ATARI ST USER

The top-selling Atari ST magazine

Volume 2
Number 10
December 1987
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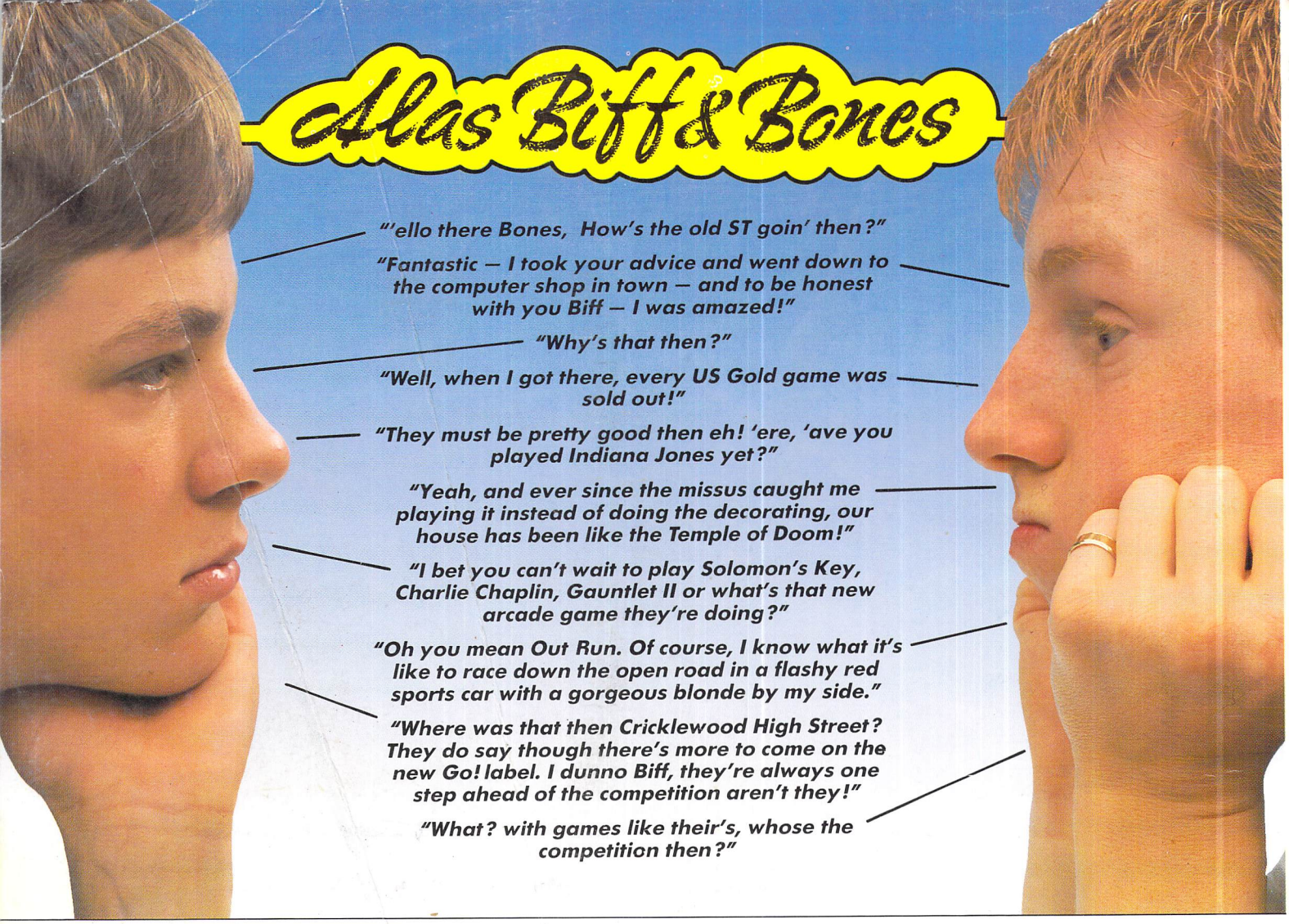

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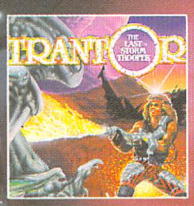

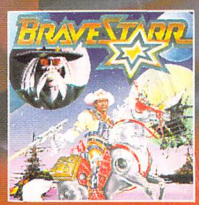

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The big event of 1987...

Atari User Christmas Show

Organised by
Database Exhibitions

Champagne Suite, Novotel, Hammersmith, London W6

10am-6pm Friday November 20
10am-6pm Saturday November 21
10am-4pm Sunday November 22

The record-breaking Atari User Show is back – with three action-packed days devoted to the ever-expanding Atari market.

- ★ **Try out the very latest UK and US 8-bit software**
- ★ **See the full ST range, including the new mega-ST**
- ★ **Snap up the never-to-be-repeated bargains**
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- ★ **Get helpful advice from *Atari User's* own experts**
- ★ **Experience the fascinating world of communications**

. . . and much, much more!

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A191

Big TV ads for Atari

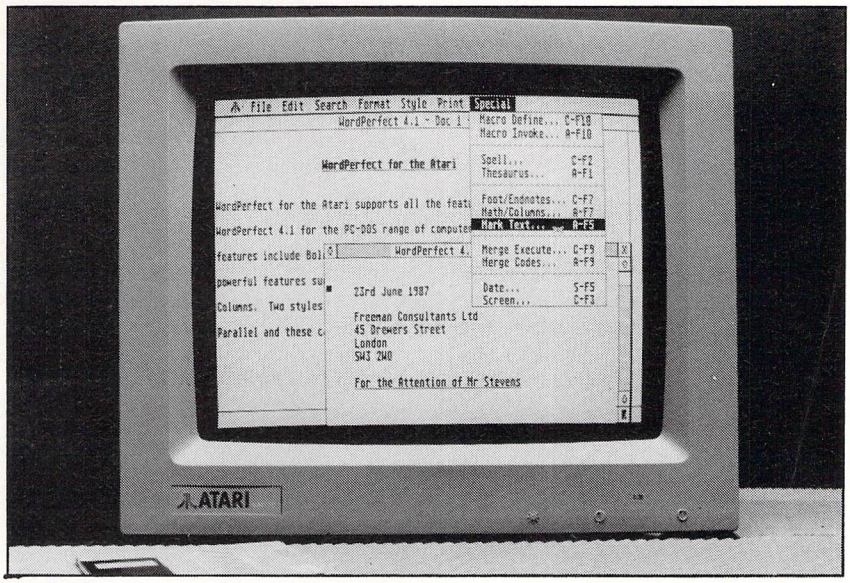
A MASSIVE television advertising campaign has been launched by Atari to back up its expectations that the ST will be the fastest-selling personal computer for the home this Christmas.

As an Atari spokesman put it: "With the 520ST costing as little as £299 which connects directly into any colour television, and with good software backup and outlets in a number of leading High Street stores, we can't see how it can fail".

The brash, colourful and exciting adverts with their highly developed video graphics and stirring music are designed to stand out among the mass of pre-Christmas product promotion on the small screen.

Atari launched the campaign at the PCW Show where it took the largest exhibiting area.

Another 43 companies took stands in specially-designated "pavilions" within Atari World with a range of hardware, software and peripherals which included the £2,500 Atari desktop publishing system.



WordPerfect on the ST

WORDPERFECT has been released on the ST making it the software's 13th computer format.

This version is file compatible with WordPerfect 4.1 and 4.2 for the IBM PC and other computers, allowing direct file transfer between the two environments.

Announcing the word processor's new conversion chairman of the board of the WordPerfect Corporation Bruce Bastion explained his company's philosophy behind the product.

He said the continued success of WordPerfect – distributed in the UK by Sentinel – was due to the fact that the company listened to its users more than most.

"We think the product should be productive and natural to use. People have to be able to find what they want in the package.

"The purposes for which people want to use a word processor 80 per cent of the time are the areas in which WordPerfect shines".

He has very firm ideas about the future of the package.

"There will be more compatibility and more interaction with other pieces of equipment.

"Word processing is moving towards desktop publishing. I am not talking about separate packages, I mean a word processor with dtp facilities. I think WordPerfect will be a leader there", he said.

The package fully supports Gem and includes all of the original program's main features such as automatic save to disc, 115,000 word dictionary, thesaurus, maths, macros to speed up repetitive tasks, three-level undelete, automatic paragraph numbering, text columns, sort and merge and table of contents or index generation.

Each is accessible via the keyboard or mouse.

Price £199.

Database with a difference

A RADICAL new concept in databases which provides instant productivity has been released on the ST.

Superbase Professional is the latest in a series of award winning programs from Precision Software, the Surrey-based firm with a growing international reputation.

Superbase Professional gives all the tools needed for a complete software environment – including a unique forms editor which at the basic level of design allows the creation of multi-page forms combining colour, lines, boxes and text at will.

Special editing aids are featured and graphics can easily be integrated to give the look of customised stationery. Significantly, forms can be structured to handle complex multi-file data entry and review requirements without programming.

"This is the definitive development tool which makes the word 'database' totally inadequate," said Precision sales director Nigel Lovett Turner. "Superbase Professional is a revolution; if you can think it, this program will do it."

Superbase Professional's Database Management Language (DML) has been devised to make it easy for the non-programmer to create powerful applications while at the same time offering an astounding 200 commands.

Simple routines can be built up to become complex programs until a fully automated database system is created.

At the highest level, replacement pull-down menus can be produced and many other customising features such as personalised pop-up selection panels are available.

ROLL UP FOR YOUR CHRISTMAS PRESENT

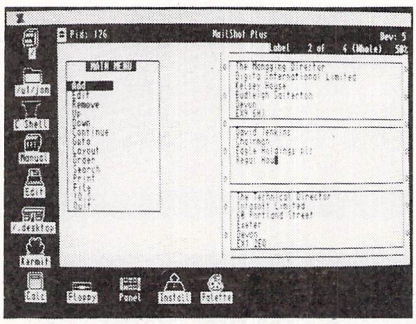
EXHIBITORS at this year's Atari Christmas Show have revealed more details of the new products and bargain offers they have in store for ST users.

Computer Concepts is launching its Calligrapher document processor and demonstrating it on Atari's new laser printer. Also on show will be a new scanner for the ST which can reproduce text and graphics at 300 dpi.

Adamsoft has reduced prices on its range of Abacus software which includes a database, spreadsheet, word processor, circuit board designer and business chart pack.

Prospero Software is launching two Gem environments for the ST – Prospero Fortran priced £129.95 and Prospero Pascal for £99.95. Software Store has promissed to introduce a large amount of freshly imported software for the ST.

Michtron will be offering Easy Page, a desktop publishing package for £29.95, and Make it Move version 2, an animation package for Neochrome or Degas. Also on show will be GFA Companion, a code producing package for putting Gem boxes into GFA Basic programs.



On show at the Atari Show: Digita's Mailshot Plus

Microdeal will be launching American Marine combat game Leatherneck, International Soccer and Tanglewood – all at £19.95 – and previewing Goldrunner II.

A full range of budget games software for the ST will be on offer from MCD. R.H.Design is launching what it claims is a "revolutionary" ST joystick. Zonefour will be launching a budget 20Mb hard disc for the ST.

Storm Computers & Software promises "a mammoth promotion" with spectacular bargains for all ST users.

Theme of the Software Express stand will be desktop publishing. The firm will have on sale for the first time Mirrorsoft's Fleet Street Editor, Version 1.1, and – at a special price of £129 – the A-Magic video digitiser.

Minature Tool/Videk will have special show prices for a range of Atari cables and switchboxes.

Tynesoft is launching ST versions of Winter Olympiad 88, price £19.95, and Formula 1 Grand Prix, price £14.95.

Precision Software will be demonstrating its new programmable database package for the ST, Superbase Professional, which features a powerful forms editor.

Digita Group is launching a Spectrum Sound Analyser for balancing Hi-Fi systems, price £99.95, and two menu-driven database label makers – Mailshot for £24.95 and Mailshot Plus for £49.95

From KKS Electronics comes the Astracom Modem for the ST at a 15 per cent discount. The firm will also be launching a 1Mb second disc drive.

A money saving advance ticket order form is on Page 4.

New Frontier hits 198 Mb

ST hard disc specialist Frontier Software has added to its range with the release of a 198Mb Supradrive, a repackaged 30Mb unit, and new extension abilities.

As with the 60Mb drive from Frontier (0423 67140) the new 198Mb drive is housed in a casing similar in size to Atari's 20Mb SH204 drive.

The 30Mb version is based on a 3.5in unit and is housed in a compact sturdy metal case which is no bigger than a standard Atari external floppy disc.

Frontier sales manager Dave Fields explained that by adding an SCSI port to the back of their hard discs, manufacturers Supra had made it possible for the user to plug an extra drive into his system.

Changing face of women's work

WOMEN doing home-based computer work are being sought by researchers for a new Channel Four television series.

One of the programes in Women and Work will focus on the importance of part time work or flexible working hours for women with families.

"We are therefore particularly interested in women working in home based computer technology", says Cinecontact, the company organising the films. "Not only does this work offer the necessary flexibility but it also gives a sense of the changing of women's work for the future".

Women working in London and the Home Counties who are prepared to talk about the general aspects of combining childcare and work and of the advantages and disadvantages of such work are asked to contact Claire Pollak or Frankie Glass at Cinecontact. The phone number is 01-434 1745.

Eye's right

A BOARD game called Eye which is challenging Trivial Pursuit for popularity has been translated into computer form for the ST.

Based on a circular board with two rotating spirals of colour, all of which represents the Ancient Sanctuary of Epidaurus, it is claimed to be easy to learn but complex enough to tax the keenest of minds.

It was conceived at an American summer school by three rather eccentric characters – Kerry Kevill, an Australian teacher, Iris Luttering, a German fashion student and Billy Barry, an Anglo-Irish ex-jockey.

Seven years and seven months later, on the island of Crete, Eye became a completed project.

The ST version from Endurance Games (01-805 8001) scores over the board game by providing fully animated title screen, a status box, move counter and more direct control.

Price £14.95.

EXCELLENT SOFTWARE FOR EXCELLENT PEOPLE

GET HOLD OF THESE ATARI ST PROGRAMS NOW!

DOMARK

AVAILABLE FROM ALL GOOD STOCKISTS

In brief...

ATARI's 2Mb and 4Mb MegaSTs – complete with blitter chip – are now being shipped in quantity in the UK. The company is targetting the machines at educational and professional markets from where it has already had a great deal of interest.

★ ★ ★

ACCORDING to software house Domark (01-947 5622), the ST is the "yuppie machine of the year". The title was given as part of the launch of Trivial Pursuit on the machine. The version is billed as breaking new boundaries in graphics and sound – questions about which can even be played through the Midi port.

★ ★ ★

A DTP package for the ST – Timeworks Desktop Publisher – with full WYSIWYG has been launched by Electric Distribution at £99. The same company is also to produce add-ons for its Cyber Studio package.

★ ★ ★

RANARAMA, in which the player is required to guide a frog around a maze and then arrange the letters na-ra-ma-ra into a well-known computer game title, now has an ST version. It costs £19.95 from Hewson (0235 832939).

★ ★ ★

QUOTE of the season came from Sir Clive Sinclair in an computer press interview: "The Atari ST (personal computer) is a super machine".

★ ★ ★

OCEAN (061-832 6633) is to release its first game for the ST. ECO is about survival. The player starts as an amoeba, evolves through fish and fauna stages and eventually achieves human status. During the search for vital elements, a food chain begins which turns the player into a predator – or prey. It will cost £19.95.

★ ★ ★

A RANGE of Gem applications products for the ST has been launched by Digital Research. Gem Write/Gem Paint, Gem Draw Plus, Gem Graph and Gem WordChart all cost £99.95. Gem Desktop Publisher is promised before the end of the year.

Atari's doing fine

SHARPLY improved results for the first half of 1987 have been revealed by the Atari Corporation.

Compared with the same period last year income is up more than a massive 132 per cent with sales showing an improvement of nearly a third at around $136 million.

"Atari continues to enjoy a favoured market position throughout the world", said a spokesman. "Record sales were again achieved in both the video game and computer product lines".

The statement sets out part of the Atari Corporation future plans. It says:

"Pursuing a vertical integration, the company intends to make acquistions in computer or related fields. An active search is underway to identify appropriate businesses whose activities will complement Atari's operations".

The figures show that at the end of the period under review, Atari had $198 million in capital, as compared with $40 million last year.

It points to the launch of the Mega STs and laser printers as a significant part of future growth.

ENTER THE LOW COST CD ROM

A WHOLE new area of operation will be opened up to the ST next year when Atari releases a compact disc rom for under £400.

The device, which will also play audio CDs, can transfer information at 1.5Mbits a second and will take discs containing 600Mb of data.

Atari UK boss Bob Gleadow says that a host educational and industrial applications will be catered for; the ST would be useful for any purpose where reference to vast amounts of data was needed.

The CD-rom was first put together in 1985, but proved too expensive to produce at that time.

Advances in manufacturing technology and increased efficiency have now, says Atari, made a reasonably priced model a viable proposition.

The hard line

CUMANA has launched a series of hard disc drives for the ST which can provide up to 60Mb of formatted storage.

"Now that market prices favour a change toward hard discs we feel that the time is right to make our move", said managing director Don Bolton.

Both the 40Mb drive, priced at £1,149, and the 60Mb, at £1,349, are voice coil for high speed access. Installation is said to be easy using supplied software.

The 20Mb version costs £779 and the 30Mb £799.

Four-player Gauntlet is faster

FOUR players each equipped with a joystick will be able to play the ST version of Gauntlet II.

For along with each copy of the game will come information offering a special adapter for about £7. This plugs into the printer port and enables two more joysticks to be added.

Another feature of the game, from US Gold (021-356 3388) is that it has been designed to run faster than the original by making the playing area smaller.

All the Gauntlet opponents remain, and are joined by new ones including the fire-breathing dragon which guards the exit to the randomised maze and the IT Creature which makes you the centre of attention for all the monsters.

It is one of a number of games scheduled from US Gold. Also expected soon is Charlie Chaplin. The player becomes a silent movie director and must find and choose a script, backdrop, props and cast.

Outrun is a car race of "gigantic" proportions with a series of backdrops not normally found in such games.

From Coconut Beach the player must reach a series of checkpoints through rolling landscapes, along undulating roads, tracks and autobahns and avoiding the other swerving road users along the way.

Trantor – The Last Storm Trooper is set on a forbidding planet where a single warrior with his flamethrower has to fight his way through several levels to escape.

He has only 90 seconds to reach the terminal in the satellites building. Every time he does so his console is recharged

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Atari ST Reference Books from Abacus Software

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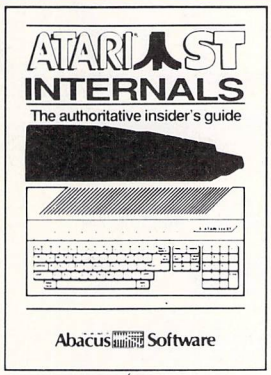
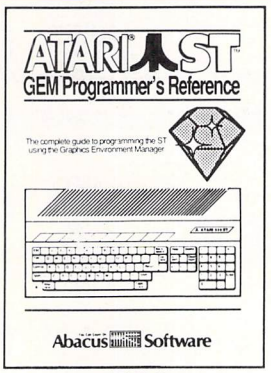


ST Internals

(Formerly Anatomy of the Atari ST)

An essential guide to the insider's information on the ST. Written for the programmer wanting a thorough, complete description of the inner workings of Atari's outstanding ST computers. Detailed descriptions of graphics and sound chips, hardware, the Centronics and RS-232 ports, GEM, important system addresses and much more. Included is a commented BIOS assembly listing. This reference work is a required addition to your ST library. Third printing.

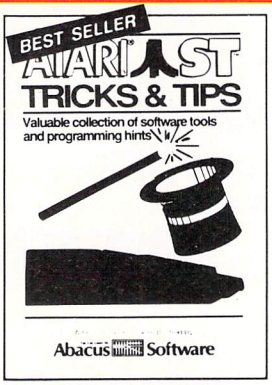
AB 450 446 pages **£14.95**



GEM Programmer's Reference

An indispensable guide for the serious ST programmer needing detailed information on GEM. Written especially for the Atari ST, it has an easy-to-follow format. Covers choosing the right programming language, introduction to C and assembly languages; a study of the Editor, C-compiler, Assembler & Linker; programming the Virtual Device Interface (VDI); Application Environment Services (AES); Graphics Device Operating System (GDOS), and interfacing to TOS. Many example programs, Cross-referenced VDI/AES calls.

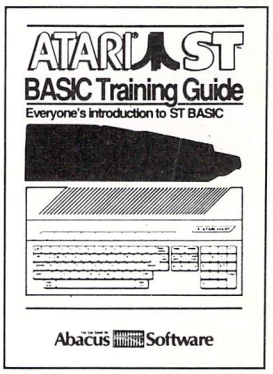
AB 470 412 pages **£14.95**



Tricks & Tips

Fantastic collection of ST program tools and techniques for the ST. Programs include a super-fast RAM disk; time-saving print spooler; colour print hardcopy; plotter output hardcopy; accessories construction – all of these programs and more are included in the price of the book! Learn how to create brilliant graphics, use the VDISYS commands, and master the powerful GEM applications. Refine your BASIC, assembler and C programs with advanced programming techniques.

AB 455 260 pages **£14.95**



ST BASIC Training Guide

An educational, well-written introduction to Atari ST BASIC. You'll learn to program your ST quickly with the BASIC commands, problem analysis, and algorithms presented in the first few chapters. Quizzes throughout the book help you learn to "think in BASIC" while you get a practical grounding in the language at the same time. Topics include data-flow and program flowcharts, menus, multi-dimensional arrays, sort routines, file management, BASIC under GEM, advanced programming techniques, and much more.

AB 485 312 pages **£12.95**

Introduction to MIDI Programming

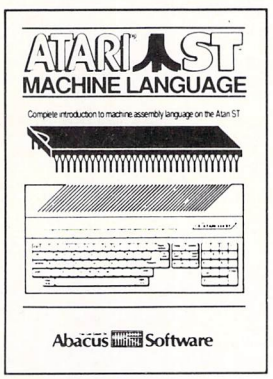
Your ST's built-in Musical Instrument Digital Interface (MIDI) lets you control any MIDI-equipped digital synthesizer – and the results can be phenomenal! This book covers the fundamentals of MIDI operation on the ST – how a synthesizer is actually interfaced with the ST's MIDI ports. Includes C sourcecode listings for comprehensive MIDI editor, driver and animated player for any of the Casio CZ series, etc. Written by the authors of XLENT Software's ST Music Box™ package.

AB 520 250 pages **£14.95**

Peeks & Pokes

Enhance your programs with the PEEK and POKE examples in this book. Clearly explains a number of the most important POKEs and their uses. At the same time, you'll get a good look at the architecture of the Atari ST. Topics include: the ST's configuration and interfaces, its "intelligent" keyboard; the mouse, pointer and stack, diskettes; TOS, GEM, interpreter/compiler, choice of programming languages, input and output; much more.

