23 3TP, Phone: 0279 757692).



MAKEICON.PRГ, the icon editor program has simple drawing tools.

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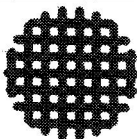
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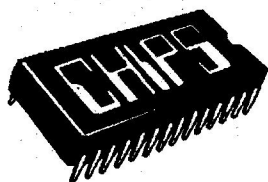
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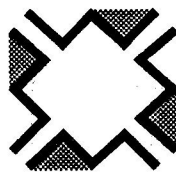
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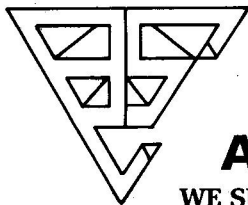
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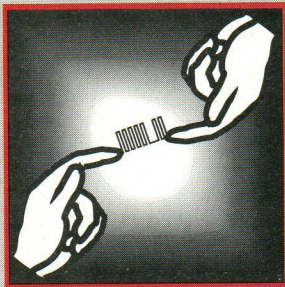
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BIX charges on the move; for better or for worse? Plus, the cost of comms, and a summary of some of the most popular types of on-line system accessible from the UK.

ST WORLD ON LINE

The general theme of this month's ST World Online is money, or rather some easy ways of losing money. I've been comparing some commonly used online services in terms of cost, but first another look at a major service we covered a while back.

Good news from BIX

If you have ever fancied trying the BIX conferencing system run by Byte magazine then there is some good and bad news this month. The good news comes courtesy of BIX, the bad news courtesy of BT's PSS. So which do you want first, the good news or the bad news? Good news, eh? OK, your choice.

BIX, which is a somewhat minor major player in the game has introduced a quite astonishing offer this month. They are offering a flat-rate monthly fee for BIX access, a fixed fee for as much usage as you like. For \$15 (about £9.50) you can use BIX for a whole month - 24 hours a day if you feel like it. Even better, for \$156 (about £97) you can use BIX for a whole year. That works out at best at just over 1p per hour! Compare this to the normal time-based charges of \$11/hour (off-peak), and \$20/hour (peak).

Suppose you dial-up BIX once a week just to see what's new and download something. If you 'blink' your new messages (file them and download them as quickly as possible) you would be finished in about half an hour. Now at standard

BIX rates that would cost you \$22, which compares favourably with the yearly flat-rate of \$13 per month. Of course, spend an hour online to BIX per week and you will save yourself \$31.

Any catches? Yes, I'm afraid there are. Flat-rates are all very well, but to benefit you have to keep using the system. The break-even point is at about 1.2 hours per month. If you have recently become addicted to BIX then you'll find that this usage rate is easy to attain - but familiarity breeds contempt, as they say, and soon you'll be using BIX less and less - eventually just occa-

sionally. A good idea would be to buy a quarter's usage at \$59 to see how things go, have a look at your bills at the end, and then decide if it's worth continuing.

And now the bad news...

The most recent edition of the PSS newsletter had some information on changes to the IPSS charging structure. In the old system, an IPSS call to BIX would be split into a time-based charge and a data-volume-based charge. Essentially you would pay about 5 pounds for every kilosegment (about 60K of data at best, 1K at the very worst) and an equal amount for every hour you spent online. I consider myself a typical non-corporate user and judging by my last PSS bill these charges split 5:1 in favour of data. One 10 minute call to BIX transferred about 38K of data and cost me £3.50 (plus VAT), yet another 10 minute call transferred 72K and cost £5.80.

The new system has eliminated time-charges (hooray!) but has increased the data-charges (uh oh!). The new rates, which came into effect on June 1st, now will charge £7 per kilosegment. With no time-charges some people will be better off, but what of the typical user? What about the examples above? Well, the 38K datacall would now cost me £4.15 and the 72K datacall £7.90! In fact,

for the 72K datacall it would now cost me less to direct-dial the US (cheap rate).