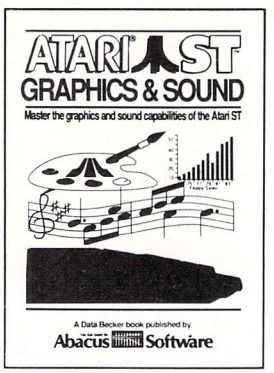
AB 480 175 pages **£12.95**



ST Machine Language

Learn 68000 machine and assembly language to make the fullest use of your ST. Takes a systematic approach in presenting number systems, logical operations and bit manipulation; use of registers, structure and details of the 68000 instruction set and the ST system routines; explains the functions of the editor, assembler, linker, etc. Contains many sample programs.

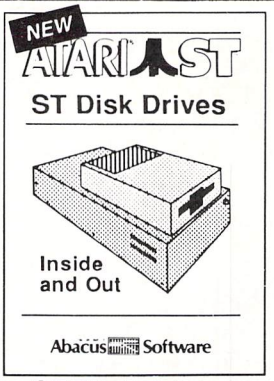
AB 465 280 pages **£14.95**



Graphics & Sound

An in-depth look at creating sophisticated graphics and surprising music and sounds on the ST. Detailed guide features step-by-step introduction to graphics in all resolutions: 2-D and 3-D function plotters, Moiré patterns, graphic memory, various resolutions, fractals, recursion, sound waveform generation, MIDI. Example programs written in C, LOGO, BASIC and Modula-2 ST. See and hear the audio-visual possibilities built into this remarkable computer.

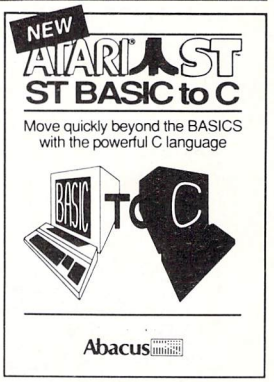
AB 460 255 pages **£14.95**



ST Disk Drives: Inside and Out

The definitive guide to the ST disk drives, including the Atari ST Hard disk. This exhaustive volume not only covers files, file structures and data management, but details both the programming and technical aspects of the floppy drives, hard drive and RAM disk. Includes program listings for several full-length utilities and programming tools that allow you to further explore the capabilities of these drives. Available first quarter '87.

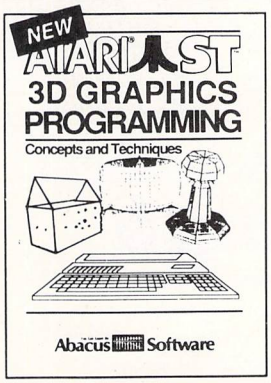
AB 445 375 pages **£16.95**



ST BASIC to C

Move up from BASIC to C – in a hurry! If you're already a BASIC programmer, you can learn the fundamentals of C language programming all that much faster, usually in less than one day. Parallel examples demonstrate the programming techniques and constructs in both languages. Topics include variables, pointers, arrays, data structures, more.

AB 515 250 pages **£14.95**



3-D Graphics

Teaches ultra-fast 3-D graphics techniques in 68000 machine language. Axial rotation, zooming and shading of 3-D objects. Learn the mathematics and data structures behind 3-D graphics. Topics include transformation and projection of one dimensional figures to 3-D, hidden line removal, shading, introduction to 3-D CAD. Complete with 3-D patternmaker and animator.

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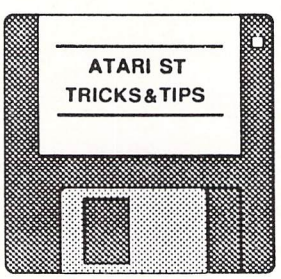

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NEWSLETTER

Email is good business

BOOKSELLERS Graeme Roberts and Tony Swann, who first got in touch through MicroLink's bulletin board, are finding electronic mail makes for good business.

Graeme made a 12,900 per cent profit on a battered copy of Sowerby's Exotic Mineralogy he sold to Tony, a director of natural history specialists Wheldon & Wesley.

"I bought the book for £1 from a local junk shop after seeing Wheldon & Wesley's advertisement on the MicroLink BB", said Graeme. "I thought it was probably worth more than I paid, but had no idea I would get as much as £130".

Tony Swann was equally delighted with the deal. "After a couple of hours hard work with a soft rubber I was able to remove the accumulated dust and grime of 175 years and turn it into a quite reasonable copy which I sold on the phone to a collector in America for £240 the same day", he said. "The three of us are very happy, and it's all thanks to MicroLink".

The aged scientific tome was a change of theme for Graeme who specialises in out-of-print science fiction, fantasy and horror and is currently expanding into supplying dealers and collectors in the US. His main reason for joining MicroLink is its "enormous potential for speeding communications" with his clients.

Tony also considers MicroLink an extremely useful business tool. "It isn't just because of increasing sales and purchases", he says. "I travel a lot around Britain and Europe and find the Official Airlines Guide saves me much time at the travel agency. Telex and the British Rail timetables come in handy too.

"Overall I'm delighted with the system and it's certainly beginning to pay for itself".

Cut the cost of fashion

PEOPLE can now dress themselves from head to toe in the latest fashions with the help of MicroLink.

London company Twillfine is using the system to advertise High Street chain store fashion wear at a fraction of normal retail prices.

The garments aren't seconds – they're warehouse stock which has to be cleared to make room for new lines.

Twillfine's prices are as low as £4 for blouses usually priced £14.99 and £1.50 for shirts which normally retail at more than £13.

Your chance to join MicroLink – Page 20

New board for chess

MICROLINK subscriber Keith O'Connell has challenged the world to a giant electronic game of chess.

Playing on the MicroLink bulletin board he says he is willing to take on anyone of average standard.

"I don't mind how many games I play at once", he said. "Anyone who wants to take part can just mailbox me with their moves in response to my game on the bulletin board.

"All I ask is that my opponents play for themselves, and don't just use a computer chess program to decide their moves. I want to play people, not a computer – I can do that on my own at home".

Micro muscles

MICROLINK subscriber Theo van der Meer has launched a search for software authors with experience of writing for peripherals.

He wants them to help him develop a device which allows people with severe muscular problems to use computers.

Theo's company, Preston Communications, is UK distributor for a Dutch product that links a muscle or several muscles to a joystick, allowing people with all kinds of muscular diseases to control a micro.

The device, which takes over the five joystick functions, has just completed clinical trials in Holland and is now being tested here.

"Our problem is that all the programs to control the device are currently written for the Commodore and we need to have them re-written for other machines such as the BBC Micro, IBM PC and compatibles, Atari, Apricot, Apple and Macintosh", said Theo. "We will of course gladly pay for this work".

Tower triumph

TWO years after finding himself out of a job at the age of 56, Yorkshireman Philip Gibbs is boss of his own company and poised for success.

With the help of his computer and MicroLink he has launched Sheffield Skyhook to manufacture self-erecting towers for closed circuit TV systems.

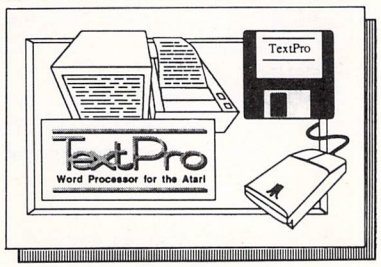
Now his project is nearing completion he is also receiving financial support from British Steel, British Coal and the Department of Industry prior to going into full production.

Philip has been using MicroLink to improve his communications with the various agencies he deals with, and has also found the Kompass Online directory of UK companies invaluable as a source of potential customers.

"At the moment we are using MicroLink mainly for telex", said Philip. "But when we finally get going full swing we'll be making use of Email as well".

Atari ST Productivity Software from

You Can Count On Abacus Software

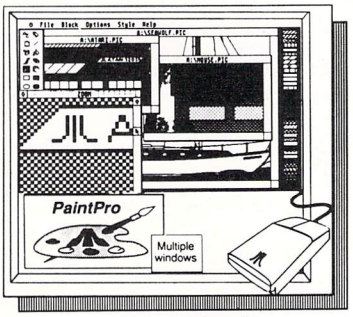


TextPro

"....TextPro is the best wordprocessor available for the ST." — Randy McSorley **Pacus Report** Dec '86

The professional wordprocessing package designed for the ST by professional writers ST TextPro combines great features with flexibility, speed and easy operation – but at a very reasonable price! ST TextPro offers full-screen editing with mouse or keyboard shortcuts, as well as high-speed input, scrolling and editing. You can create multiple columns of text, and choose up to 180 characters per line. ST Textpro even generates an automatic index and table of contents! Other features include 30 user-defined function keys; flexible printer installation; sideways printing: loading and saving to RS232 port; and much more.

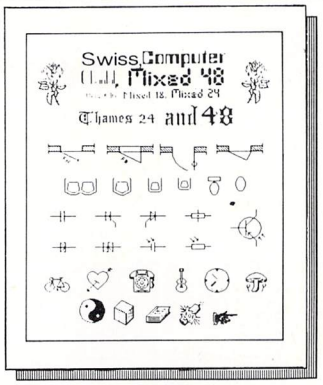
AB 490 Unbeatable value at only **£39.95!**



PaintPro

A true GEM™ among ST graphic design/paint programs. ST PaintPro is very friendly and economical – but very powerful. PaintPro supports up to three active windows, and has a complete toolkit of functions: free -form sketching, lines, circles, ellipses, boxes, text, fill, copy, move, zoom, spray, paint, erase, undo, help, as well as extensive text capabilities. You can even import "foreign" pictures for enhancement using PaintPro's double-sized picture format, and send hardcopy to most popular dot-matrix printers. Works with either monochrome or colour ST systems. ST PaintPro is a must for everyone's artistic or graphics needs.

AB 620 **£49.95**



PaintPro Library # 1

A companion to the ST PaintPro package (and compatible with Degas as well). This complete graphics library includes five new original fonts that can be used with PaintPro – Swiss, Computer, Chantal, Mixed and Thames (Old English) – and hundreds of symbols, borders, ornamental lines, etc. for use in electronic, architectural and graphics design.

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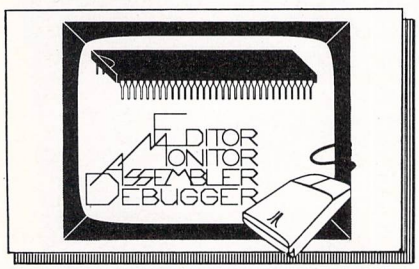
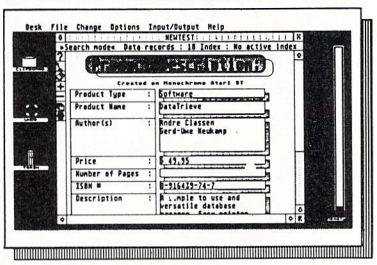


AssemPro

"The whole system is well designed and makes the rapid development of 68000 assembler programs very easy." — Jeff Lewis **Input** Dec. '86

ST AssemPro is a complete machine language development tool for the professional developer. The Assempro package makes assembly language programming easier and quicker than ever before, because it takes full advantage of the ST's GEM environment. AssemPro includes a full-function screen editor with search and replace, block operations, upper/lower case conversion, and user-definable function keys. The fast 68000 macro assembler *assembles to either disk or memory*, and features interactive error correction. AssemPro sends an assembler and/or symbol table listing to printer or disk, and features a powerful debugger with single-step, breakpoint, 68020 emulator, and much more. ST AssemPro gives the programmer online help including instruction address mode and GEM parameter information, disassembler and reassembler, and a comprehensive 175-page manual.

AB 625 Now only **£49.95!**

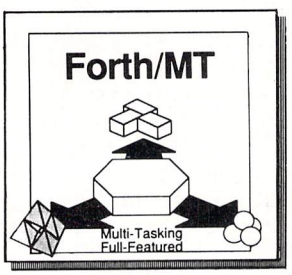


DataRetrieve (Formerly DataTrieve)

"DataRetrieve is the most versatile, and yet simple, data base available for the Atari 520ST/1040ST on the market to date." – Bruce Mittleman **Atari Journal** Nov. '86

A simple-to-use and versatile database manager, ST DataRetrieve's drop-down menus allow you to quickly define your file and enter your information through screen templates. ST DataRetrieve has fast search and sorting capabilities, a capacity of up to 64,000 records, and allows numeric values with up to 15 significant digits. This package indexes up to 20 different fields per file, and has complete, built-in reporting capabilities. Lets you access up to four files simultaneously. Supports multiple files and seven different-sized RAM disks on the 1040ST for lightning-fast operation. DataRetrieve includes seven prepared data base templates that you can customize to your own uses. Interfaces to TextPro files. Easy printer control, many help screens, and complete manual.

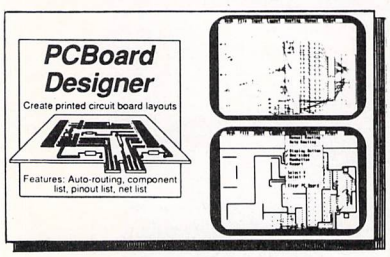
AB 505 Unbeatable value at only **£39.95!**



Forth/MT

A powerful, multi-tasking Forth package designed exclusively for the ST. Forth is not only a programming language, but an operating environment – you can program, assemble and edit. Used for more than 15 years in industrial and scientific applications, Forth dramatically reduces program development time compared to assembly language or the high-level programming languages. Since Forth is so fast, compact, flexible and efficient, it is particularly well-suited to solving real-time problems. Our ST Forth/MT is a complete, 32-bit implementation based on the Forth-83 standard. Features include a full screen editor, monitor, and macro assembler. Forth/MT has over 750 words in the Kernal, with a 1500 + disk-accessible word library. Complete TOS commands, LINEA commands, floating point and complex arithmetic available. Utility descriptions are stored on disk – you can change them to suit your needs. Machine language sections added for high speed.

AB 495 **£49.95**



PCBoard Designer

PCBoard Designer is a powerful, interactive computer-aided design tool that automates the layout of printed circuit boards. The remarkable PCBoard Designer drastically cuts the cost, long hours and tedium of producing a working circuit board. PCBoard Designer has a wide range of sophisticated features and remarkable speed found only on systems costing thousands more. Exclusive to PCBoard Designer is its automatic routing capability – all traces are automatically drawn on the screen and redrawn as you delete, modify your board design. In addition, it has options of 45° or 90° angle traces, different trace widths, routing from pin to pin, pin to BUS, BUS to BUS, as well as two-sided boards.

The rubberbanding feature lets you see the user-defined components during replacement – and you can reposition your components at any time during the design process. PCBoard Designer prints your completed layout to any Epson or Epson-compatible dot matrix printer at 2:1. The high-quality printout is camera-ready for final photo-etching PCBoard Designer also prints your component layout, and lists every component and connection. Runs on Atari 520ST or 1040ST computers with monochrome monitor. Epson FX-80 or compatible, Hewlett-Packard plotters; NEC P6/P7 printers, or Toshiba 24-pin printers required for photo-ready traces.

AB 500 Improved version now only **£195!**

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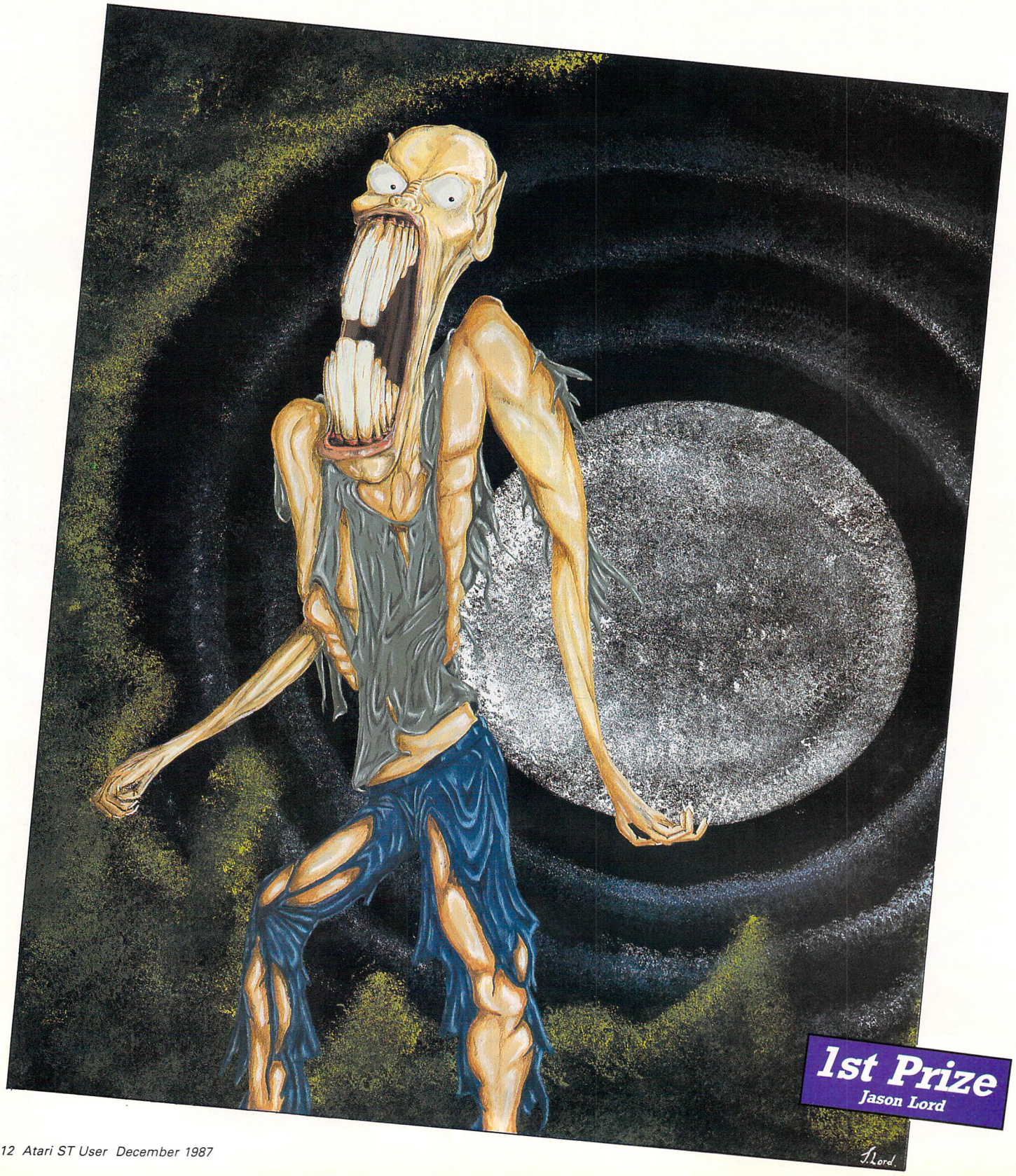
ATARI ST USER

COMPETITION STUNNERS

THE response to our Advanced OCP Art Studio competition in the September 1987 issue of *Atari ST User* was overwhelming. We received some spectacular artwork and were very impressed with the overall standard of entries.

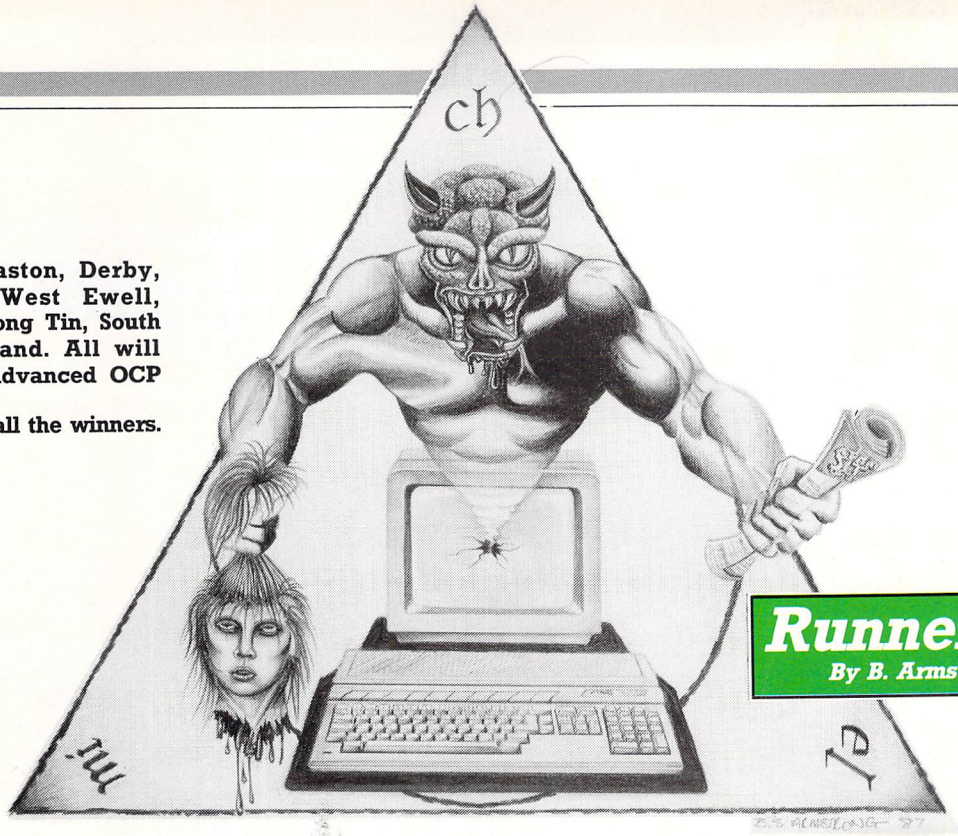
First prize of Eidersoft's Pro Draw Graphics Tablet plus Advanced OCP Art Studio goes to Jason Lord of Felixstowe, Suffolk.

The five runners-up are B. Armstrong, Chadderton, Oldham, Wilson Sharp, Hornsey, London,

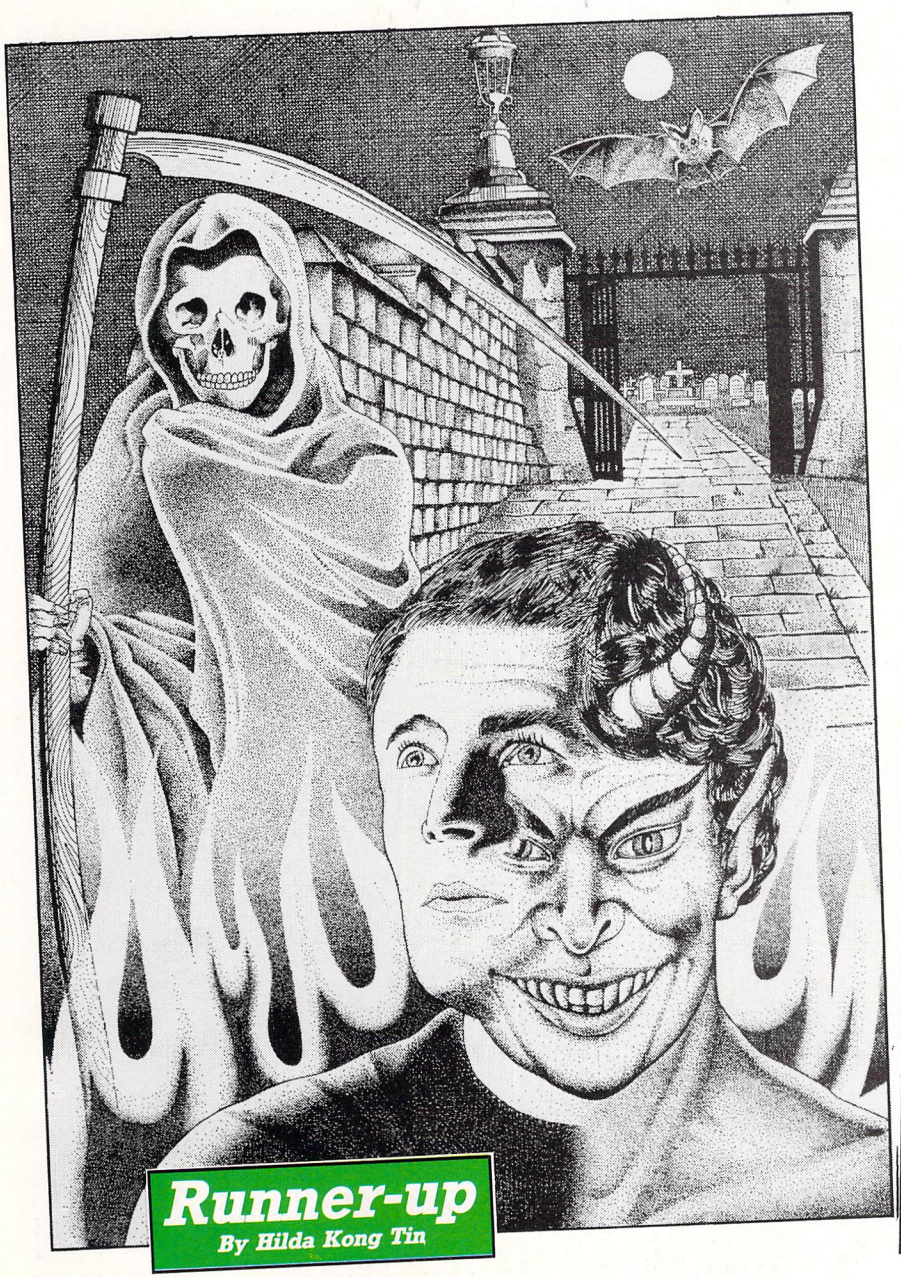


Graham Pugh, Alvaston, Derby, Herman Serrano, West Ewell, Surrey, and Hilda Kong Tin, South Dunedin, New Zealand. All will receive Rainbird's Advanced OCP Art Studio.

Congratulations to all the winners.

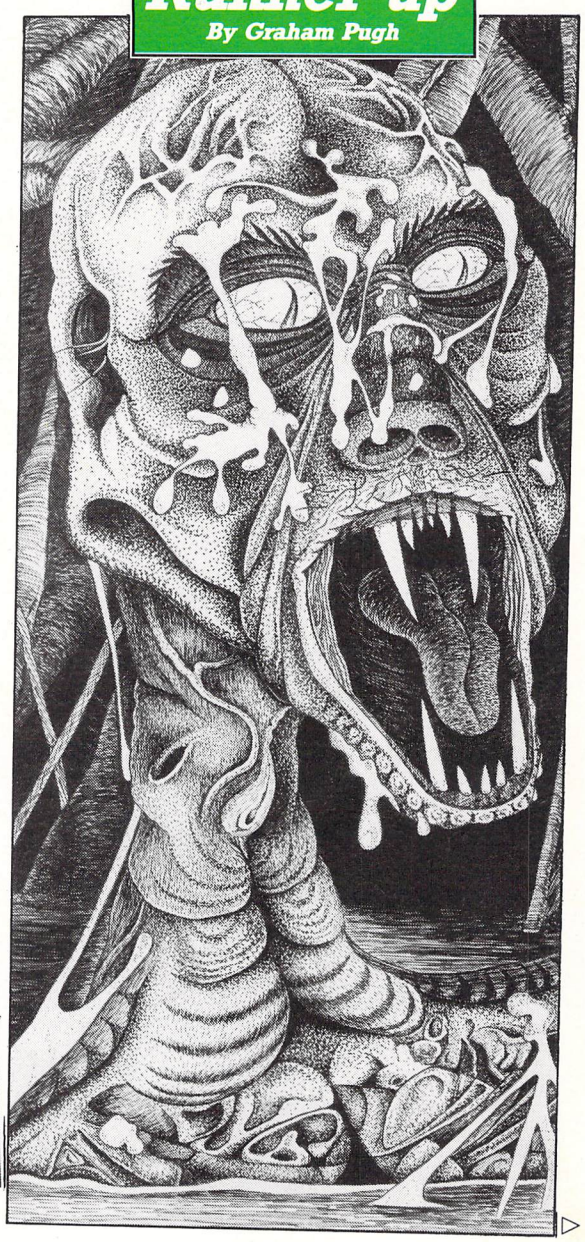


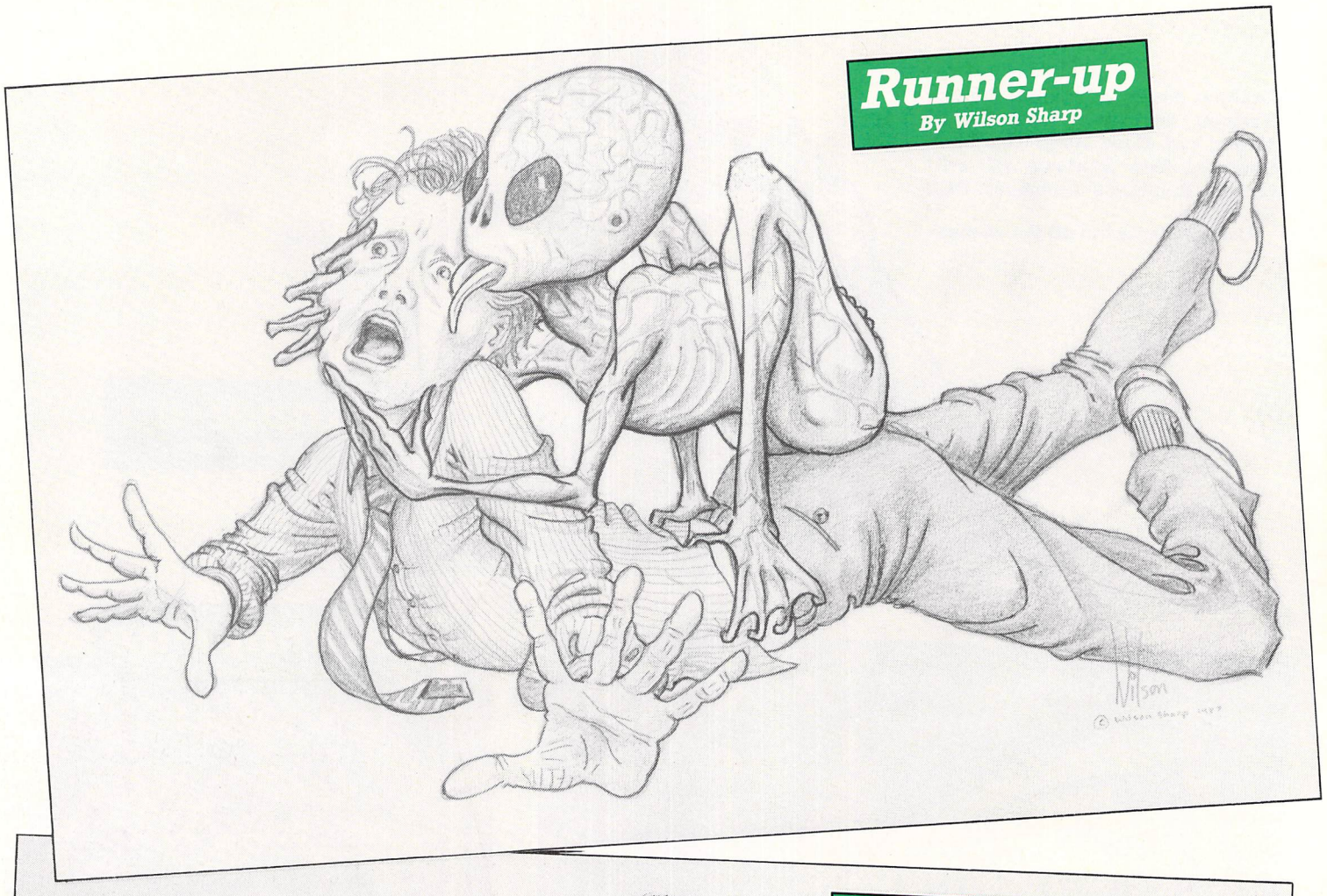
Runner-up
By B. Armstrong

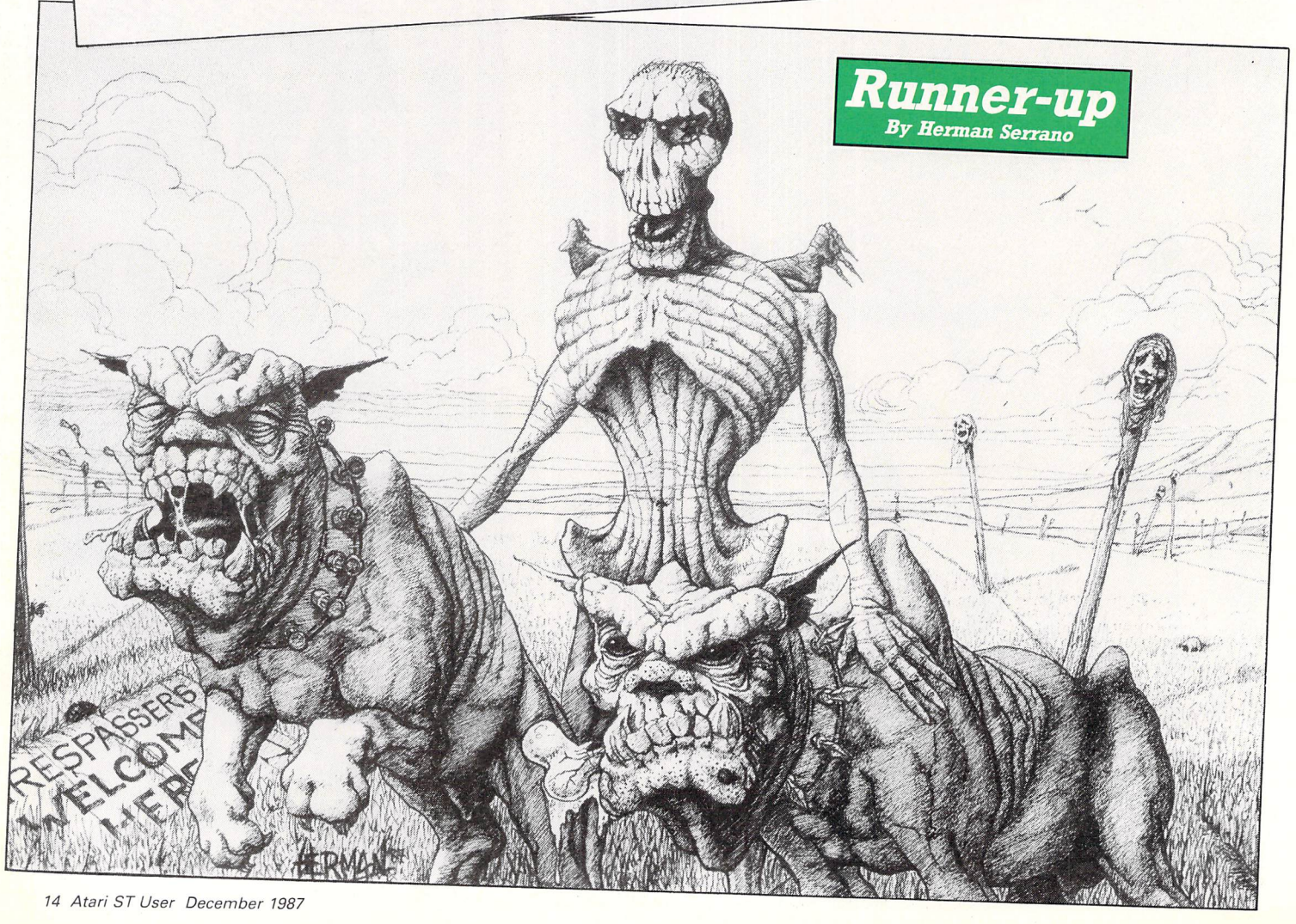


Runner-up
By Hilda Kong Tin

Runner-up
By Graham Pugh




Runner-up
By Wilson Sharp


Runner-up
By Herman Serrano

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FREE STARTER KIT - Only From Silica

When you purchase any Atari ST keyboard, you will not only receive the best value for money computer on the market, but you will also receive the following from Atari Corporation as part of the package:

** BASIC Language Disk * BASIC Manual * ST Owners Manual * TOS/GEM on ROM*

If you buy your ST from Silica Shop, you will also receive:

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In addition, we at Silica would like to see you get off to a flying start with your new computer, so we have put together a special **ST STARTER KIT** worth over £100, which we are giving away **FREE OF CHARGE** with every ST computer purchased at our normal retail prices. This kit is available **ONLY FROM SILICA** and is aimed at providing users with a valuable introduction to the world of computing. We are continually upgrading the ST Starter Kit, which contains public domain and other licensed software, as well as books, magazines and accessories all relevant to ST computing. Return the coupon below for full details.

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At Silica Shop, we have a dedicated service department of seven full time Atari trained technical staff. This team is totally dedicated to servicing Atari computer products. Their accumulated knowledge, skill and experience makes them second to none in their field. You can be sure that any work carried out by them is of the highest standard. A standard of servicing which we believe you will find **ONLY FROM SILICA**. In addition to providing full servicing facilities for Atari ST computers (both in and out of warranty), our team is also able to offer memory and modulator upgrades to ST computers.

1Mb RAM UPGRADE: Our upgrade on the standard Atari 520ST-M or 520ST-FM keyboard will increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at an additional retail price of only £86.96 (+VAT = £100).

TV MODULATOR UPGRADE: Silica can upgrade the 1040ST-F to include a TV modulator so that you can then use it with your TV set. This is an internal upgrade and does not involve any untidy external boxes. A cable to connect your ST to any domestic TV is included in the price of the upgrade which is only £49 (inc VAT). The upgrade is also available for early 520ST computers at the same price.

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We aim to keep stocks of all Atari related products and our warehouse carries a stock of over £½ million. We import many software titles direct from the USA and you will find that we have new releases in advance of many of our competitors. Unlike dealers who may only stock selected titles, we have the full range. In addition, we carry a complete line of all books which have been written about the Atari ST. A range as wide as ours is something you will find is available **ONLY FROM SILICA.**

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Rest assured that when you buy your ST from Silica Shop, you will be fully supported. Our free mailings give news of releases and developments. This will help to keep you up to date with new software releases as well as what's happening in the Atari market. And in addition, our sales staff are at the end of a telephone line to service all of your Atari requirements. If you purchase an ST from Silica and would like any technical advice, we have a full time technical support team to help you get the best from your computer. Because we have both the staff and the systems specifically dedicated to providing after sales service on Atari ST computers, we are confident that our users enjoy an exceptionally high level of support. This can be received **ONLY FROM SILICA**.

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We hope that the combination of our low prices, FREE UK delivery service, FREE Starter Kit and FREE after sales support, will be enough to make you buy your Atari equipment from Silica Shop. If however, there is something you wish to purchase, and you find one of our competitors offering it at a lower price, then please contact our sales department, providing us with our competitor's name, address and telephone number. If our competitor has the goods in stock, we will normally match the offer (on a 'same product - same price' basis) and still provide you with our normal free delivery. We realise that we are not the only company who will match a competitor's price. However, if you come to us for a price match, you will also be entitled to our after sales service, including free newsletters and technical support. This makes our price match promise rather special, something you will receive **ONLY FROM SILICA**. We don't want you to go anywhere else for your Atari products. So shop at Silica, the UK's No1 Atari Specialist.

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520ST-FM with 512K RAM & mono monitor £399 (inc VAT) **Upgrade from 512K RAM to 1024K RAM £100** (inc VAT)

ATARI 1040ST-F - NEW PRICE

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1040ST-F Keyboard Without Monitor ..... £499 (inc VAT)
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MEGA STs NOW IN STOCK

For the user who requires even more RAM than the 520 or 1040 ST's offer, the new MEGA ST computers are now available. There are two MEGA ST's, one with 2Mb of RAM and the other with a massive 4Mb. Both new computers are fully compatible with existing ST's and run currently available ST software. The MEGA ST's are styled as an expandable Central Processing Unit with open architecture and a detachable keyboard. They are supplied with GEM, a free mouse controller and all extras as with the 520 or 1040. Prices are as follows:

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Baffled by the thieves? Worry not...

THE poor old postman who staggers up to my cave each day is beginning to rue the day I materialised on his round. The amount of mail grows ever larger with each week that passes, and while it's good news for the Post Office, the weight of the daily sack is beginning to take its toll on the postman's long-suffering back.

The satisfying thing is the letters are not all cries for help from struggling or baffled adventurers. Many readers write in with maps, solutions, hints, tips, glitches and anecdotes.

In fact, assistance from readers makes up about half of all the adventure mail received. And that's one of the most gratifying rewards of presiding over these pages.

To see adventurers taking the trouble and effort to help out their fellow players brings a lump to Brillig's scraggy throat and a tear to his bloodshot eyes.

Brillig is not normally noted as being the most sensitive of souls – I dare not admit to being a softie lest my fellow wizards think my self-promoted reputation of being as hard as a fossilised wombat's big toe is nothing but a sham.

But even world-weary Brillig is forced to admit adventurers really are the nicest bunch of humans one is ever likely to fall into a pit with. (So far as humans can be nice, that is – let's not overdo the sensitivity or my colleagues will smell a rat and ban me from next month's outing of the Warlock's Nazgul-Nagging and Orc-Insulting Society).

The number of people who have written in with tips for Guild of Thieves was only outweighed by the number asking for help with that very adventure.

My thanks for their assistance go in particular to Darrel O'Neil of Choppington, A. Walraven from the Isle of Man, Craig Vaughan of Birmingham and Derek Atkins from Den Haag in Holland.

Pride of place must go to Mark Sarul of Barwell in Leicestershire (he of DEBUG fame – see the August 1987 issue of *Atari ST User*).

He has not only sent in the end game to Guild of Thieves (on a disc, too) along with a heap of hints, but in doing so has solved one problem that had been troubling me for some time – how to open the opaque case. Well done, Mark – I reckon you must be one of the first in the country to solve this adventure.

For the many adventurers, including Paul Livesy of Cold Ash and Paul Panayis of Northampton, baffled by some of the problems in Guild of Thieves, my hints and tips section should prove profitable reading.

Also bidding for Brillig's Hall of Fame has to be Phil Latham of Macclesfield. Phil has sent in a total (and I mean total) solution to The Pawn.

No less than 18 closely printed pages giving every single input and every program response in order – you can't get more thorough than that. I take my pointed hat off to you, Phil.

HINTS AND TIPS

GUILD OF THIEVES

Opaque case refuses to open?

Roll the coloured dice one at a time until each one shows a five. Then insert each into its respective coloured slot on the case.

Gem still stuck in the wax?

Get the mirror from the main bedroom. Use it to point the beam of light at the gem.

Stung with anger at your failure to get the honey?

Forget it – you don't need it so far as I can tell.

Struggling to cross the coloured squares?

WOBNIAR is rainbow backwards. I was always taught to remember the colours of the rainbow by taking the initial letters of the phrase "Richard of York goes back in vain" (red, orange, yellow, green, blue, indigo, violet). Cross the squares by following the colours of the rainbow backwards. On return, do the opposite.

Hot coal room burning you up?

Rub your feet with the succulents. You'll need to overcome the spider first but a few flies and a jam jar should help.

Coconut proving unattainable?

Shake the tree.

Wondering what to do in the toilet?

Nothing that's of any use in the game. But try hanging about for a bit – you may be rewarded by a sight of the Master Thief.

Can't open the gallery safe?

I shouldn't bother trying. I don't think it can be opened – unless someone out there knows better.

SPACE QUEST

Compartment near the spacesuit a puzzle?

Type LOOK AROUND. Look in the closet and get the gadget – it is a translator.

Congratulations are due to Marcel Langezaal of KC Leiddn in The Netherlands for his solution to Space Quest, to Allen and Mark Errington for their splendid maps of Space Quest, Black Cauldron, Golden Path and King's Quest II, and to Suzanne Reynolds for her tips on Lurking Horror.

Denise McKnight of Apple User fame has some advice for Mr Martin. She thinks his troubles are probably the result of playing a rather undesirable character.

If you try to buy food, drink and so on without having enough money, or try to haggle too low with the shopkeepers, they will get annoyed. Word spreads fast about non-payers. Denise suggests if all else fails, you should start again and this time behave yourself!

My gratitude is also extended to Anthony Kay from Shipley for his solution to Mindshadow, to Dave Morris of Wilmslow (and Roger and his workmates at the local electronics company) and to Alan from Southampton for their tips on Space Quest, to Noel Arrowsmith of County Durham for Kings Quest II, to David Ward of Gosport for Kings Quest III and to Paul Thacker from Walsall for his useful map and tips for Borrowed Time.

In return, Alan would like to know how get past the laser gate and what to do in the Orats cave in Space Quest.

Noel wishes for some assistance with KQ2 – he's in the castle and can't find a light to go down the dark stairs, can't open the dresser and doesn't know where to find the key to the chest.

David too, would like some advice. In KQ3, where do you get the money to buy a drink and how do you use the magic lamp? Does anyone know?

Simeon Berwick of Ipswich doesn't know what numbers to enter on the keypad to launch the space truck in Stationfall. For Simeon and any others stuck at such an early stage of this superb adventure, have the game's documentation to hand and read the tip below.

Finally, I come to some of our reader's tales of the unexpected. Anthony Kay says you can complete Mindshadow while still on the beach at the beginning of the game. Just type in REMEMBER TYCOON, REMEMBER BOB MASTERS, REMEMBER ARC-MAN, REMEMBER JARED and REMEMBER WILLIAM and you'll get the boring end of game message.

From Gareth Dew of Bridgwater comes interesting news of an Infocom public domain demonstration. It contains playable excerpts from Zork I, Infidel and Planetfall, an excerpt and exposition on Witness, an adventure tutor and some advertising material. It can be downloaded directly using a modem (Gareth found it on STAR 01 586 6882, 8N1) and takes up about 150k of disc space.

And last, (I always save the best for last) comes William Downie, aged 13, from Kemnay in Inverurie. This young adventurer sent in a beautifully typed letter complete with a map of Wishbringer.

On the map is an excellent picture of Chaos the cat drawn by William's eight year old sister using Tootles, their pet cat, as a model. Good gracious – an eight year old girl and a family cat both involved in adventuring – can this be a record?

William has found a number of glitches in adventures, including these two: In the marvellous Wishbringer, if you buy the ticket from Miss Voss with the coin and when she goes off to the phone, type TAKE COIN, she will return it to you and you can continue to buy as many tickets as you like.

In Zork II, when the dragon is killed by the melting ice wall, if you get killed yourself and then return to the dragon's lair, you'll find the dragon alive and kicking again.

But, even stranger, if you visit the place where he was killed, his carcase is still there. Must have a twin brother, I expect.

Until next month, keep on adventuring.

Can't pass through the underground cave?

Get the rock from outside the lift, walk across the top of the grate on the floor then put the rock on the geyser.

Can't find a useful piece of glass?