With these new charges you would probably do well to avoid IPSS altogether. There are other options, direct dialling being one. A direct cheap-rate call to the US will cost around 58p per minute - expensive, yes, but good value for bulk-downloading files. Don't forget that V22/V22bis modems are compatible with the US Bell system and with an MNP modem the connection at 2400 baud should be fast and clean. You can direct-dial BIX on 0101-617-861-9767 (1200/2400 baud with MNP, with 9600 baud/HST in June) if you wish - with the new BIX flat-rate you'll probably do quite well.

That just about wraps up this month's column. I must, however, honour an overdue promise to mention a new ST BBS - "My Little Phoney" on 0865-773277 (all speeds to 2400 baud). According to the sysop, Steven Green, the hottest new feature is "the new inter-BBS version of Space Empire, which is running on most of the UK FoReM boards. This allows each node to effectively be a galaxy and you can send recon groups, attacks, trade convoys, etc. to other nodes" ... in case you didn't guess, it's a multi-user game (I hope).

WHAT PRICE ON-LINE?

Surprisingly enough, the cost of a modem and suitable software can be far less than the usage costs incurred over the space of a few months. To assist you in weighing up the additional costs involved, ST World Online this month presents a rough price guide for the most commonly used systems. The calculated costs for the US systems are estimates including IPSS/Network charges where appropriate. The costs for BBSes are based on the normal BT phonecharges. Apart from the BBS entries, the time charges do not include the cost of the phone call itself. Mail costs are based on uploading and sending a 1K mail message to a single user. All costs are given in pounds. Where two prices are given, the first is cheap-rate, the second is peak.

Service	Max. baud rate	System Location	Sign-up Charge	Monthly Fee	Cost per Minute	Mail cost per Kb
BIX(time charge)	1200	USA	£24.38	-	0.66/0.76	0.65
BIX(fixed charge)	1200	USA	£24.38	£8.12	0.55/0.55	0.60
BIX(direct dial)	2400/MNP	USA	£24.38	£8.12	0.50/1.00	0.50
CIX	9600/MNP	Surrey	£12.00	-	0.025/0.045	0.05
CompuServe	2400/MNP	USA	£15.00	-	0.62/0.68	0.70
Connect	9600/MNP	London	£5.00	(- for now)		
Direct Connection	2400/MNP	London	£75.00	-	-	-
Matrix	2400	Lv/pool	£25.00	-	-	-
Microlink	1200(& 2400)	Local	£10.00	£5.00	0.035/0.11	0.07
Micronet	2400	Local	-	£5.00	0.01/0.06	0.02
BBS	1200-2400/MNP	Local	-	£5.00	0.01/0.03	0.02
BBS	1200-2400/MNP	Long Dist	-	£5.00	0.02/0.05	0.04

CIX - The UK's answer to the BIX conferencing system. Currently there are some 3000 subscribers to this service. Mail facilities are good, and have been massively improved very recently with the addition of external mail to all UK UUCP mail sites. Some major improvements to CIX are on trial right now - more details in next month's column. CIX is on 01-399 5252, and allows you to subscribe online with ACCESS or VISA cards.

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CompuServe - The largest online database in the US, and consequently the world. The services available on CompuServe are far too numerous to mention here. Mail facilities are second to none, providing external mail to most other US E-mail systems, along with an extremely powerful FAX service. CompuServe can be contacted via IPSS (NUA=3132) or via the CSC Ports in the UK (01-439 4055, all speeds). Unfortunately, you need a 'Starter Pack' to begin using CompuServe, and these packs are very difficult to find in the UK.

Connect - A Unix-based BBS run by the PC User Group. Connect is still beta-testing, and is therefore still not charging its users. Connect recently installed six 9600 baud V42 lines (encompassing MNP Level 4), unfortunately using the Hayes 9600 baud standard rather than the more common HST standard. The highlight of Connect is an efficient link to Usenet, which also provides the E-mail and conferencing facilities. Connect is still the cheapest way to access Usenet in the UK. Connect offers two different full-screen editors for entering mail messages, along with normal upload facilities. You can try Connect by dialling 01-863 6646.