Examine the back of the crashed pod.

KING'S QUEST II

Sugar lump useless?

Eat it and you'll be able to walk through the path of poisoned thorns and brambles without harm.

Viper obstructing progress?

Put the bridle on it – it will transform into a flying horse and give you a lump of sugar.

STATIONFALL

Can't launch the space truck?

Insert the activation form then look at your chronometer. Check the time given against the list of time ranges given in the package's documentation. Against each range is a three digit number – this is the number you must type on the keypad to launch.

KING'S QUEST III

Can't read a spell?

Open the Book of Sorcery and follow the instructions given.

Spider's web in the cave off-putting?

Turn yourself into an eagle.

No talk in the tavern?

Type TALK TO CAPTAIN and you may get a passage on his ship.

BUREAUCRACY

Delayed the plane but still stuck at the airport?

Climb up the pillar and pull out the red and black wires from the speaker up the pillar. Before you climb down again, connect the red wire to the black.

HITCH HIKER'S GUIDE TO THE GALAXY

Don't know what to do with the four pieces of fluff?

Read the Guide. Put the fluff in the flowerpot and take it somewhere warm and humid.

Screening door won't open?

You need to show your intelligence by holding tea and no tea at the same time!

Bug-Blatter Beast of Traal being beastly?

Confuse it by carving your name on the sandstone memorial. Then cover your head with the towel and tell him your name when he asks.

Guards on Damogran a problem?

Wait for Trillian then tell the guards to drop their photon rifles. Next step is to dispose of the pile of rifles.

Gnome on the range

Program: Gnome Ranger
Price: £14.95
Supplier: Level 9, 5 Mendip Road, Crown Wood, Bracknell, Berks RG12 3XG.
Tel: 0334 487597

NICE to see Level 9 back on top form with Gnome Ranger, the comany's latest text and graphics adventure. It marks a welcome return to a strong storyline and absorbing prose after the somewhat sprawling, overcrowded and curiously unsatisfying Knight Orc (published by Rainbird).

Gnome Ranger uses Level 9's new Kaos system, and very powerful it is too. Comparison with earlier adventures shows just how far they have come towards producing the most sophisticated of adventure systems. The command handling in particular is a joy to use.

The plot revolves around a bossy but well-meaning young gnome (gnomess?) called Ingrid Bottomlow (gnome joke number one) who leaves her dull farming community to learn more about the modern world by studying Gnome Economics (gag two) at college.

On her return, she is afire with missionary zeal and raring to put her newfangled notions into operation, much to the trepidation of her family and neighbours.

However, her every attempt at improvement ultimately ends in catastrophe for the recipient of her enthusiastic attention.

Ingrid, though, is unperturbed by the havoc she creates (her thick-skin probably helps) and presses on in saintly fashion with her bright if disastrous ideas.

Her family is not amused, and following a secret meeting, decide to reward Ingrid with a small token of their feelings – a magic scroll. When she reads it, she is instantly transported far away. Oh dear, the scroll must have been faulty, tut, tut, what a shame, never mind, eh?

All this preamble to the game is documented in a 48-page gnome-sized diary acompanying the pack. The adventure starts with Ingrid out in the wilderness, undaunted and determined to set off for home again, putting the world to rights on the way.

Unusually for Level 9, the game is all written in the past tense and given the style and humourous content, it works out very well. The adventure is in three parts but each one has to be completed before you can start the next. Each of the parts is related to animal, vegetable and mineral themes.

Gnome Ranger is a light hearted romp, and as I've indicated above, peppered with gnome jokes. For instance, the letter N is frequently preceded by the letter G so you get references such as "What shall I do gnow?" and "gnecklace". Even the northerly directions are shown as "gnorth, gnorth-east and gnorth-west".

Surprisingly, the program understands exactly what you mean if, say, you type GNW as a direction for north-west.

The text is fulsome, literate and often springs many a delightful surprise. Knocking at a door elicited the response "Ingrid reached for the knocker, but found – gnot surprisingly – that it was too high. She shrugged and knocked loudly on the door with her knuckles".

The attention to descriptive detail is equally praiseworthy. In an emporium run by a centaur, she finds "an impressive piece of armour, a capacious backpack, a charming gnecklace, a curious brass lamp, a magisterial black rod, a suspicious-looking bunch of keys, a cheese sandwich, a pointed shovel and a map".

Many other adventures would not have bothered with the adjectives in a list such as that, but Level 9 do not believe in skimping. The result is a much richer product.

There are plenty of examples of witty word-play and alliteration is used to splendid comic effect. Neat touches of punctured hyperbole also keep the atmosphere light-hearted, "It was a full rainbow of brilliant hue, an ethereal arc of vivid sparkling colour, a heavenly vault of pellucid polychromatic splendour, and quite pretty too".

The puzzles range in difficulty from the fairly easy to the mind-damaging. Some solutions require the involvement of more than one character. There are many other characters besides Ingrid and most can be recruited and given complex commands to carry out while you let Ingrid get on with something else.

Thank goodness there does not seem to be the quantity there was in Knight Orc – Gnome Ranger is far better controlled.

The digitised graphics are the best I've seen from Level 9 and the game contains such excellent features as ram save and restore, Undo your last move and high-level commands such as run to a place, follow someone, find something, and wait for someone). It even has an auto-play feature so the game can demonstrate itself.

Although Gnome Ranger has a different flavour to their previous adventures, I am convinced it is Level 9's best ever. It is funny, well-plotted, teasing, very friendly, but powerful, literate and big (look at the price, too).

Gno, there's gnot a shadow of doubt in my mind – this is an adventure you simply must gnot miss. Go out and buy Gnome Ranger – and pronto! □

Brillig

Presentation	***9***
Atmosphere	***9***
Puzzlement	***9***
Value for money	***10***
Overall	***9***

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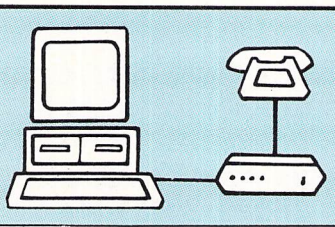

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C	*Miracle: Miracle WS4000 V21, V23 modem + FaSTcomm software (£244.90)*
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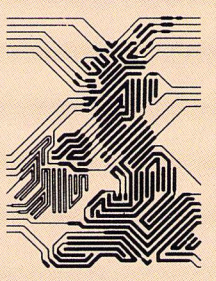

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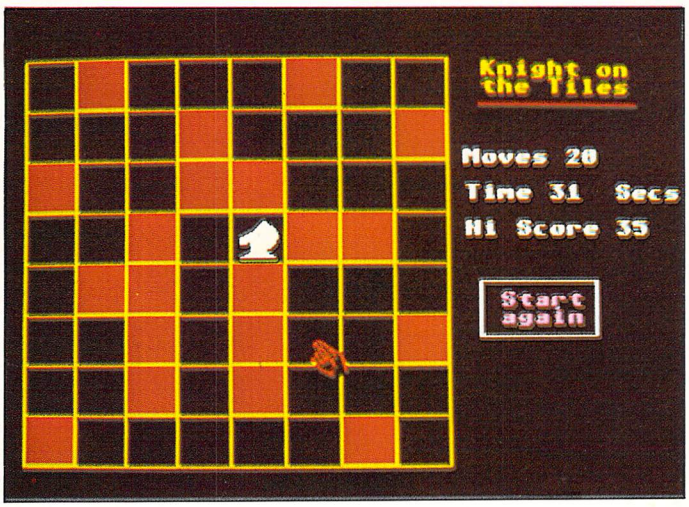
ST12

A knight on the tiles



Ken Hughes presents a puzzling game of logic and strategy

NOW we can reveal what chess Grand Masters do on their days off to stimulate the old grey matter and develop their powers of logic – play Knight of the Tiles, the board game equivalent of the card player's Patience.

The rules are easy to understand, though the game is less easy to play. The object is to move your chess piece – a knight – around the board visiting each square just once. As in chess, the knight can move only in an L-shaped sequence, as shown in Figure I.

If you move up or down one square you must move two squares left or right. Similarly, if you move up or down two squares you have to move one square left or right.

When the game starts your Knight is in the bottom left-hand corner of the chessboard. Using your mouse, point to the square you want to move on to and press either mouse button. The move will not take place until the button is released so you have the chance to change your mind. An illegal move will be ignored and an impatient beep is sounded.

If you find yourself in a position where you can't make a legal move, or you realise you're not going to complete the puzzle, you can start again by pointing anywhere outside of the tiled area and clicking the mouse button.

A demonstration mode is included which shows one possible route to complete the puzzle. However, unless you have a photographic memory and can recall 60-odd chess moves and their correct sequence, it won't help much. In fact, it makes the game all the more frustrating. There are also many other solutions – they just need finding.

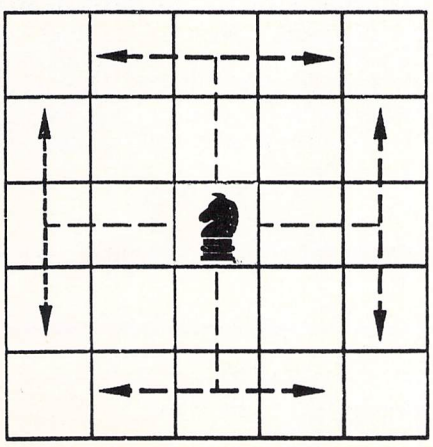


Figure I: The knight's legal moves

There is a high-score facility which records the highest number of moves accomplished. This is stored on disc in the file SCORE.DAT. When you play the game, ensure you have a disc in the default drive and the write protect window is closed.

The game is written in GFA Basic and runs in low-resolution colour. When you have typed in and saved the program, press Shift+F10 to run it. Select the game or demonstration option by clicking on the appropriate button in the dialog box. You can, if you wish, compile the program so it runs directly from Desktop.

If you have made an error when typing in the listing and the program stops, you will be faced with a blank screen. Press the Escape key and when you see the prompt OK>, type in:

```
SETCOLOR 0,7,7,7
```

and press Return. The black background will change to white and if you now press Escape again, followed by Return you will be able to read the listing. The cursor will be positioned where the program stopped and this will give you a pointer as to where the error is.

The program itself is fairly straightforward but there are one or two items which need a little explanation. When the program is run it first checks to see if the value returned by Xbios(4) is 0. If it isn't it means you've forgotten to set the screen mode to low resolution and the program terminates.

The next step is to ask the player which option is required – demonstration or actual game. This is done by means of a dialog box, but if you want to use the techniques outlined by Bruce Smith in last month's issue of *Atari ST User*, you could drive the program via a menu bar and pull-down windows.

The routine used to read the high score from disc needs a little explanation. You may think I've used a sledgehammer to crack an egg – but there is a logical reason to explain the way I've done it.

I've opened the file in random access mode even though there is only ever going to be one record stored in it. This is because the first time you run the program the file SCORE.DAT won't exist. By using:

```
OPEN "R",#1,"score.dat"
```

if the file is not on the disc it will be created – if it is there, it will be opened and the contents read into ram.

Had we tried to open a non-existent file with:

```
OPEN "I",#1,"score.dat"
```

an error would have resulted. True we could have trapped the error, deflected the program to a sub-routine to create the file and then continue – but it's a lot of extra programming to achieve the same result.

In a similar vein, you may be wondering why I've used a WHILE...WEND loop to read in just one data record. The answer is related to that given above.

If the file has just been created it won't contain any data other than the end-of-file marker. Trying to read this into *score$* and convert it to a numeric integer variable (*score%*) would also result in an error.

By using the WHILE statement, the end-of-file marker is identified, no further action takes place and the error is not generated. While on the subject of the high score, it's reset to 0 if you manage to complete the puzzle.

Now you can have a Knight on the Tiles and paint the town – or at least the tiles – red. □

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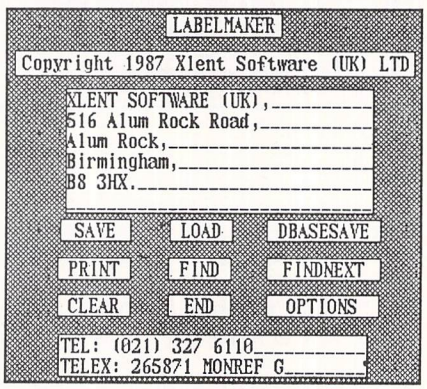

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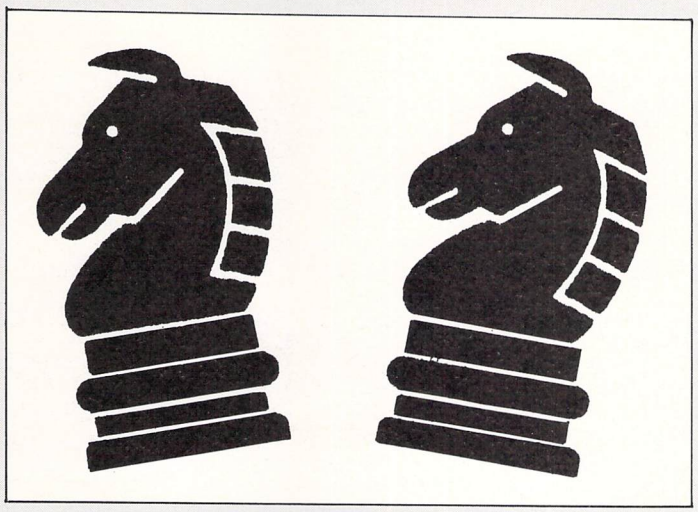

```
   10 REM ************************
   20 REM * Knight on the Tiles *
   30 REM *    by Ken Hughes    *
   40 REM *  (c) Atari ST User  *
   50 REM ************************
   60 REM
   70 REM Written in GFA Basic
   80 REM Do NOT enter line numbers
   90 REM
  100 IF XBIOS(4)<>0 THEN
  110 ALERT 3," | Please set mode | to
 Low Resolution",1,"Desktop",b%
  120 END
  130 ENDIF
  140 ALERT 2,"| Please select the | r
equired option:-",1,"Game|Demo|End",b%
  150 IF b%=2 THEN
  160 GOSUB demo
  170 ENDIF
  180 IF b%=3 THEN
  190 SETCOLOR 0,7,7,7
  200 SETCOLOR 15,0,0,0
  210 END
  220 ENDIF
  230 OPEN "R",#1,"score.dat"
  240 WHILE NOT EOF(#1)
  250 INPUT #1,score$
  260 score%=VAL(score$)
  270 WEND
  280 CLOSE #1
  290 GOSUB init
  300 GOSUB draw_tiles
  310 GOSUB draw_knight(15,165)
  320 t%=TIMER
  330 GOSUB game
  340 END
  350 PROCEDURE init
  360 OPENW 0
  370 CLS
  380 DIM framex%(8),framey%(8),frame%
(9,9)
  390 x2=1
  400 y2=8
  410 tempx%=15
  420 tempy%=165
  430 flag%=0
  440 move%=-1
  450 SETCOLOR 0,0,0,0
  460 SETCOLOR 1,7,7,0
  470 SETCOLOR 2,7,7,7
  480 SETCOLOR 3,5,0,5
  490 SETCOLOR 15,7,2,1
  500 DEFMOUSE 3
  510 FOR n%=1 TO 8
  520 READ framex%(n%)
  530 READ framey%(n%)
  540 NEXT n%
  550 DATA 15,4,40,27,65,50,90,73
  560 DATA 115,96,140,119,165,142
  570 DATA 190,165
  580 FOR n%=1 TO 8
  590 FOR m%=1 TO 8
  600 frame%(n%,m%)=1
  610 NEXT m%
  620 NEXT n%
  630 RETURN
  640 PROCEDURE draw_tiles
  650 COLOR 2
  660 FOR n%=0 TO 175 STEP 25
  670 FOR m%=0 TO 161 STEP 23
  680 BOX n%,m%,n%+25,m%+23
  690 NEXT m%
  700 NEXT n%
  710 DEFTEXT 2
  720 PRINT AT(28,1);"Knight on"
  730 PRINT AT(28,2);"the Tiles"
  740 COLOR 1
  750 LINE 215,20,290,20
  760 DEFTEXT 3
  770 PRINT AT(27,6);"Moves ";
  780 PRINT AT(27,8);"Time ";
  790 COLOR 3
  800 PRINT AT(27,10);"Hi Score ";scor
e%
  810 DRAW 215,100 TO 270,100 TO 270,1
25 TO 215,125 TO 215,100
```

This is one of hundreds of programs now available FREE for downloading on MicroLink

```
  820 DEFTEXT 15
  830 PRINT AT(29,14);"Start";
  840 PRINT AT(29,15);"again";
  850 DEFTEXT 3
  860 RETURN
  870 PROCEDURE draw_knight(x%,y%)
  880 IF flag%=0 THEN
  890 x2%=1
  900 y2%=8
  910 frame%(x2%,y2%)=0
  920 ENDIF
  930 IF frame%(x2%,y2%)<>1 AND flag%<
>0 THEN
  940 PRINT CHR$(7);
  950 x2%=temp1%
  960 y2%=temp2%
  970 GOTO bypass
  980 ENDIF
  990 frame%(x2%,y2%)=0
 1000 DEFFILL 0,2,8
 1010 FILL tempx%,tempy%
 1020 IF flag%=1 THEN
 1030 DEFFILL 1,2,4
 1040 FILL tempx%,tempy%
 1050 ENDIF
 1060 flag%=1
 1070 COLOR 3
 1080 DEFFILL 3,2,8
 1090 DRAW x%,y% TO x%-5,y%+5 TO x%-10
,y%+7 TO x%-10,y%+10 TO x%-5,y%+9 TO x
%-5,y%+14 TO x%-10,y%+16 TO x%+5,y%+16
 TO x%,y%+14
 1100 DRAW x%,y%+14 TO x%+5,y%+10 TO x
%+6,y%+7 TO x%+5,y%+4 TO x%,y%
 1110 FILL x%-2,y%+4
 1120 COLOR 0
 1130 PLOT x%-2,y%+6
 1140 tempx%=x%-10
 1150 tempy%=y%+10
 1160 move%=move%+1
 1170 bypass:
 1180 RETURN
 1190 PROCEDURE game
 1200 SHOWM
 1210 DO
 1220 time%=(TIMER-t%)/200
 1230 SHOWM
 1240 GOSUB read_mouse
 1250 GOSUB check_move
 1260 IF wrongflag%=0 THEN
 1270 GOSUB draw_knight(x1%,y1%)
 1280 GOSUB print_score
 1290 wrongflag%=0
 1300 ENDIF
 1310 IF move%=63 THEN
 1320 GOSUB end_game
 1330 ENDIF
 1340 LOOP
 1350 RETURN
 1360 PROCEDURE print_score
 1370 PRINT AT(33,6);move%
 1380 PRINT AT(32,8);time%
 1390 PRINT AT(36,8);"Secs"
 1400 RETURN
 1410 PROCEDURE read_mouse
 1420 k%=0
 1430 WHILE k%=0
 1440 MOUSE x%,y%,k%
 1450 WEND
 1460 WHILE k%<>0
 1470 MOUSE x%,y%,k%
 1480 WEND
 1490 IF x%>199 OR y%>184 THEN
 1500 GOSUB hi_score
 1510 RUN
 1520 ENDIF
 1530 temp1%=x2%
 1540 temp2%=y2%
 1550 x2%=INT(x%/25)+1
 1560 y2%=INT(y%/23)+1
 1570 x1%=framex%(x2%)
 1580 y1%=framey%(y2%)
 1590 RETURN
 1600 PROCEDURE check_move
 1610 wrongflag%=0
```

```
 1620 IF (ABS(x2%-temp1%)=2 AND ABS(y2
%-temp2%)=1) OR (ABS(x2%-temp1%)=1 AND
 ABS(y2%-temp2%)=2) THEN
 1630 GOTO leave_chk
 1640 ELSE
 1650 PRINT CHR$(7);
 1660 x2%=temp1%
 1670 y2%=temp2%
 1680 wrongflag%=1
 1690 ENDIF
 1700 leave_chk:
 1710 RETURN
 1720 PROCEDURE wrong_move
 1730 PRINT CHR$(7);
 1740 RETURN
 1750 PROCEDURE end_game
 1760 PRINT AT(27,17);"Well done!"
 1770 PRINT AT(27,18);"You have got"
 1780 PRINT AT(27,19);"to the end."
 1790 PRINT AT(27,20);"The Hi Score"
 1800 PRINT AT(27,21);"will be reset"
 1810 move%=0
 1820 GOSUB hi_score
 1830 OPEN "R",#1,"score.dat"
 1840 PRINT #1,STR$(move%)
 1850 CLOSE #1
 1860 PAUSE 500
 1870 RUN
 1880 RETURN
 1890 PROCEDURE hi_score
 1900 IF move%>score% THEN
 1910 score%=move%
 1920 score$=STR$(score%)
 1930 OPEN "R",#1,"score.dat"
 1940 PRINT #1,score$
 1950 CLOSE #1
 1960 ENDIF
 1970 RETURN
 1980 PROCEDURE demo
 1990 HIDEM
 2000 GOSUB init
 2010 GOSUB draw_tiles
 2020 DEFTEXT 15
 2030 PRINT AT(29,14);"DEMO "
 2040 PRINT AT(29,15);"MODE "
 2050 DEFTEXT 3
 2060 GOSUB draw_knight(15,165)
 2070 RESTORE demo_data
 2080 REPEAT
 2090 PAUSE 100
 2100 time%=0
 2110 READ x%,y%
 2120 x2%=INT(x%/25)+1
 2130 y2%=INT(y%/23)+1
 2140 GOSUB draw_knight(x%,y%)
 2150 GOSUB print_score
 2160 UNTIL x%=40 AND y%=119
 2170 PAUSE 250
 2180 GOSUB end_demo
 2190 RETURN
 2200 demo_data:
 2210 DATA 65,142,15,119,40,165,90,142
,65,96,115,119
 2220 DATA 140,165,190,142,165,96,140,
50,190,73,165,27
 2230 DATA 115,4,65,27,15,4,40,50,90,7
3,140,96,115,142
 2240 DATA 165,165,190,119,165,73,190,
27,140,4,115,50
 2250 DATA 90,4,40,27,15,73,65,50,115,
73,165,50,190,4
 2260 DATA 140,27,190,50,165,4,115,27,
140,73,90,50
 2270 DATA 65,4,15,27,40,73,65,119,15,
96,40,142,90,165
 2280 DATA 140,142,190,165,165,119,115
,96,65,73,90,27
 2290 DATA 40,4,15,50,40,96,15,142,65,
165,90,119,115,165
 2300 DATA 165,142,190,96,140,119,90,9
6,40,119
 2310 PROCEDURE end_demo
 2320 ALERT 3,"End of demo",1," Run |
End ",b%
 2330 IF b%=1 THEN
 2340 RUN
 2350 ENDIF
 2360 SETCOLOR 0,7,7,7
 2370 END
 2380 RETURN
```


The truth about TELEX

How much does it cost to go on Telex?

You could go the conventional way and buy a dedicated Telex machine. The cheapest will cost you £1,604 (the Whisper), the dearest £2,892 (the Cheetah). You will also need a separate telephone line, costing £101 to install, plus £404 a year rental. That's a total outlay over the first year of a minimum of £2,109. (All prices include VAT.)

Or you could do what more and more Atari ST users are doing – use your computer to double as a Telex machine. And just use your ordinary telephone!

How do I turn my Atari ST into a Telex machine?

All you need is a modem and appropriate communications software (see the advertisements in this issue), a telephone, and a subscription to *MicroLink*.

Telex is just one of a growing number of services available to Atari ST users on *MicroLink*. With MicroLink you can also read the news as it happens, go teleshopping, create your own closed user group, send telemessages and electronic mail right round the world, download free programs directly into your micro . . . and much more.

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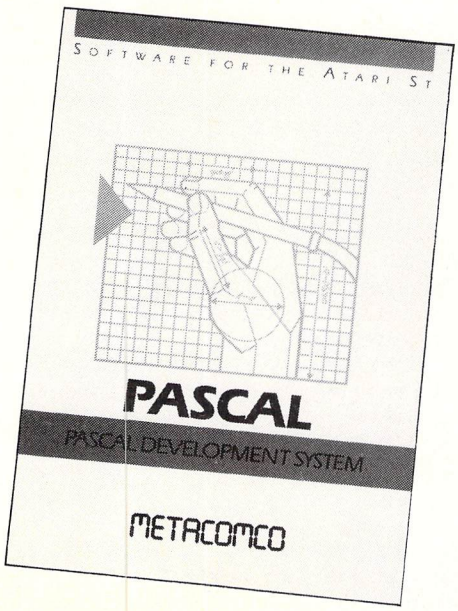
But there's a big bonus you get when you use *MicroLink* for Telex that the conventional way doesn't offer.

With *MicroLink* you don't HAVE to be in your office to send or receive Telex messages. You can just as easily use your computer at home (or even a portable). So now you can check whether there are any Telex messages waiting for you – anywhere, anytime. How's that for your business efficiency?

How to join: See Page 20

Impressive upgrade

Roland Waddilove tests out a new implementation of Pascal



PASCAL 2 is the latest version of Metacomco's Pascal. They have incorporated a number of new features and much improved both the implementation of the language and its ease of use.

Newcomers will have to pay the full £89.95, but if you have the original version of Pascal Metacomco will upgrade it, providing three new discs and manual for a very reasonable £34.50.

Many of the features of the programming environment are common to Metacomco's Lattice C version 3.04 which was reviewed in the August 1987 issue of *Atari ST User*. For instance, Debug+, Menu+, the text editor and resource construction set are the same.

Menu+ is a shell designed to make the development cycle – edit-compile-link-run – much easier and quicker. The whole process is Gem based and menu driven. All file, compile, link and run commands can be executed by selecting the appropriate items from drop down menus with the mouse.

After telling Menu+ the name of your file it will use it when invoking a series of default options when calling up the editor, compiler or linker. You can also run the compiled application from within Menu+ and return to it afterwards.

The text editor is fully Gem-based and is a big improvement over the original version. Many commands are the same as the original, but are now available from pull down menus or pop-up dialogue boxes.

It is fairly intuitive and you can get by with just a cursory glance at the manual as long as you don't want to do anything complex. One or two functions are still a little awkward and there is room for improvement.

For instance, to split a line or join two short ones you have to enter an extended mode command in a dialogue box – Escape+S and Escape+J. It would be much simpler if you could use the Backspace or Delete keys as with 1st Word.

The resource editor is Kuma's excellent K-Resource. This enables you to create and edit resource files used by Gem to create menus, icons and dialogue boxes. Debug+ is a powerful utility for debugging Pascal programs.

If after compiling a program it doesn't behave as expected, you can compile it again with the debug option set, then load the file into Debug+.

Having done this, Debug+ acts rather like a Pascal version of a machine code monitor. You can display the source code, single step through the program, set breakpoints, execute the program up to a breakpoint, examine variables, and so on.

In addition to this, Debug+ will also disassemble the program into 68000 mnemonics so you can see what's going on at machine level. Macros can be defined to simplify command entry.

The program being debugged has it's own display screen and this is completely separate from Debug+'s screen. Control+F flips between the two.

Unfortunately Debug+ isn't Gem-based and is a bit unfriendly. It takes a while to get to know all the commands ▷

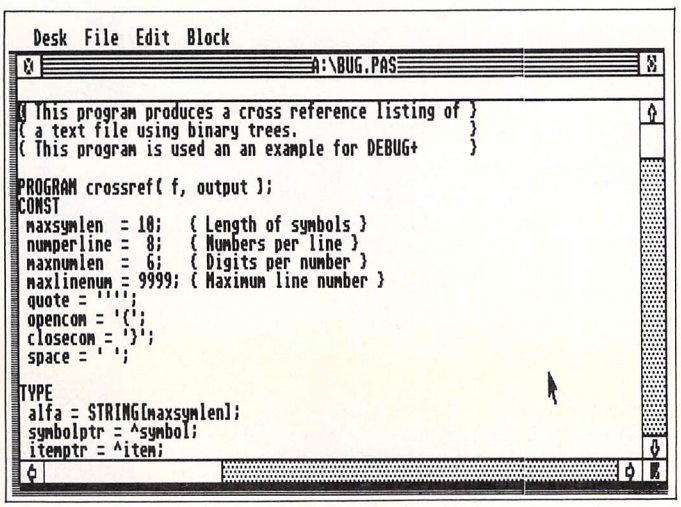


Figure I: The editor

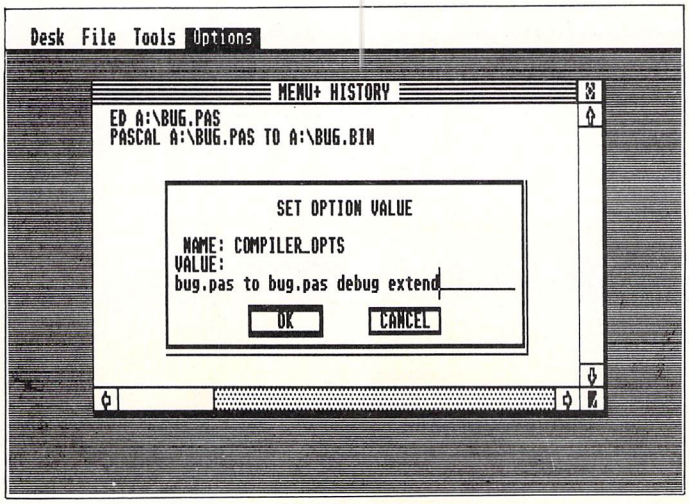


Figure II: Compiling from within Menu+

◁ and you'll need the manual to hand the first few times you use it.

Metacomco have added quite a few extensions to Pascal to make it more flexible and easier to use. These include dynamic length strings, random access files and file handling, double precision maths, bitwise mathematical operators, conditional compilation, include files, STEP in FOR loops, underscores in names, optional case sensitivity and much more.

Gem's VDI and AES routines can be accessed through a series of standard routines in include files. Everything that can be carried out in C is also available from Pascal – there is very little difference in the code.

The manual – more than 700 pages – is excellent. There are sections for both beginner and the more advanced programmer. There is a good description of all keywords and each is illustrated with a short program.

The AES and VDI routines are well documented and some longer examples at the back of the manual show how these may be used.

My only criticism of the manual is that it is so thick it won't lie flat – I found it quite frustrating trying to hold it open with my elbow while typing away at the keyboard.

```
Breakpoint Hit
File BUG.PAS Routine crossref
0063: BEGIN
0064:   root := NIL; line := 0; kl := maxsymlen;
0065:   PAGE; RESET( f );
0066:
0067:   WHILE NOT EOF( f ) DO
0068:   BEGIN
0069:     IF line = maxlinenum THEN line := 0;
006A:     line := line + 1;
)
```

Figure III: Debugging a program

Unfortunately, Metacomco's Pascal 2 is awkward to use with a 520ST with single drive. It is possible to use it with this system, but I wouldn't recommend it and I would advise getting a second drive.

A 1040ST is a much better proposition, as it is possible to set up a good-sized ram disc as a second or third drive. Also you'll need either a monochrome or medium resolution colour monitor. A TV is not really suitable.

Overall, this is a good implementation of the language and will suite beginners and more advanced programmers alike. □

Product: Pascal 2
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ISO/BSI Pascal Level 0 compiler. No size restrictions are placed on code or data sizes. Extensions to the standard include dynamic-length string type; systems programming facilities; enhanced I/O facilities; enhanced loop control; exception processing; execution profiling for optimisation purposes. Supplied with a copy of the ALPS package.

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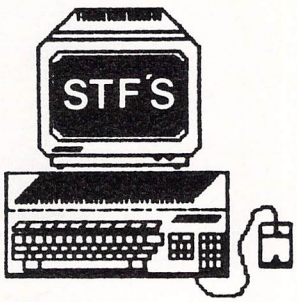

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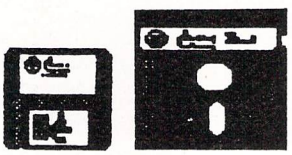

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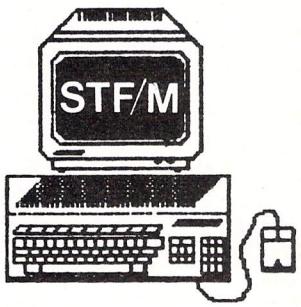

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GALLERY

THIS month's Gallery exhibition comes to you from Rita Plukss in Victoria, Australia and was created using Degas. The pictures are based on pure art rather than computer generated graphics – and very impressive they are too.

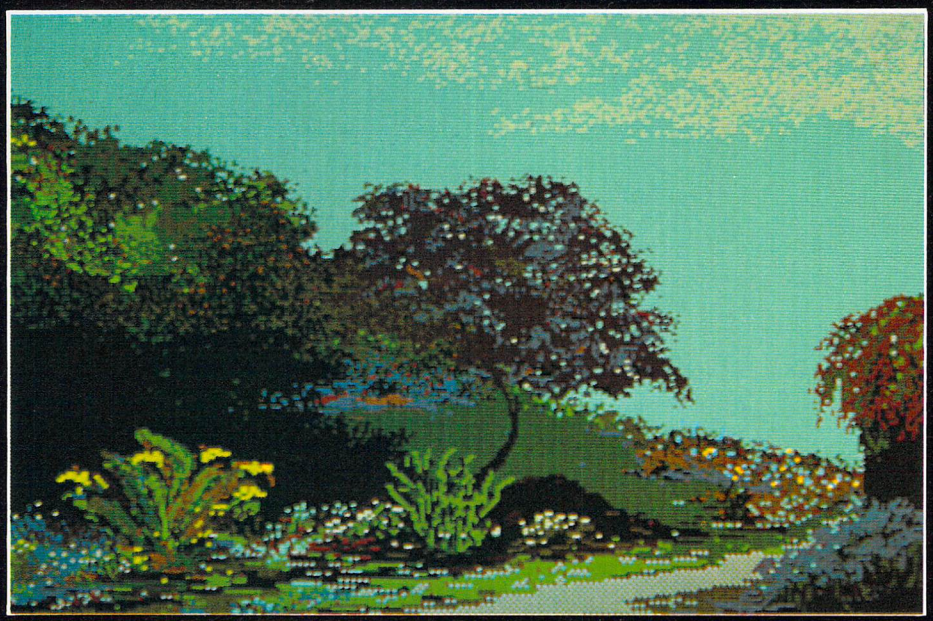
We hope to feature more of Rita's work in the New Year, but meanwhile, if you have created a work of art and would like it to be shown on our world wide stage, send it to Gallery. During the Christmas holiday, when there's nothing to do except eat and drink, why not dust the cobwebs off your faithful Atari ST and get drawing.

Remember, all submissions must be your own work, you must own the copyright to it and you must give us your permission to publish it.

Morning Glow: Colours created by the early morning sun playing on the vegetation of the Australian bush, giving a calming and peaceful feel to the world around us, but not devoid of the expectations of life.

Poppies: Still life depicting not only the essence of stillness, but capturing tranquility.

Pond: An experimental piece showing the difference between painting and drawing. It relies solely on colour without any drawing technique at all. It is a composition in colour much the same as one would use in impressionistic painting.



Courtyard: A more relaxed piece inspired by parts of the artists own backyard. The small maple, lilies and other small plants looked lovely on this very restful day.

Please enclose an sae for the return of your discs. The address to send your Masterpieces is:

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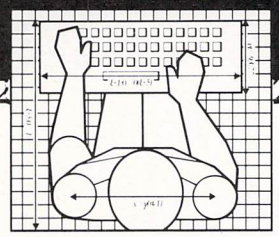
Red Centre: A waterhole in the interior of the Australian continent, an area known as the Red Centre because of the rich colours of its soil.

Regrowth: Regrowth of vegetation after an Australian bush fire. The impressionistic technique was used to depict the feeling of movement of wind over the once barren and scarred earth.

LATTICE C 3.04 £99.95



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"The Metacomco Lattice C compiler is excellent" ST User

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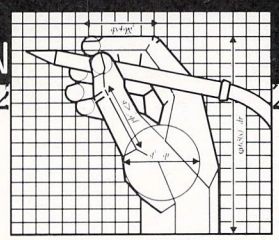

Pascal 2 adds most of the benefits of a modula 2 to the popular and widely used Pascal language. It's also ideal for frustrated BASIC programmers who want to move up to a really powerful structured language on the ST. Pascal 2 is a full development system to write blazingly fast Pascal programs which can use all the technically exciting features of the 68000 and the GEM environment.

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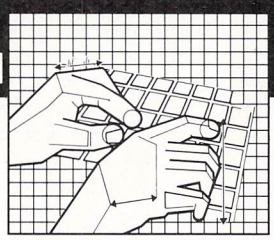

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C how you can save a packet

Cram more on to your discs with Glenn Williams' assistance

WHEN formatted using Gem, a single sided disc can hold around 340k of data and a double sided one just over twice as much. Yet it is surprising how quickly they fill up.

More important than the physical problem of storage of a large number of discs is the cost – they aren't cheap by any means. So being able to squeeze as much data as possible on to a disc has become more vital than ever.

The following C and ST Basic programs when compiled and run will let you format your discs with extra storage space of up to 120k – though it depends a lot on how good your drive is. In real terms this translates to quite a substantial saving per box of 10 discs.

For instance, if you are using double sided discs at a cost of around £20 for 10 and then formatting your discs with the Desktop formatter, you should be getting just over 720k of storage space per disc.

The cost per kilobyte works out at about 0.26p, but if you format the same discs to 840k per disc, the cost drops to around 0.24p per kilobyte. This might not sound much of a saving, but when you consider it works out at just over £3.86 on each box of 10 discs you buy, it's like being given nearly two free discs.

Before going any further take a look at the two programs. Program I is an ST Basic program which creates a resource file and Program II is the main listing, written in C.

Enter Program I using ST Basic, save it then run it. This will create a resource file called FORM.RSC on drive A. This file must always be on the same disc and folder as the compiled and linked version of Program II. Once this has been completed type in Program II. I've tried to keep this as simple as possible and it should be quite easy to follow.

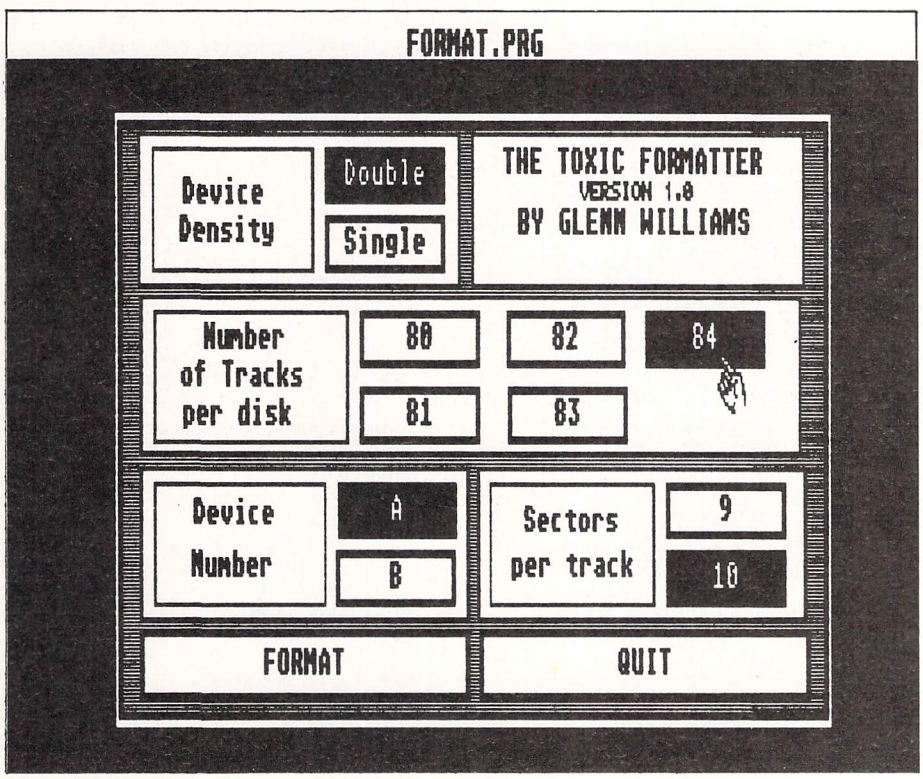

Figure I: Format selection screen

The first four lines of code include some standard C compiler header files. They are followed by a set of define statements for the FORM.RSC file.

The next section of code sets up some global variables. The first four are used when positioning the dialog box and store the start x,y position, box width and height respectively.

The next two hold the values returned by Gem after running either an alert or dialog box. The final set are all used by the format function and store values for number of sides to format, tracks per disc and so on.

Now we've got all the variables out of the way we can look at what the program's functions actually do. The first three are involved with opening and closing dialog boxes.

By looking at these you will see I have only had to use five different statements to handle the dialog box. This is because most Gem calls can perform a number of slightly differing tasks.

For instance, the function *form–dial* not only draws and erases the dialog box, but can also draw it expanding or shrinking.

The next and most important function in Program II needs a little more explanation. This section is the heart of the program as it performs all the disc I/O.

The actual routine for formatting discs is relatively easy to follow and is function 10 in the Xbios going under the name of *flopfmt*.

This is an extremely flexible routine, allowing the user full control over the number of tracks per disc, number of sectors per track, disc side to format and even the disc sector interleave factor. All of these variables, except the interleave factor can be changed using this program.

After the disc has been formatted it must have boot sector written to it. This contains a host of information that tells the operating system exactly how the disc was formatted.

Writing a boot sector is even easier than formatting the disc. The Xbios has yet another routine which will do the ▷

◁ work for us. *Protobt* (Xbios function 18) sets up a boot sector in ram and lets you save it to sector one track zero on side zero using the routine *flopwr* (Xbios function 9).

The next function is a lot simpler. All it does, is call up one of Gem's alert boxes warning you to make sure you have the right disc in drive A before formatting starts.

The following function, *main()*, is the first to be executed. It loads the FORM.RSC file and starts the whole program running.

We now come to the final function, the aim of which is to determine the particular option the user has selected. This is accomplished by checking the value returned by Gem against the value for each of the dialog box's buttons.

If you want to go deeper into the theory behind the routines used, you should read Atari ST Internals published by Abacus Software. This book's 400 plus pages is a mine of information.

You should have both the FORM.RSC and FORMAT.PRG files together on one disc. All you need to do now is set your display to medium or high resolution using the Set Preferences option from the Desktop and double click on FORMAT.PRG.

When the program is running you can select the drive letter, density, number of tracks and sectors to format by clicking the mouse pointer over the appropriate boxes. All that's left to do then is click on the Format box. The program will do the rest.

The default settings of the program are: Drive A, double-sided, 84 tracks of 10 sectors. This is the maximum for a double sided drive and should give you just over 840k storage space per disc.