Direct Connection - Another way to access Usenet. E-mail is again reliant on Usenet links, but DC also offers a neat 'maildrop' facility. Maildrop allows non-registered users to log-on and leave mail messages in the mailbox of any existing (registered) user. This facility is a great idea, and is sure to be copied by its competitors - but not as yet! The one-off subscription payment is good value, especially considering the additional services offered, including outgoing FAX. Direct Connection is on 01-853 3965 (up to 2400 baud/MNP).

Matrix - Unix-based Liverpool BBS with four lines. Nice informal system offering full read/write access to Usenet. It still seems to be finding its feet, and does seem to be a bit quiet - still, at only £24.95 per year it's not bad value. Unfortunately, it still lacks support for MNP, even to the point of requiring you to turn off MNP before dialling. You can get a demo of Connect on 051-255 0225 (all speeds to 2400 baud).

Micronet - an Information Provider on Prestel. Micronet has the largest user base of all the UK online services. Facilities offered are again too numerous to mention, but the highlights include: ST Selection; a telex link; multiple chatlines; widespread E-mail service with optional links to Telecom Gold; and a variety of Gateways to the computers of many large institutions. Chief disadvantages of Micronet/Prestel include the Viewdata graphics display which is almost unusable on noisy lines, and the limit of mail messages to just 20 lines of 40 characters! Micronet can be accessed on 021 618 111, for a demo keep tapping the '4' key when it asks for ID and password.

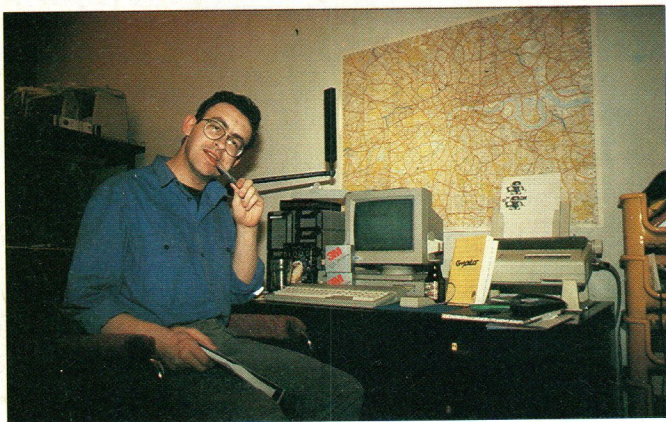
Microlink - Telecom Gold for home users. Microlink forms part of the Telecom Gold E-mail service and thus offers an extensive UK mail facility. Users outside London access Microlink via PSS, which does make it a little expensive to use. An interesting range of services is offered - including a hugely expensive link to the US Mnemonics system. Telecom Gold has the lion's share of the electronic mail market in the UK, and so the E-mail facilities of Microlink are what makes it worth paying for. A telex service is also available at extra cost. For more details talk to Microlink on 0625 878888 (Voice).

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BBS - many and various. BBSes are private systems run by enthusiasts - sometimes from their bedrooms. The better systems are quite impressive, offering comprehensive E-mail and download facilities. Some BBSes become commercial and move into the ranks of the established online service. Connect and Matrix are good examples. With BBSes being so common, the users tend to be spread fairly thinly amongst them. A popular board can have several hundred regular users, but in the case of an unpopular board you may well find yourself being its first caller.

FROM THE BUNKER



You know how it is, when you feel you're a real expert, and someone cuts you down to size? I do. After delving into the wrinkliest corners of a package (in this case, Superbase Personal 2), after marvelling at the intricacies and appreciating the depth of thought that goes into a program, a sure path to a purple face may be found in offering the thing to someone else.

Superbase Personal 2 arrived here in the bunker shortly after MS-Write. Previously, both of us had kept our address lists as a First Word Plus document, loading it in when brain-fade struck and using the Search command to track down the required number. This could have continued in Write, but The Other User has just come to need some rather more advanced facilities: Keeping track of record labels, promotion companies and 'rhythm combos'.

"Aha", I said, "you need a database. You need relational facilities, you need label printing, all that stuff."

"Will it keep my addresses?"