A word of warning: Some drives can't cope with 84 tracks, and cheap discs may be unreliable, so you should experiment with various formats before storing valuable data on your discs. You should be safe with 81 tracks and 10 sectors per track.

```
10 rem Produces FORM.RSC
20 rem By Glenn Williams
30 rem (c) Atari ST User
40 PRINT "Please wait..."
50 cn =1
60 open "R",1,"form.rsc",1
70 field #1,1 as filedt$
80 read data$
90 if data$="*" then 160
100 byte=val("&H"+data$)
110 file$=chr$(byte)
120 lset filedt$=file$
130 put 1,cnt
140 cnt=cnt+1
150 goto 80
160 print "All Done.....":end
170 DATA 00,00,01,26,00,EE,00,EE
180 DATA 00,EE,00,EE,00,24,00,01
190 DATA 00,EE,04,86,00,24,00,01
200 DATA 00,02,00,00,00,00,00,00
210 DATA 00,00,04,8A,44,65,6E,73
220 DATA 69,74,79,00,44,65,76,69
230 DATA 63,65,00,44,6F,75,62,6C
240 DATA 65,00,53,69,6E,67,6C,65
250 DATA 00,6F,66,20,54,72,61,63
260 DATA 6B,73,00,4E,75,6D,62,65
270 DATA 72,00,70,65,72,20,64,69
280 DATA 73,6B,00,38,31,00,38,30
290 DATA 00,38,34,00,38,32,00,38
300 DATA 33,00,41,00,42,00,44,65
310 DATA 76,69,63,65,00,4E,75,6D
320 DATA 62,65,72,00,53,65,63,74
330 DATA 6F,72,73,00,70,65,72,20
340 DATA 74,72,61,63,6B,00,39,00
350 DATA 31,30,00,46,4F,52,4D,41
360 DATA 54,00,51,55,49,54,00,54
370 DATA 48,45,20,54,4F,58,49,43
380 DATA 20,46,4F,52,4D,41,54,54
390 DATA 45,52,00,56,45,52,53,49
400 DATA 4F,4E,20,31,2E,30,00,00
410 DATA 42,59,20,47,4C,45,4E,4E
420 DATA 20,57,49,4C,4C,49,41,4D
430 DATA 53,00,00,00,00,00,00,00
440 DATA 00,00,00,00,00,00,00,00
450 DATA 00,00,00,00,00,00,00,00
460 DATA 00,00,00,00,00,00,00,00
470 DATA 00,B3,00,00,00,00,00,00
480 DATA 00,BF,00,05,00,06,00,00
490 DATA 11,80,00,00,00,FF,00,0C
500 DATA 00,01,00,00,00,D2,00,00
510 DATA 00,00,00,00,00,EC,00,05
520 DATA 00,06,00,00,11,80,00,00
530 DATA 00,FF,00,1A,00,01,FF,FF
540 DATA 00,01,00,22,00,14,00,00
550 DATA 00,10,00,02,11,72,00,00
560 DATA 00,00,05,33,06,13,00,07
570 DATA 00,02,00,06,00,14,00,00
580 DATA 00,00,00,FF,11,00,05,01
590 DATA 04,00,01,17,07,04,00,05
600 DATA 00,03,00,04,00,14,00,00
610 DATA 00,00,00,FF,11,00,00,01
620 DATA 04,00,04,0B,07,03,00,04
630 DATA FF,FF,FF,FF,00,1C,00,00
640 DATA 00,00,00,00,00,24,06,01
650 DATA 01,02,00,07,00,01,00,02
660 DATA FF,FF,FF,FF,00,1C,00,00
670 DATA 00,00,00,00,00,2C,00,02
680 DATA 07,00,04,06,00,01,00,06
690 DATA FF,FF,FF,FF,00,1A,00,15
700 DATA 00,00,00,00,00,33,06,0D
710 DATA 05,00,01,08,03,01,00,01
720 DATA FF,FF,FF,FF,00,1A,00,15
730 DATA 00,00,00,00,00,3A,06,0D
740 DATA 07,02,01,08,03,01,00,0E
750 DATA 00,08,00,23,00,14,00,00
760 DATA 00,00,00,FF,11,00,06,01
770 DATA 07,05,06,2F,00,05,00,0C
780 DATA 00,09,00,0B,00,14,00,00
790 DATA 00,00,00,FF,11,00,00,01
800 DATA 04,00,07,0D,01,04,00,0A
810 DATA FF,FF,FF,FF,00,1C,00,00
820 DATA 00,00,00,00,00,41,06,01
830 DATA 04,01,00,09,00,01,00,0B
840 DATA FF,FF,FF,FF,00,1C,00,00
850 DATA 00,00,00,00,00,4B,03,03
860 DATA 02,00,01,06,01,01,00,08
870 DATA FF,FF,FF,FF,00,1C,00,00
880 DATA 00,00,00,00,00,52,07,01
890 DATA 06,02,00,08,00,01,00,0D
900 DATA FF,FF,FF,FF,00,1A,00,15
910 DATA 00,00,00,00,00,5B,01,10
920 DATA 01,03,01,08,03,01,00,1A
930 DATA FF,FF,FF,FF,00,1A,00,15
940 DATA 00,00,00,00,00,5E,01,10
950 DATA 05,00,01,08,03,01,00,14
960 DATA 00,0F,00,11,00,14,00,00
970 DATA 00,00,00,FF,11,00,06,01
980 DATA 04,0B,05,17,07,04,00,10
990 DATA FF,FF,FF,FF,00,1A,00,15
1000 DATA 00,00,00,00,00,6A,04,0E
1010 DATA 05,00,01,08,03,01,00,11
1020 DATA FF,FF,FF,FF,00,1A,00,15
1030 DATA 00,00,00,00,00,6C,03,0E
1040 DATA 07,02,01,08,03,01,00,0E
1050 DATA 00,12,00,13,00,14,00,00
1060 DATA 00,00,00,FF,11,00,00,01
1070 DATA 04,00,02,0C,07,03,00,13
1080 DATA FF,FF,FF,FF,00,1C,00,00
1090 DATA 00,00,00,00,00,6E,05,02
1100 DATA 03,00,06,06,01,01,00,11
1110 DATA FF,FF,FF,FF,00,1C,00,00
1120 DATA 00,00,00,00,00,75,04,02
1130 DATA 01,02,00,06,00,01,00,1C
1140 DATA 00,15,00,1B,00,14,00,00
1150 DATA 00,00,00,FF,11,00,02,1A
1160 DATA 04,0B,05,17,07,04,00,18
1170 DATA 00,16,00,17,00,14,00,00
1180 DATA 00,00,00,FF,11,00,07,00
1190 DATA 04,00,06,0B,07,03,00,17
1200 DATA FF,FF,FF,FF,00,1C,00,00
1210 DATA 00,00,00,00,00,7C,02,02
1220 DATA 04,00,00,07,03,01,00,15
1230 DATA FF,FF,FF,FF,00,1C,00,00
1240 DATA 00,00,00,00,00,84,03,01
1250 DATA 01,02,00,09,00,01,00,1B
1260 DATA FF,FF,FF,FF,00,1A,00,15
1270 DATA 00,00,00,00,00,8E,07,0D
1280 DATA 05,00,01,08,03,01,00,23
1290 DATA FF,FF,FF,FF,00,1A,00,15
1300 DATA 00,00,00,00,00,64,06,1A
1310 DATA 05,00,01,08,03,01,00,19
1320 DATA FF,FF,FF,FF,00,1A,00,15
1330 DATA 00,00,00,00,00,61,07,24
1340 DATA 05,00,01,08,03,01,00,14
1350 DATA FF,FF,FF,FF,00,1A,00,15
1360 DATA 00,00,00,00,00,90,07,0D
1370 DATA 07,02,01,08,03,01,00,1D
1380 DATA FF,FF,FF,FF,00,1A,00,05
1390 DATA 00,00,00,00,00,93,07,01
1400 DATA 00,11,03,17,07,01,00,1E
1410 DATA FF,FF,FF,FF,00,1A,00,05
1420 DATA 00,00,00,00,00,9A,04,1A
1430 DATA 00,11,04,17,07,01,00,22
1440 DATA 00,1F,00,21,00,14,00,00
1450 DATA 00,00,00,FF,11,00,07,19
1460 DATA 04,00,07,17,07,04,00,20
1470 DATA FF,FF,FF,FF,00,1C,00,00
1480 DATA 00,00,00,00,00,9F,00,02
1490 DATA 03,00,00,13,00,01,00,21
1500 DATA FF,FF,FF,FF,00,15,00,00
1510 DATA 00,00,00,00,00,EE,06,07
1520 DATA 03,01,00,0B,00,01,00,1E
1530 DATA FF,FF,FF,FF,00,1C,00,00
1540 DATA 00,00,00,00,00,C0,01,03
1550 DATA 03,02,00,11,00,01,00,00
1560 DATA FF,FF,FF,FF,00,15,00,20
1570 DATA 00,00,00,00,01,0A,02,1C
1580 DATA 01,04,01,15,00,01,00,07
1590 DATA FF,FF,FF,FF,00,1A,00,15
1600 DATA 00,00,00,00,00,67,07,1A
1610 DATA 01,03,01,08,03,01,00,00
1620 DATA 01,26,*
```

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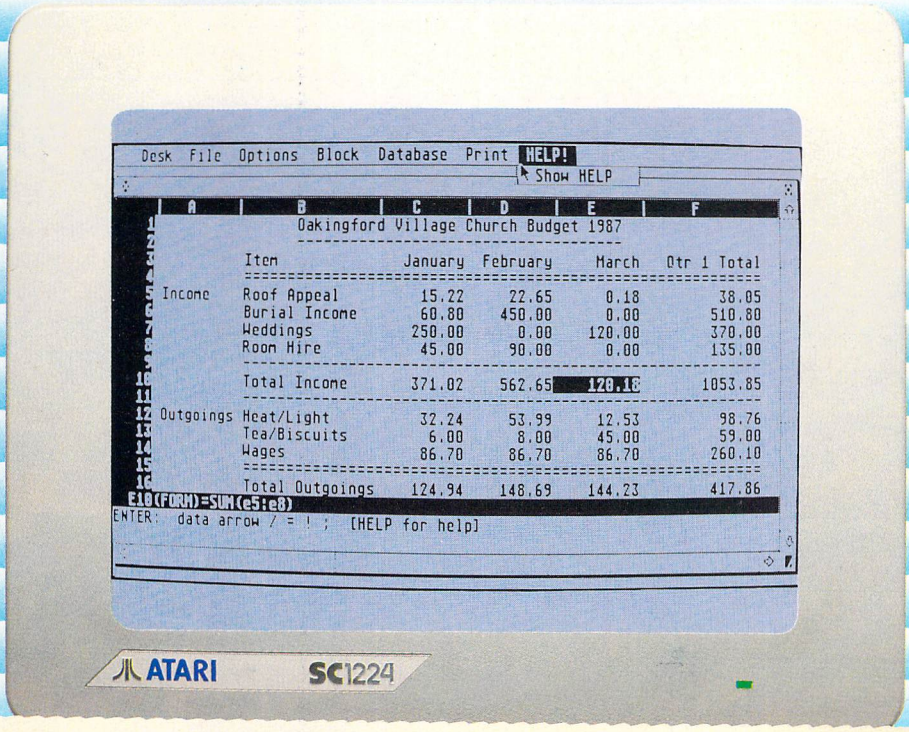
```
/*********************************************************
*                  Disk formatter                        *
*                By  Glenn Williams                      *
*                (c) Atari ST User                       *
*********************************************************/
#include <gemdefs.h>          /* load GEM definitions     */
#include <obdefs.h>           /* load form structures     */
#include <osbind.h>           /* load the os bindins      */
#include <stdio.h>            /* load the IO header file  */
/*********************************************************/
#define TREE00 0      /* loaded form FORM.RSC header file */
#define SD1 6
#define SD3 5
#define TRK81 12
#define TRK82 25
#define TRK80 13
#define TRK83 35
#define TRK84 26
#define DRIVEA 15
#define DRIVEB 16
#define SEC9 24
#define SEC10 27
#define QUIT 29
#define FORMAT 28
/*********************************************************/
int ob_x;                 /* upper left corner of object  */
int ob_y;                 /* upper left corner of object  */
int ob_width;             /* width of obj                 */
int ob_height;            /* height of obj                */
int fo_aexbttn;
int fo_doreturn;
int v,tracks,sectr,drive,side,btype,dtype;
/*********************************************************/
open_dialog(dialog)       /* this proc opens a dialog box */
 OBJECT *dialog;
{
 form_center(dialog, &ob_x, &ob_y, &ob_width, &ob_height);
 form_dial(0,0,0,0,0,0,ob_x,ob_y,ob_width,ob_height);
 form_dial(1,0,0,0,0,0,ob_x,ob_y,ob_width,ob_height);
 objc_draw(dialog, 0, 10, ob_x, ob_y, ob_width, ob_height);
}
/*********************************************************/
end_dialog(dialog)           /*this proc closes dialog box*/
{
  form_dial(2,0,0,0,0,0,ob_x,ob_y,ob_width,ob_height);
  form_dial(3,0,0,0,0,0,ob_x,ob_y,ob_width,ob_height);
}
/*********************************************************/
do_deafults(dialog)           /* set up program defaults */
OBJECT *dialog;
{
  drive=0;                                /* drive A       */
  side=1;                                 /* double sided  */
  tracks=84;                              /* 84 tracks/dsk */
  sectr=10;                               /* 10 secs/trk   */
  objc_change(dialog,SD3,0,ob_x,ob_y,ob_width,ob_height,SELE
CTED);
  objc_change(dialog,DRIVEA,0,ob_x,ob_y,ob_width,ob_height,S
ELECTED);
  objc_change(dialog,TRK84,0,ob_x,ob_y,ob_width,ob_height,SE
LECTED);
  objc_change(dialog,SEC10,0,ob_x,ob_y,ob_width,ob_height,SE
LECTED);
}
/*********************************************************/
format(dialog) /* this is the proc that does all the work */
OBJECT *dialog;
{
  static char buffer[20000];
  int i,snum,sectd;
  long l;
  btype=0;
  dtype=3;
  if(side==0) dtype=2;
  graf_mouse(2);                  /* mouse shape 3 (hand) */

for (i=0; i<tracks; i++) {        /* do the format        */
 for(snum=0; snum<side+1; snum++) {
  if (Flopfmt(buffer,0L,drive,sectr,i,snum,1,0x87654321L,0xe
5e5)) {
 fo_aexbttn=form_alert(1,"[0][FORMAT ERROR!][CONTINUE]");
 start(dialog);
  }
 }
}
 for (i=0; i<sectr*512; i++) buffer[i] = 0;
 Flopwr(buffer,0L,drive,1,0,0,sectr);
 Flopwr(buffer,0L,drive,1,1,0,sectr);

Protobt(buffer,0x01000000L,dtype,btype);  /* boot sector  */
  buffer[24]=sectr;                 /* save No. sectors    */
  buffer[25]=0;                     /* per track           */
  sectd=(tracks*sectr)*(side+1);    /* No. sectors per disk*/
  buffer[20]=sectd/256;
  buffer[19]=sectd-(buffer[20]*256);
Flopwr(buffer,0L,drive,1,0,0,1);  /* write new boot sector*/
 graf_mouse(3);                   /* turn mouse to hand   */
 fo_aexbttn=form_alert(1,"[0][FORMAT ALL DONE!][CONTINUE]");
 start(dialog);
}
/*********************************************************/
falert(dialog)                  /* format disk warning    */
OBJECT *dialog;
{
 fo_aexbttn=form_alert(2,"[3][FORMAT DISK?|ALL DATA ON DISK
WILL BE LOST][CONTINUE|QUIT]");
 if(fo_aexbttn==1)  format(dialog);
 start(dialog);
}
/*********************************************************/
main()
{
 OBJECT *dialog;
 appl_init();                     /*  INIT. APPLICATION   */
 graf_mouse(3);
 if (!rsrc_load("form.rsc"))        /* LOAD RSC FILE     */
 {                                   /* & CHECK FOR ERROR */
   form_alert(1,"[0][Cannot find FORM.RSC|Terminating ...][O
K]");
   exit(1);                          /* EXIT AFTER ALERT */
 }
 rsrc_gaddr(0, TREE00, &dialog);    /* find addr. of dbox */
 open_dialog(dialog);               /* RUN DBOX TWO       */
 do_deafults(dialog);               /* SET DEAFULTS       */
 start(dialog);                     /*  start formatter   */
}
/*********************************************************/
start(dialog)                   /* set options for format */
 OBJECT *dialog;
{
 objc_change(dialog,FORMAT,0,ob_x,ob_y,ob_width,ob_height,NO
RMAL);
 graf_mouse(3);
 fo_doreturn=form_do(dialog, 0);   /* run main dialog box */
  if(fo_doreturn==SD1) side=0;
  if(fo_doreturn==SD3) side=1;
  if(fo_doreturn==DRIVEA) drive=0;
  if(fo_doreturn==DRIVEB) drive=1;
  if(fo_doreturn==TRK80) tracks=80;
  if(fo_doreturn==TRK81) tracks=81;
  if(fo_doreturn==TRK82) tracks=82;
  if(fo_doreturn==TRK83) tracks=83;
  if(fo_doreturn==TRK84) tracks=84;
  if(fo_doreturn==SEC9)  sectr=9;
  if(fo_doreturn==SEC10) sectr=10;
  if(fo_doreturn==QUIT) exit(1); /* back to GEM desktop   */
  if(fo_doreturn==FORMAT)  falert(dialog); /* format disk */
  start(dialog);                 /* rerun dialog box....  */
}
```

timeworks



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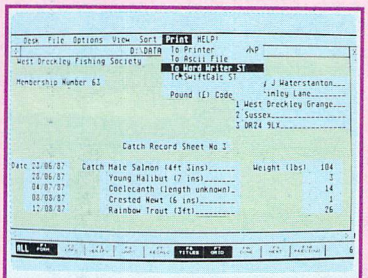

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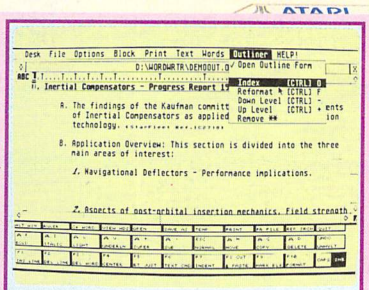

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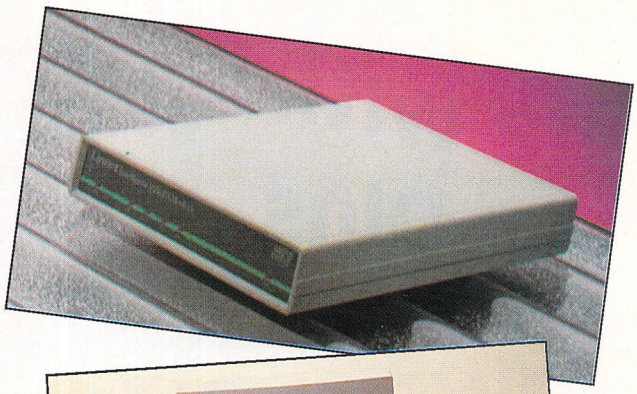

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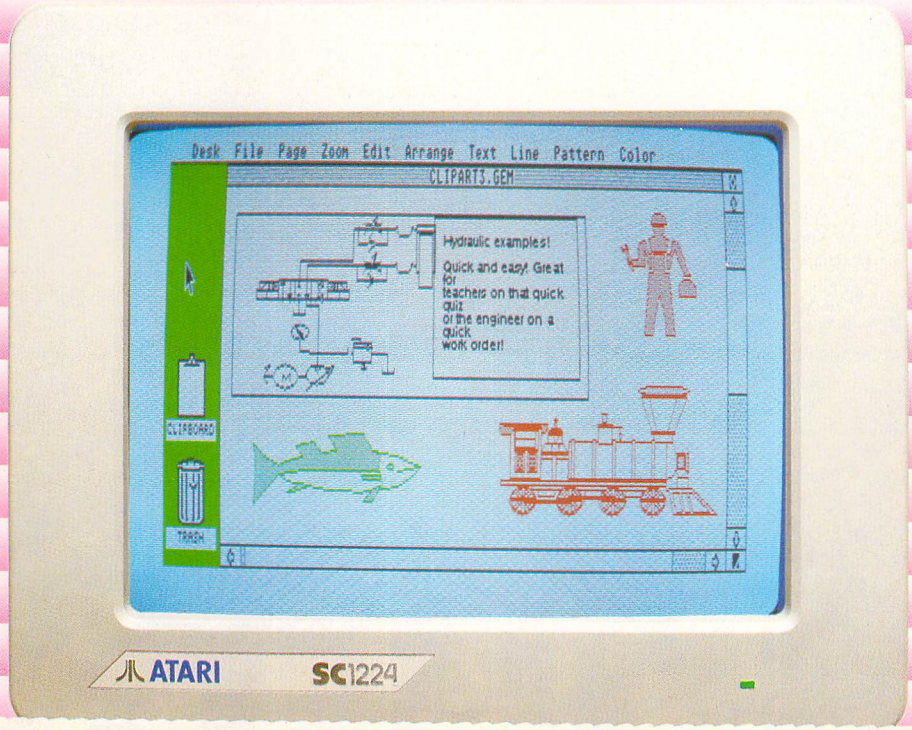

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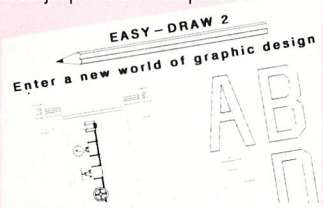

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Gems of databases

Alan Goldsboro puts K-Data and Base Two under the microscope

LOOK at any major software publisher and you are sure to find at least one database package available from the range of applications offered for the ST.

If you followed the absorbing series by Ken Hughes on the making of databases which started in the July 1987 issue of *Atari ST User*, you will realise that information management systems are the lifeblood of computers.

The last time I looked at databases was to compare Superbase Personal and Trimbase, also in the July 1987 issue. This time we are going to put two new packages through their paces – K-Data from Kuma Computers and Base Two from Antic Publishing.

These are of the flat card index mould, yet both products have pushed the boundaries to the limit to produce visual and effective databases.

Kuma is already well known for programs which include the K-Spread, K-Word and K-Graph suite of integrated programs. Antic Publishing is best known for the publication of the premier Atari magazine in the States, Antic. Both companies are well respected and in the past have offered quality packages at affordable prices.

Both K-Data and Base Two have similar modus operandi, a design module and a separate data input/resource/report module. Medium screen resolution can be used, but both databases look sharper in high resolution mode.

Being Gem based, moveable windows, scrolling text and pull down menus operate with customary smoothness. In addition, both packages have sizeable fields, grab and place positioning of fields and titles, choices of text and data style and presentation and mouse and keyboard compatibility.

Looking at the design modules, here we see the first difference between the two programs. K-Data has six types of field definitives – text, numeric in fixed and floating point, date, time and enumerated.

The date field has six styles and the time field has two variations with automatic system date and time insertion as a feature. The enumerated field is a user-defined specific class/look-up facility using either selection buttons or pull down menus.

For its part, Base Two has five definable fields – text, numeric, date (in American format, but calculable), formula for calculations and implicit.

The formula field can be attached to numeric fields to work out any kind of calculations using other fields, constants up to 15 digits, +, -, *, /, square root and parentheses.

The implicit field is created by default and all fields take on the attributes of numeric until data is entered. This means the computer can decide on the type of field without you having to worry about entering the wrong kind of data. You can however, override this function by determining your fields at the time of their creation.

The host of features in both packages make up an impressive list, while K-Data doesn't have calculating fields it does have the facility to create a key field (which forms part of the index sequencing) from any field and not just the first one as in so many other databases.

Another little gem is the Unique feature, assigning this to a field will ensure the data entered is totally unique. For instance, using it with a numeric field it could act as a record counter forcing you to give each input a different number.

Data entry can be speeded up by having default information included or if you wish, fields can be designated as mandatory in which case data will always have to be entered.

Numeric fields can be defined with minimum and maximum values plus leading signs such as £ and $. Text is either blocked left or placed full out with automatic wrap round.

Base Two cannot designate the key field, by default this is always the one placed in the top left corner. Field names can be duplicated and fields even defined without any names.

As with K-Data, Base Two has no limit to the size of text fields and also has full use of the wrap round feature. The £ sign can't be used though.

K-Data has the edge on Base Two as far as the visual aspects go, even though both have six styles of text, (bold, light, italic, underline, outline and shadow), three choices of colour (medium resolution only) and a similar range of sizes.

The quality of K-Data is easy to see. With Base Two you can only have one ▷

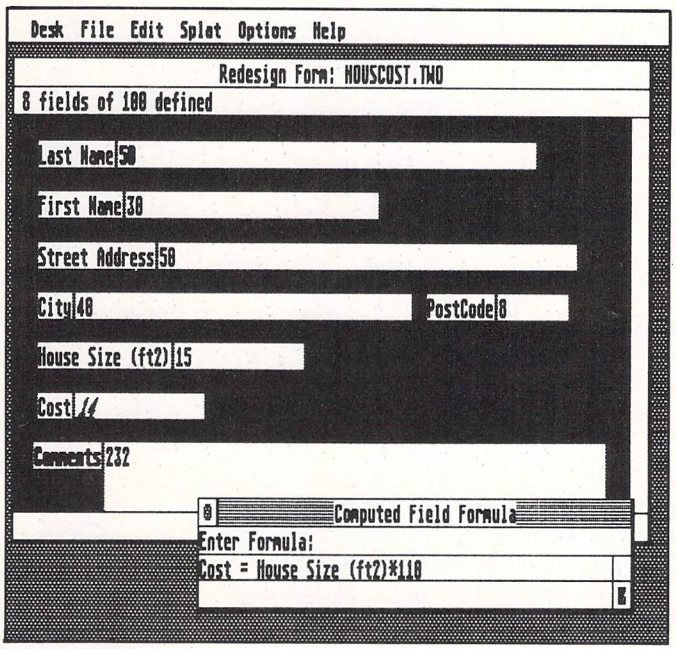

Figure I: Base Two design module with computed field formula

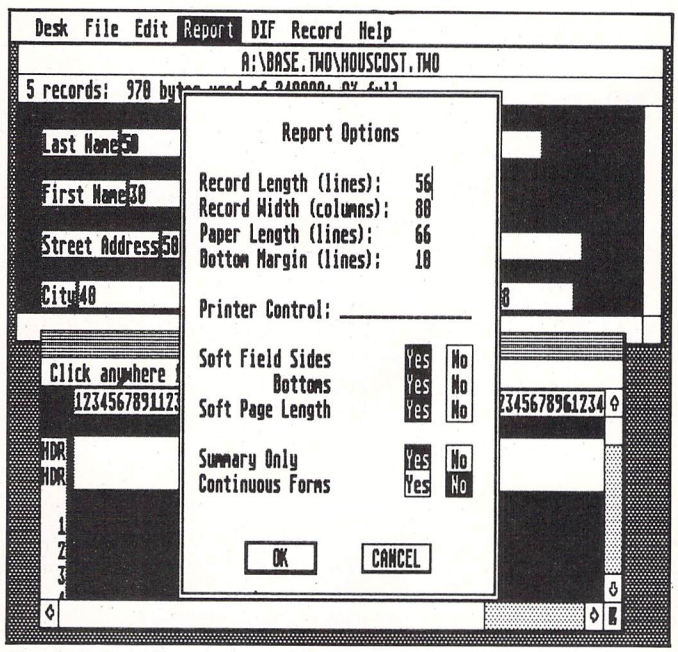

Figure II: Base Two main module with report designer and options

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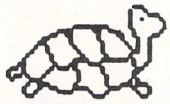

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◁ style of box for labels or data, but with K-Data they can be outlined, shadowed or both. Also there are eight shades and four colours which can be used in any combination.

K-Data's boxes can be used independently of labels and data and placed anywhere on the screen. The maximum number of characters for a label is 64 for Base Two and 65 for K-Data.

As both packages are Gem based, fields can easily be placed by scrolling the windows and this is often done automatically as you size them. Editing is carried out by clicking on boxes or fields and changing attributes, sizes and positions.

Fields, labels and so on can be copied, pasted, moved or deleted. Base Two has excellent editing functions but uses the same buffer to store labels and fields. A couple of extra features show up well with K-Data such as the case dependency A=a, A<>a and the positioning of selection buttons which can be moved individually or as a group.

K-Data and Base Two operate the same policy on editing finished designs. Once your database is designed and saved to disc, you can load up the design module and add, delete or edit either the field or label without disturbing the precious data already entered.

Data entry takes place in the main program. With K-Data you first have to create a file from your design module. Once this has been done you are presented with a small window in the centre of the screen.

This shows the first 10 key fields with buttons to scroll up and down a record at a time, a page at a time or go to top or bottom of the file. Within this window there are a further four buttons to find, edit, create and delete records.

By double clicking on the Create button you are transferred to an exact copy of your design module layout. Data can now be typed in and using either mouse, Alternate or Control keys you can place data easily and effectively.

If you enter the wrong type of data or by-pass a mandatory field a nice friendly speech bubble appears and tells you what the error is. Pressing any key removes it from the screen. Enumerated data is achieved by clicking on the desired button or selecting from the list of pre-defined choices.

Entering data for Base Two is somewhat easier, although K-Data is by no means difficult. The main program, once loaded displays the same screen as the design module.

Any field can be fed information and data can be cut, copied, pasted or deleted either by mouse or control characters. Because Base Two can accept a null date and time there is an option to set the system date and time within the program.

For K-Data, extracting data is carried out using the standard operators – equal to, greater than, less than and so on, but both programs have widened this to include a containing criteria. K-Data has also expanded into multi-level selection, achieved using the class creation option.

Briefly, this is a filtering system using any number of fields to extract information such as "only those people between 25 and 35 who live in the North of England and subscribe to *Atari ST User* but do not own a printer".

The resultant information is saved as a subset which can be grouped with other classes, generated as a report, merged into data files and saved to disc. Class definitions are saved as part of the data file and can be edited as and when required.

Base Two also has a multi-level search facility. This takes up to three levels and uses a similar structure to K-Data. The major difference to K-Data's search procedure, other than the limiting of levels, is that it is used as part of the reporting procedure and not as a separate option.

There is a nice merge option in K-Data, this will let you join similar files or classes together. It will also let you add or modify records in a file. By using the class and merge functions together, files can be divided, updated and joined with other files providing somewhere along the way there are compatible key fields.

K-Data also has a built in feature to send data to K-Graph, not just values, but also labels. Data from K-Spread, either by row or column, can be easily accepted and using K-Word, mailmerging becomes possible. Data can also be sent in Ascii code or data information format (dif).

Not to be outdone by Kuma, Base Two also has a feature to send data in dif. Program examples are A-Calc Prime and A-Chart (both from Antic which by coincidence are written by Kuma).

The same selection and sorting criteria used by Base Two for reporting to screen can be adopted for the dif exchange. For users of the original DBMaster One, there is a conversion program to transfer data to Base Two.

The reporting procedures for both programs are fairly comprehensive. Starting again with K-Data, reports can be generated from classes as well as whole data files. Working from a new screen there are four different ways to display your report – screen, printer, file and dif.

Reports are made from three sections, headers, footers and main body. Fields are selected from a list and dragged to the report design form where they can be placed in any position. The length of the report can be determined by the user ▷

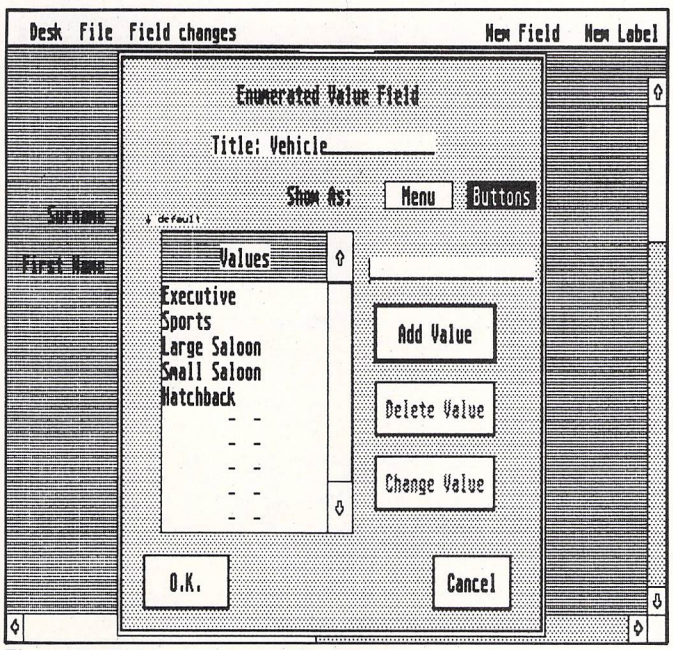

Figure III: K-Data design module showing enumerated values as button selectors

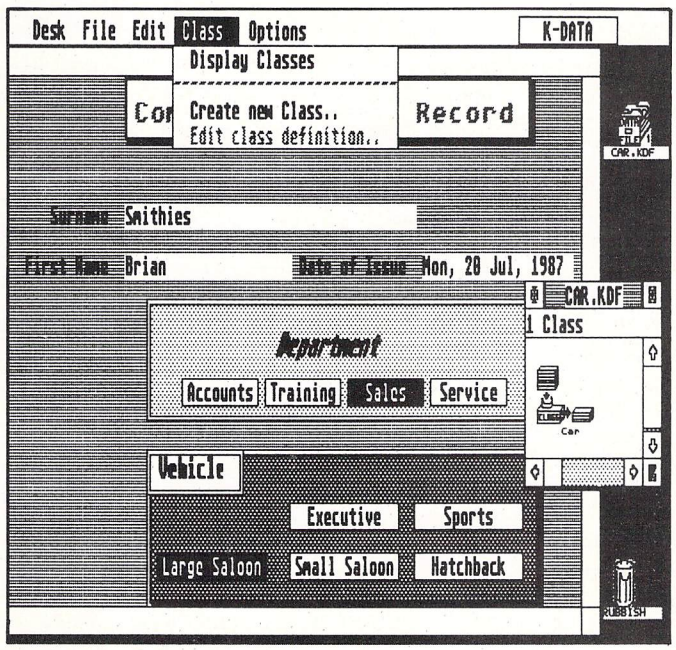

Figure IV: K-Data main module showing window of completed subset

◁ and labels, page numbers, file name, report date and time can be placed in the headers, footers and body of the form.

The report can be designed to accommodate fixed or variable length fields, this allows the computer to close up missing lines when printing. In addition to the selection criteria fields can be sorted in ascending or descending order. Record count can be used to add up the numeric data and display it in the footer.

Four separate parts make up the report design for Base Two: Positioning of data fields, selection criteria, sorting and page description and style. Creating the report is done in a window at the bottom of the screen and this can be sized and scrolled to suit.

Fields are highlighted in the datafile and clicked on in the report form. Once displayed in the report they can be sized or positioned almost anywhere.

The selection criteria has already been discussed earlier and the sorting procedure not only gives ascending and descending order but can be used to start a new page wherever the sort field changes. For instance, if you sorted on town, every time the town changed a new page would be started.

Numeric field can be specified to total up on each page or at the end of the whole report. Headers up to two lines deep can be printed with labels, page numbers, date and time either blocked or centred.

The rest of the report format is taken up with width and length sizes, margins and a handy printer control string facility to type in your own codes. Base Two has included its soft field option, which will close up lines and spaces between fields to give a customised look to the report.

A unique feature of Base Two is the report function saving procedure. Up to ten reports are saved with the datafile and these include all the search and sort criteria. This enables quick and easy editing and reporting of data once the report has been designed. Reports can be sent to printer, screen or disc.

K-Data comes on two discs and the manual is 130 pages long, spirally bound with examples throughout. Base Two is on one disc with a much smaller manual of 65 pages in an A5 binder and comes with tutorial and reference sections. This is easier to read, but K-Data has far greater depth.

In conclusion, while there are similarities between both programs, at first glance Base Two looks like a poor relation to K-Data and if you gave it only a cursory glance you may be forgiven for putting it down and walking away.

The friendly and extremely visual appearance of K-Data coupled with the excellent search criteria and reporting procedure make this versatile database worthy of recommendation. The only real niggle is the lack of a formula field for calculations.

Base Two's main plus points over K-Data are the numeric field and formula combinations, on-line help and its shell program which runs both the design and maintain modules. Against it is the fact that it's an American import and consequently the date format is different to ours and the £ character is not available.

If you've been put off by the complexities of relational databases, the smart, clean programming of Kuma's K-Data should cater for your everyday needs. If it had a calculable field I'd give it top marks. As it is, K-Data must be the best flat card database available for the ST. □

Product: K-Data
Price: £49.95
Supplier: Kuma Computers, 12 Horseshoe Park, Horseshoe Road, Pangbourne, Berkshire RG8 7UW.
Tel: 07357 4335

Product: Base Two
Price: $60 (£50 approx)
Supplier: Antic Publishing, 524 Second Street, San Francisco, CA 94107. USA
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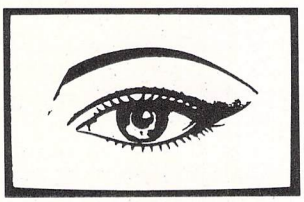

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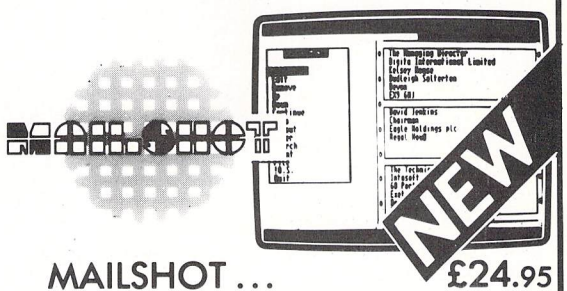

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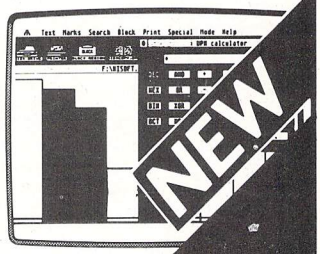

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ACCESS VISA

Winged messenger is on the button

In the final article in his comms series David Atherton looks at the Mercury system

BRITISH Telecom (BT) have been much criticised recently for equipment failure and charges. Whether or not this is justified, many people attribute their problems to a telephone monopoly.

However, for the past few years there has been a competitor for telephone services. Mercury Communications, part of the giant Cable and Wireless group, has been quietly building up a user base, not only in big business, but also among domestic users.

I've been looking at the Mercury alternative, and found it well worth considering.

Mercury offers several telecommunications services, including national (Mercury 5000) and international (Mercury 5100) data networks, large City of London installations (Mercury 2000), telex (Mercury 7100) and electronic mail (Mercurylink 7500). There are also two main telephone systems, Mercury 2200 and 2300.

But how can the Mercury system work? Surely BT own all the wires? Well – yes and no. For quite a while, Mercury has been quietly laying its own cables along the same routes as those of BT, but as Mercury started somewhat later, it has so far only laid routes between the major cities.

Also there aren't any Mercury lines to individual subscribers. Under the Telecommunications Act, BT is obliged to let Mercury compete with them.

One result of this is that BT allows Mercury subscribers to connect to the nearest Mercury point on its lines – just like you might use a train to connect you to the airport at each end of a journey, because it would be impossible to build an airport at the end of every street.

Mercury pays BT for this use of the local link at each end, so a better analogy would be the courtesy coach at each end of a package air flight. Of course this charge is an additional operating cost for Mercury and so must eventually be reflected in their tariff.

A Mercury subscriber uses the BT lines as far as the local exchange and is then routed directly on to a Mercury exchange. The call is carried on Mercury equipment to the other end, where a local link is again made on BT lines.

There are two exceptions. One is if you dial an area not served by Mercury the call has to be switched back to BT lines from the nearest Mercury point and may travel on the BT trunk network before going on to local lines. The other is local calls, which are not handled by Mercury at all.

As Mercury has not yet completed its exchange construction, many parts of Britain cannot use the system yet. To become a Mercury subscriber you must live in one of the exchange code areas listed in Table I.

If you aren't in one of these areas, file this article away somewhere safe – it will be useful to you in a few years time, when Mercury wires up your town.

Mercury 2200 is a system for users of PABXs (switchboards) and so is only really for businesses. It involves fitting a smart box into the PABX, which then monitors all outgoing calls and decides which should be sent through BT (all the local ones) and which through Mercury (the long distance ones).

The Mercury charges are lower on the 2200 service than the domestic 2300 one, but the setup costs are higher. For the domestic and small business users with a single telephone line, the Mercury 2300 service is the one to go for. The rest of my comments apply to the latter service.

Why should you bother changing over? The principal reason is cost. Mercury call charges are on average 15 per cent less than BT's on long distance inland calls, and about 10 per cent less on international calls.

The graph in Figure I shows the cost of Mercury and BT long distance cheap rate calls – obviously very important for long distance bulletin board users.

All Mercury long distance calls work out cheaper, and the more you make the greater the saving. Similarly an international call, say 10 minutes to the USA at cheap rate, will cost £4.81 on Mercury against £5.06 on BT.

The Mercury charging system works in your favour as well. Because it started from scratch with fully computerised digital exchanges, Mercury can time your call to the second and bill you accord- ▷

01	021	051	061	0203	0272	0274	0275	0281	0331	0332	0335
0367	0433	0442	0452	0454	0455	0457	0491	0509	0525	0530	0532
0533	0535	0537	0538	0543	0564	0582	0594	0602	0607	0663	0672
0675	0676	0734	0735	0742	0746	0753	0761	0773	0781	0782	0793
0858	0895	0902	0907	0922	0925	0928	0932	0937	0943	0949	

Table I: Mercury access areas. Only users in these exchange areas can become Mercury 2300 subscribers

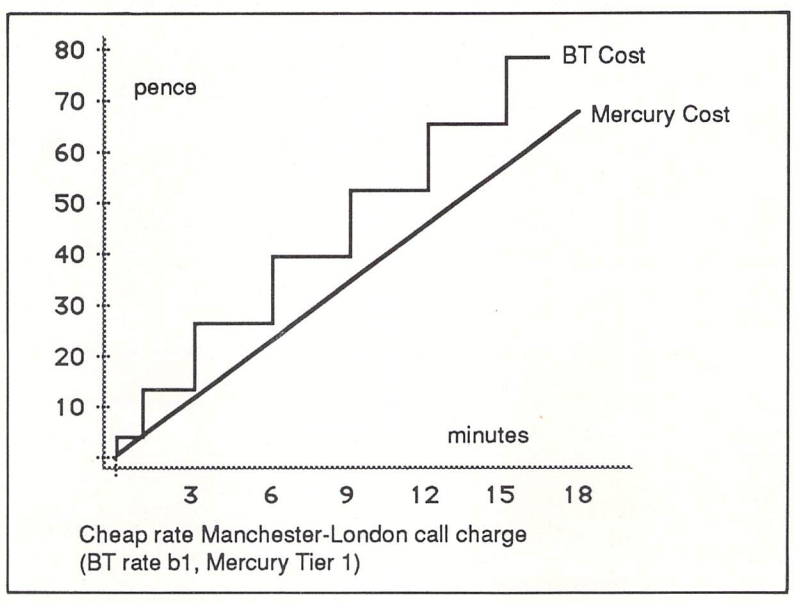

Figure I: BT vs Mercury line charges

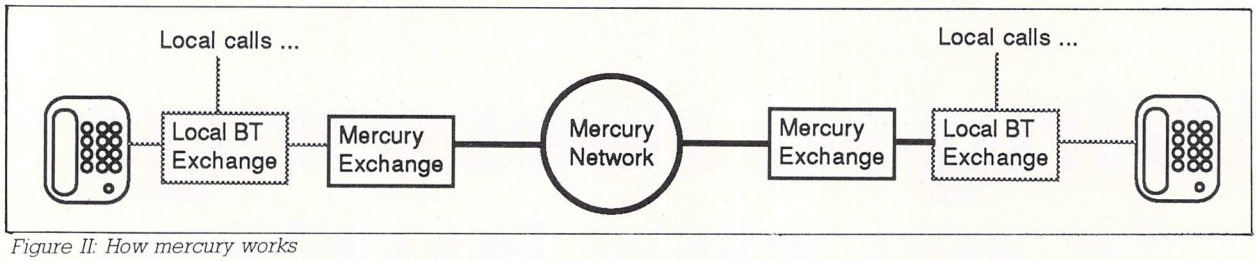

Figure II: How mercury works

◁ ingly. On BT you are charged for the part unit clocked when you hang up, which adds 4.4 (+VAT) to around half the calls you make.

Line quality is improved enormously with the Mercury system. The digital exchanges work by converting your speech (or modem tones) into binary information, (very similar to the way the information passes from your ST to the modem), and with error-correction systems this effectively eliminates line noise.

Of course, you have to use BT circuits at each end of the Mercury call which makes the process less than completely perfect, but generally users with Mercury lines notice a distinct improvement in quality.

One of the attractions of the Mercury 2300 service is that you get a nice smart phone, with push button, on-hook dialling, 30 number memory, last number redialling and mute button. This is essential as it contains the access code required to get on to the Mercury network.

To make a local call you dial as normal. For long distance calls, you press a special blue Mercury button on the phone and then the long distance number. However, it is possible to save even more money and dispense with the phone – more about this in a moment.

The Mercury button performs a number of functions. It dials a special number which connects you to the Mercury service (in London this is 131).

It then sends your identity code to the Mercury exchange, so the correct account will be billed. This means you could move your phone to another location, and still use your Mercury account.

That is followed by a tone dialled version of the long distance or international number you require.

The delay of a few seconds while you log on to Mercury is slightly irritating, but you soon get used to it. The call is switched through a combination of BT and Mercury lines, depending where you are and to where you are calling, but this is transparent to both you and your caller, and in billing terms it is a straight Mercury call at the lower Mercury rates.

So the whole operation is totally seamless. The only thing that's different is that you press a special button before making long distance calls. Your phone number remains the same, your entry in the directory and so on are all just as before and your incoming calls are unaffected. That's an important point for bulletin board operators – joining Mercury will not give clearer lines to your callers.

Mercury subscribers get two telephone bills. One from BT covers your local calls and your line rental – which is not affected by being a Mercury subscriber.

Also on the BT bill will be units for any long distance calls you make where you forgot to press the Mercury button first or didn't get a Mercury line.

Your Mercury bill is considerably more detailed than the BT one and contains a complete itemised list of every call made on the Mercury system. For each call the report shows the number dialled, the connection time (accurate to a second) and the charge for that call.

The annual Mercury connection fee, £7.50 + VAT, is included on your first bill, as is the one-off £45 + VAT for the Mercury phone – if you buy it. Mercury billing is monthly, or you can pay quarterly if you wish.

Mercury tries to make life easy for you and offers direct debit or credit card payment as well as the usual bank, post office and postal methods. You can even have different codes on the one Mercury phone for different users, and these are identified in the bill.

A youthful Atari ST user could arrange with his or her parents to use a special code for modem use, to avoid (or perhaps intensify) those interminable arguments about how much this little hobby of ours is actually costing the household.

More usefully, a small business user, whether at home or office, can easily allocate telephone usage to different jobs. Because the ID code is the method of charge, it is possible to have two different telephone numbers set up to use the same ID, and just one bill will be issued.

Without going to the expense of portable telephones, you could theoretically carry round a phone programmed with your ID, plug it into anyone's socket and calls wouldn't cost them anything. This is exactly the same principle as logging on to say MicroLink, where your charges are billed to you – even if you use someone else's telephone and computer.

Mercury reckons the 2300 system is worthwhile to anyone with bills of more than £70 a quarter. This takes account of the smart phone, and I would say that if you already had, or were thinking of buying, such a phone anyway, the payback point is much lower.

Remember all you pay extra is the £7.50 standing charge – 2p a day – and you still have all your BT services. I sent off my application form immediately after researching this article.

For modem users, especially Atari ST owners, who are very likely to be making long distance calls and quite possibly dialling overseas, the Mercury advantages get even better. Obviously the more you make these expensive calls, the greater the savings.

You can even save the cost of the Mercury phone if you're only going to use Mercury with a modem.

Most autodial modems offer pulse and tone dial facilities and if you can program yours to change over from pulse to tone dialling halfway through the dial string (all Hayes compatibles can do this), you can perform a Mercury logon as part of your dialling string.

On the subject of dispensing with the Mercury phone, there are many alternative fancy telephones which also offer facilities suitable to logon to Mercury (at least 25 digit number stores and pulse/tone switching mid-dial).

Any of these would do instead, but if you haven't got one already, the Mercury offering is about the same price as the alternatives.

A warning about using your Mercury ID, which is particularly important if you're using alternative equipment. If anyone gets hold of your number, they can make as many calls as they like and you will pay. This could easily run into thousands of pounds.

Unlike an account on MicroLink or Prestel, which although popular in the computer community, are only used by a tiny fraction of the population, a free voice phone line is a very stealable commodity.

The Mercury supplied phone has no way of reporting the ID without physically getting into the phone (although hackers have reported differently – but most people aren't hackers).

However, logon strings on computer discs and dial strings on intelligent phones with LCD displays are very visible.

If your equipment is anywhere else but in your own home I would say the voice phone should be one incapable of displaying back the ID, and any logon strings kept on computer must always be kept on a floppy – never your hard disc – , and removed when not in use.

For an information pack on the Mercury system, (free) phone 0800 424194 or write to Mercury, PO Box 49, Birmingham B1 1TE. Mercury 2300 is the single phone line service, Mercury 2200 is to fit to switchboards.

DESKTOP PUBLISHING
WITH PUBLISHING PARTNER™ ON THE ATARI ST

ATARI ST SOFTWARE

1 WHAT IS DESKTOP PUBLISHING?

Desktop Publishing is a method by which documents can be produced using a computer, software and a printer. These documents are near professional appearance and cost only a fraction of the price which you might otherwise pay to a designer, artwork studio and printer. Because the 'middle men' are eliminated from the production process, desktop publishing allows the user to retain total control over his or her documents, making last minute updates without panic and without incurring extra charges for 'rush' work.