"Yes", I said. So we got it. Superbase Personal is the middle of the current range of Superbase products for the ST, and is excellent value: all it misses compared with the grown-up version (Superbase Professional) is the application writing facility. It is full-featured and has never made me think (running off my RAMdisk) "Cor, that was slow".

So we sat down and set up an address file. Names, numbers, addresses, plus a linkage to a short file of record label names and contacts. Very pretty, validated input: neat output of mailing labels and sorted lists.

"Okay, now how do I get to that in Write?" she asked.

Unk. Grind to a halt. Look foolish. Umm and err a bit. Superbase, the .PRG, is about 280K. Plus resource files puts it to just under 350K. Even using the 800K double-sided drive in my Mega 2, the font and system files for Write using my 24-pin printer fill a DC-formatted 800K floppy to within 20K of bung full. Now, in other columns you'd hear a glowing recommendation for something like HiSoft's Twist, to flip Write out and flip Superbase in - not here, because I don't have a hard disk. So there was no prospect of that kind of trick without removing the Write disk and inserting the Superbase one, which is fraught with danger: Write does not like having its program disk removed. Translation: the risk of bombs increases twenty fold.

"You mean", I was asked "I have to save my work, take that out, put this in and run the program, load the file, and then find the name?" Glum nods. Low marks all round.

What I want, then, from some budding developer, is a desk accessory that reads and displays Superbase data files. It could even be an adapted existing address book DA (are there any of those?). I'm not fussy. All it has to do is get me off the hook.

Small is beautiful

Why am I asking for some software? Surely, people in magazines are supposed to tell you all about packages they find, not t'other way around? The reason is that not long ago I had a similar problem, and asked on CIX, and got what I wanted.

Before G+PLUS arrived, I was forever flipping between GDOS and non-GDOS applications. Since I'm a keen fan of the reset-proof, autoloading RAMdisk, this

required a cold reset. I managed to find a program which reset using the IBM style 'three finger salute' keychord of Control-Alternate-delete, but an embarrassing bit of overlap with some of the many delete options in MS Write made this a risky choice. (Translation: certain people hereabouts hit the combination and lost several hour's work...).

So I asked on CIX, for a DA (I like DA's) which could make the ST do a reset. Things like the Schizo DA include a reset button, but as I have said, space was tight. "Perhaps", I thought, "there was something in the public domain?" There wasn't. But by the next day, there was. David Jones (Davjon on CIX and STW comms correspondent) had strung together exactly what was wanted, in 704 bytes! Now I can restart my system without risking the cable nest down the back. A large pat on the back goes to our Mr Jones.

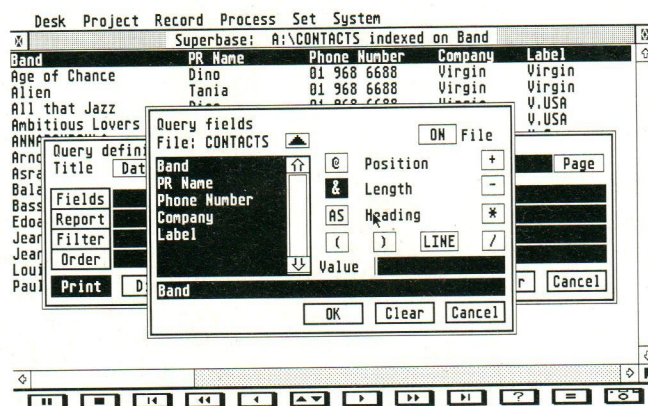
Disks

As is made clear from my problems with Superbase and Write, I don't yet have a hard disk. What I have instead is more floppies than I can shake a stick at. Branded, unbranded, lightly crisped in parts, multicoloured, free ones,

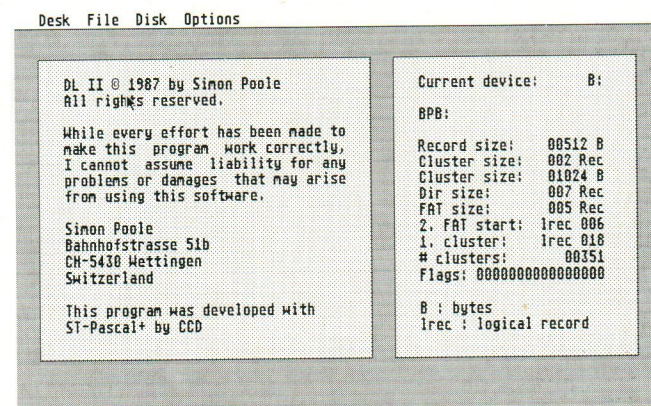
expensive ones: I try to keep only a small disk box beside the machine which enforces some discipline, and which restricts my working set. This small group is subjected to constant use and the steady rule I have evolved is that none of them, from 35-quid-a-box Inmac specials through to job lots out of the Ally Pally show, last more than four months in daily use.

Going over four months invites disaster. I have various tools to help me keep away from loss of data: The excellent DCFormat disk formatter, which does complete disk copies at high speed; a wonderful little AUTO folder program called SCACHE which cuts out those tedious disk rereads when returning to an unchanged desktop; and Simon Poole's wondrous DLII disk-checking program. Why do I use DLII? Because it comes from the author of Unlterm, possibly the best PD software for any machine. And because, unlike any other kind of computer more complicated than the Sinclair Spectrum, there is no easily available official disk repair program for the ST.

To find out why, take a look at this page next month.



Superbase Personal, being very intricate.



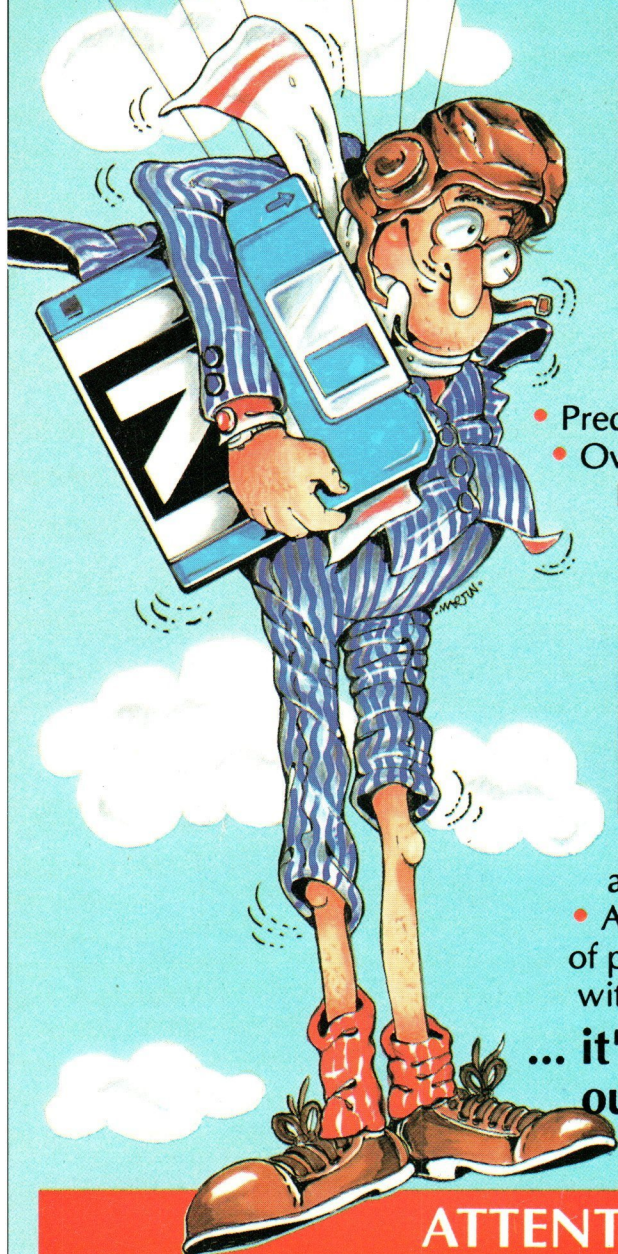
Simon Poole's DLII disk repair utility: incomprehensible but powerful.

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