2 WHAT CAN I USE IT FOR?

As we all make use of the printed word in one way or another in our daily lives, the applications for Desktop Publishing are all around us. If you belong to a club or society or if you run your own business, the possibilities are endless! Our list of example applications will give you some other ideas.

Advertisements	Distribution Leaflets	O/head Transparencies
Application Forms	Fayre Programmes	Personal Cards
Brochures	Invitation Cards	Personal Letterheads
Business Contracts	Invoices	Presentations
Charts & Tables	Labels	Price Lists
Club Certificates	Menus	Special Offer Leaflets
Club Newsletters	Office Forms	Technical Sheets
Dance Tickets	Order Forms	Work Estimates

3 PUBLISHING PARTNER

Publishing Partner, from SoftLogik Corp™, includes all of the features which you would expect in a good Desktop Publishing package. It combines word processing, page layout and graphics facilities all in one program, allowing you to create 'stunning' documents on your Atari ST. First you can do a rough page design and start adding blocks of copy. See how it fits. See how it looks. See how it flows onto the next page. Make some changes. Try a different type style, or a different size, or some borders, some shapes, or even some pictures. Because Publishing Partner incorporates WYSIWYG (What You See Is What You Get), you'll see instantly if your new idea works or not. The computer's screen will show you just how the page will look when it prints - no more guesswork. You can adjust fonts, character sizes and even character spacing, anytime and anywhere on the page. Watch an ordinary letter transform into a professional looking piece right before your eyes, as you experiment with mixing graphics and text. And, when you want to see a 'hard copy' of your masterpiece, just send it to any one of the printers which the program supports (the list is growing all the time).

SoftLogik Corp™

SoftLogik Corp™ was set up in the USA by Shawn Fogle and Deron Kazmaier to produce quality desktop publishing software with uncompromising power and features. Publishing Partner was developed after 1½ years of research, working with typesetters and printers and the results achieved are outstanding.

4 SIMPLE, POWERFUL, AFFORDABLE

Printing and publishing is a fairly complex business which takes years of training and experience to master. You wouldn't think so with Publishing Partner, which takes full advantage of the ST's user friendly GEM environment. It is so user friendly and easy to understand, most people find they can produce their first document without even opening the fully comprehensive 159 page manual which accompanies the program. Using the mouse to manipulate the self explanatory pull down menus and windows, you can be up and running in no time, creating a variety of documents quickly and easily. In addition, the flexibility of Publishing Partner allows you to choose between mouse or keyboard operation, whichever suits your personal preference. Although simple to use, Publishing Partner is by no means a simple program. Quite the contrary. Behind the user friendliness of GEM, lies a most complex and powerful publishing tool. The combination of Publishing Partner and Atari's powerful low-cost ST computers has brought an affordable alternative to the desktop publishing systems currently available from Atari's competitors.

5 THOUSANDS OF TYPE STYLES

This is no exaggeration. Unlike most other desktop publishing software packages, which offer you 2 or 3 different fonts, Publishing Partner gives you true flexibility of over 4,000 type styles per font. Publishing Partner offers you 14 variations of each font:

BACKSLANT	**MIRROR**	**STRIKE THROUGH**
BOLD	**OUTLINE**	**TALL**
DOUBLE U/L	**REVERSED**	**UNDERLINE**
ITALICS	**SHADOW**	**UPSIDE DOWN**
LIGHT		**WIDE**

And you can 'mix and match' any number and combination of styles to your own requirements. The total number of possible permutations is over 4,000. And that's not all, each style can be used in any one of 216 sizes in one point increments from 1 point to 216 points! All this is achievable on an unexpanded 520ST with just 512K RAM! Other competing packages require 1024K RAM just to get the larger sizes above 72 point and still can't match all of the variations available.

Publishing Partner is a trade mark of SoftLogik Corp™.

6 WORD PROCESSING

Publishing Partner contains the power and features that you would expect to find on a dedicated word processing package. In addition it includes facilities which a professional typesetting machine would offer. For example the program can cope with 216 different type sizes, with over 4,000 style variations of each one. The following are some of the facilities you will find within the capabilities of Publishing Partner:

* Adjust margins for any column
* Change block to uppercase or lowercase
* Change margin indents
* Character spacing from -128 to +127
* Copy text to and from the buffer
* GEM based
* Import and export files
* Insert and delete pages
* Justifies right/left/centred as you type
* Justifies to the character/word
* Kerning from -128 to +127
* Line spacing/leading in ½ points from -64 to +57
* Link columns together
* Macros
* Manual Hyphenation
* Merge files together
* Optional grid & ruler display
* Over 4,000 type style variations of each font
* Page numbering
* Pica, Inches or Centimetre measuring system
* Print to paper vertically or horizontally
* Read & merge any ASCII file
* Search and replace
* Tabs for charts/tables
* Unlimited headers & footers
* User definable page size
* User variable superscript/subscript characters

7 PAGE LAYOUT

Whatever you require, custom logos, unique borders, unusual letterheads etc. Publishing Partner is your solution. After all, it was specially designed by professionals who realize that there's more to your computer than just typing letters.

* Accurate to 3 decimal places
* Adjust character size from 1 to 216 points
* Auto text flow between columns
* Change columns on finished page
* Display 15%-1500% of original size
* Display actual size
* Display multiple pages/rulers/text routing
* Layout multiple columns
* Print to disk
* Set auto text routing
* Snap to guides
* Superimpose text on tint or tint on text

8 GRAPHICS

Not only can you load any Degas, N-Vision, Neochrome or digitized pictures into your Publishing Partner files, you can also enlarge or reduce them for an exact fit. Or, you can copy just a section of a picture and then paste it into your document as many times as you want. You can still go back and resize it at any time or crop it to delete unwanted areas.

* 3 types of line ends, square/rounded/pointed
* 7 types of line which are all editable.
* 7 weight lines ranging from ½pt to 6pt
* 40 fill patterns each with a border option making a total of 80 fill options
* Ability to produce separations for 2 colours
* Copy graphics to and from clipboard
* Cut, paste, copy or crop graphics
* Import graphics from third party graphic programs such as Degas, Neochrome, N-Vision or any art program that produces compatible ASCII files
* Select colours to use and print with
* Toolbox features include: Circles, ellipses, boxes, rounded corner boxes, horizontal/vertical lines, diagonal lines, polygons and free hand drawing

9 OUTSTANDING OUTPUT

Publishing Partner is a unique program with a large variety of printer drivers for both laser and dot matrix printers. Dot matrix is supported in both 80 column and 132 column mode, so you could even produce a tabloid width newspaper (11½" wide) on a wide body printer. Drivers are also available for the new technology 24 pin dot matrix printers which can give a fine resolution of 360×360 compared with laser printers at 300×300. The current drivers (included FREE with the program) are as follows with new ones being written on a weekly basis:

9 PIN DOT MATRIX (Various Res)	
* Atari SMM804	* Mannesman Spirit-80
* Blue Chip M120/10	* NEC 8023
* Cal Abco Legend 880	* Panasonic KXP
* C Itoh Prowriter	* Star Gemini & SG
9 PIN DOT MATRIX (240×216 Res)	
* Citizen MSP	* Mannesman Tally MT
* Epson RX/FX/EX	* Star NX/SD
18 PIN DOT MATRIX (240×288 Res)	
* Okidata Microline 292	* Okidata Microline 293
24 PIN DOT MATRIX (360×180 Res)	
* C Itoh C-715	* Epson SQ
* Epson LQ	* Toshiba P321
24 PIN DOT MATRIX (360×360 Res)	
* NEC P6/P7	* NEC XL new series

LASER PRINTERS (300×300 Res)

* Centronics PP-8 in Epson or H.P. Laserjet mode 1½Mb RAM
* Any other H.P. Laserjet compatible with 1½Mb RAM
* QMS PS800 or Apple LaserWriter - Postscript
* Any other Postscript compatible printer

SEEING IS BELIEVING

We have already told you how powerful Publishing Partner is and how easy it is to use. However, the recipients of your finished work will only be able to gauge the package by the end results of your work. The true test of any Desktop Publishing software is in the output it produces and it is here that Publishing Partner excels. With its graphics capabilities and the thousands of type styles it produces, there is no end to the design possibilities which you can create. And, with drivers for a variety of printers, including Postscript at no extra charge, you can be sure that you will be able to output in the quality your work deserves. The output quality is truly remarkable. But don't just take our word for it. Before you go any further with your enquiries into Desktop Publishing, return the coupon below for samples of Publishing Partner's output on a variety of printers. We will also send you details and prices of each printer as well as further information on Publishing Partner and the Atari range of ST computers. We don't expect you to take our word for it. We want you to see for yourself how Publishing Partner outshines the competition. So, complete and return the coupon today. Remember, SEEING IS BELIEVING!

OFFICIAL UK VERSION

The official UK version of Publishing Partner has a pound (£) sign as a standard part of its character set. Other versions have also been imported unofficially from the USA and have a dollar ($) sign instead of a £ sign. These versions will not be supported by the UK distributors or their dealers. The UK version also contains clip art, different fonts and a full range of printer drivers. Ensure that you buy the official UK version, not an unofficial import with incorrect characters.

£139.00

(+VAT=£159.85)

Publishing Partner is available from Atari ST Dealers throughout the UK. If your local dealer does not have Publishing Partner in stock, it can be obtained by mail order (Postage & Packaging free) from:

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I already own an Atari ST ☐

DTP

TERRORPODS

Product: Terrorpods
Price: £24.95
Supplier: Psygnosis, First Floor, Port of Liverpool Building, Liverpool L3 1BY.
Tel: 051-236 8818

PSYGNOSIS is rapidly building up a reputation for producing superb ST games software. Its latest product, Terrorpods, is another stunning piece of work, following in the footsteps of Barbarian which wowed games players a couple of months back.

Terrorpods features amazing graphics and digitised sound effects that will blow your socks off – boot up the game, turn the sound right up and you'll think world war three is taking place right in your living room!

The action is a futuristic arcade adventure staged within a large crater on the bleak and barren asteroid Colian. This inhospitable place, way out on the edge of System 7 on the other side of the galaxy, is immensely rich in rare minerals.

Many mining colonies have been set up to exploit the asteroid's natural resources. There is detonite, a powerful explosive; quanza, an energy giving crystal with the almost magical properties of regenerating damaged molecular structures; zenite, a metallic ore capable of storing powerful magnetic fields; and aluma, the hardest known metal.

There are 10 colonies in all, and each has its own fuel dumps, resource centres, mines, component manufacturing centres and radio beacons. Short range shuttles are used to transport the minerals and components between the settlements and they go about their business under automatic control.

Suddenly, a massive Empire Mother Ship – the most feared craft in the universe – appears and holds a geostationary orbit above the crater. The Empire plans to take control of Colian and enslave all its inhabitants.

Spoilers and the dreaded terrorpods descend from the Mother Ship and set about destroying the ground-based installations. The terrorpods are large, menacing, mechanical monsters of immense destructive power that walk about the surface on three spindly legs.

This is where you come in – your task is to defend Colian from these marauding monsters. Your craft is a Defence Strategy Vehicle (DSV) which also carries a small trading drover on board.

Your view is out of the main window of the DSV and you can see the many installations on the crater floor and the shuttles buzzing between them. The crater rim can be seen in the distance and the Empire Mother Ship hangs in the sky above.

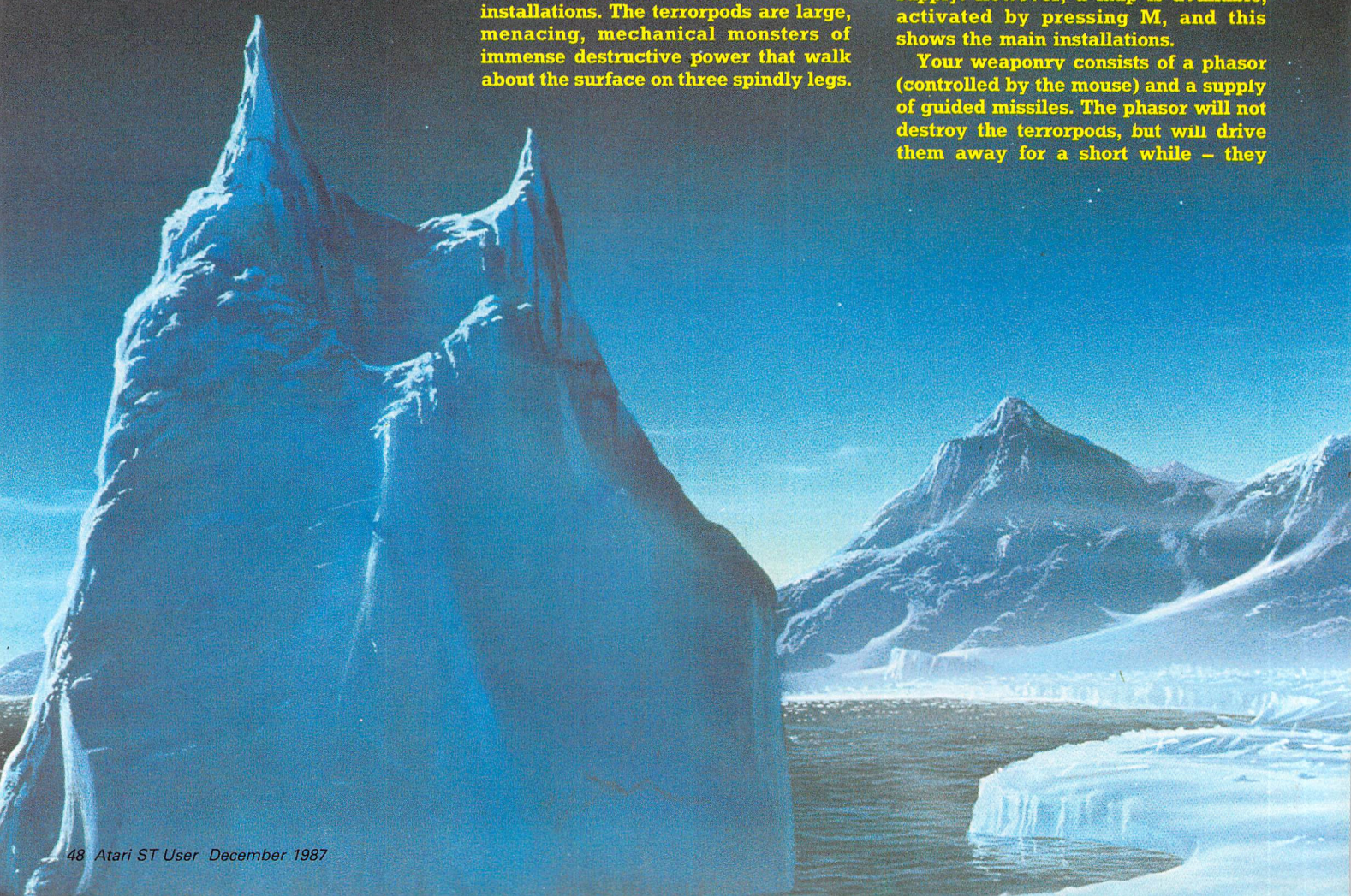
Around the edge of the window are your instruments, providing vital information on the state of your resources, energy banks, fuel and so on.

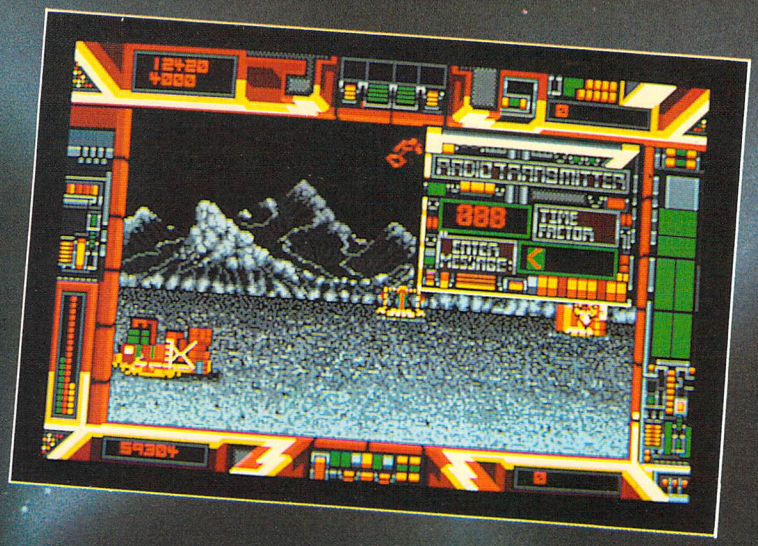
A cursor can be moved about the window and pointing at an object and pressing the left mouse button reveals its function.

The function keys transport you between the 10 mining colonies and you can move your DSV around the crater using the mouse or cursor keys.

Exploring the surrounding area consumes fuel and you have a limited supply. However, a map is available, activated by pressing M, and this shows the main installations.

Your weaponry consists of a phasor (controlled by the mouse) and a supply of guided missiles. The phasor will not destroy the terrorpods, but will drive them away for a short while – they





appear to melt down to a small disc which is then transported up to the mother ship.

A missile can be used to permanently wreck a terrorpod, leaving a battered, empty hulk standing on the crater floor.

Both the phasors and missiles require the powerful explosive, detonite, and you have only a limited supply. The phasors require very little so you're free to blast everything in sight, but the missiles, require large amounts for their warheads and after two shots will have consumed most of your stock. So you must pick your targets carefully.

When a missile is activated a small launch control screen scrolls into view and you must keep an erratic pair of pointers on target while a timer counts down to zero. It's all too easy to miss – and this wastes valuable detonite.

Your DSV isn't simply a weapon of destruction – it can be used to repair installations damaged or destroyed by terrorpods. An energy beam created from your store of quanza crystals restores a damaged area to working order when directed at it.

At first sight, Terrorpods appears to be a shoot-'em-up and it's great fun going round blasting everything in sight. However, you won't last very long playing like this as the fuel and detonite will soon run out.

What Psygnosis has done is to introduce a trading facility and this adds far more depth to the game. You start off with a supply of fuel, detonite, quanza, zenite and aluma. You can send out a small drover from your DSV to make contact with the mining colonies and various installations, some of which may be willing to trade items with you.

For instance, a fuel refinery may have a surplus of fuel and a dearth of zenite. You can then exchange some of your zenite for fuel when your tanks are nearly empty.

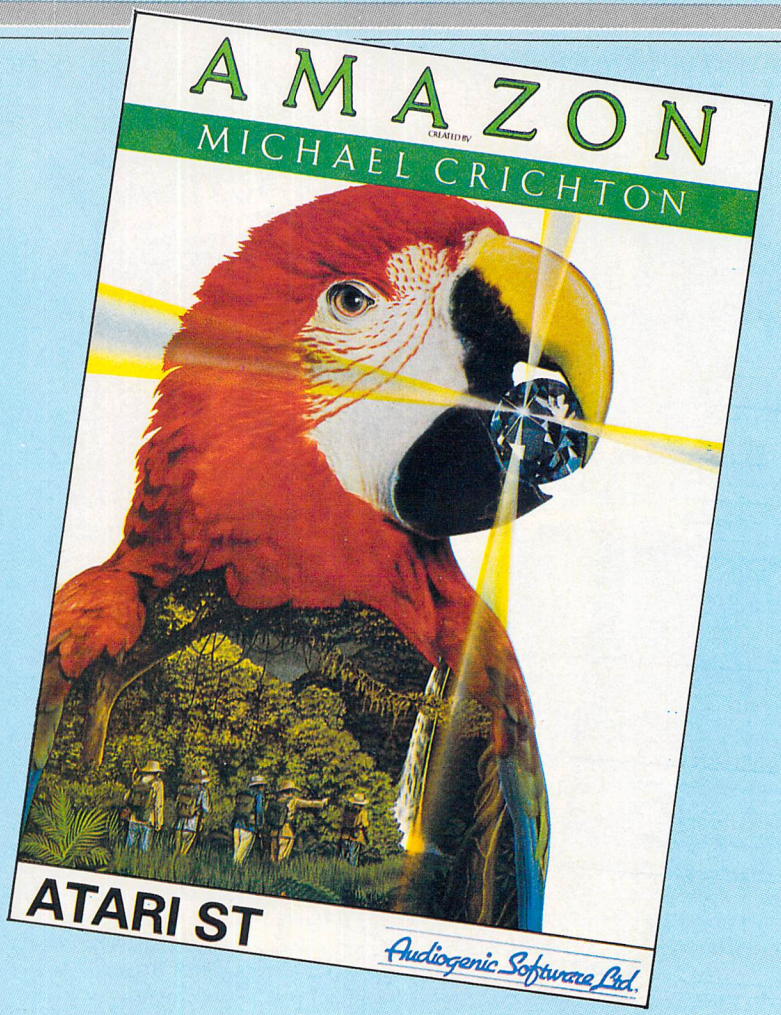
Every item has an exchange rate or value and this will vary from installation to installation. So, aluma is relatively cheap to an aluma mining colony, yet valuable to a detonite storage depot. This means you can buy goods cheaply at one place, travel to another and sell them where they are relatively scarce and very pricey.

This enables you to build up your supplies when they are low. Your detonite for the missile warheads is rapidly depleted and you'll need to trade to buy more. Be warned though – while you're busy trading, the Mother Ship is constantly blasting you and the terrorpods are destroying your mining installations.

The graphics and sound effects are among the best you'll see on the ST and I can thoroughly recommend Terrorpods – it's a superb game. My only complaint – and this is true of most ST games – is that it is a bit pricey.

Julie Boswell

Sound	*10*
Graphics	*10*
Playability	*10*
Value for money	*9*
Overall	*10*



Jungle adventure

Program: Amazon
Price: £19.95
Supplier: Audiogenic, 12 Chiltern Enterprise Centre, Station Road, Theale, Berkshire RG7 4AA.
Tel: 0734 303663

AMAZON, a text and graphics adventure in the traditional mould, is not a new game. In fact I first saw it on the market for the Commodore 64 way back in 1985. Now it has been converted for the ST.

As Amazon was written by science fiction author Michael Crichton, who is perhaps better known for such novels as The Andromeda Strain and The Terminal Man and his films, Coma and The Great Train Robbery, I had fairly high expectations.

Unfortunately, Amazon, while quite a good adventure, never lives up to its initial promise.

The game gets off to an inauspicious start. Once the program has loaded, the title screen appears – simply a list of credits. Although the instructions say that pressing G will commence the game, Amazon stubbornly refuses to even consider beginning until a lengthy tune has finished playing.

The adventure opens in the communications control room of National Satellite Resource Technology, a hush-hush research group for which you work. An anxiously awaited satellite transmission from the NSRT Amazon field team is just coming in.

As you scan the three separate views of the transmitted scene, it is clear something has gone horribly wrong. The bloodstained bodies scattered around the jungle can mean only one thing – the entire Amazonian team has been massacred.

And even as you look, a warpaint-daubed face fills the monitor screen, looming closer before the transmitted scene goes blank.

Your boss, Murphy, immediately summons you into his office to tell you he is assigning you to investigate the murders. Refuse the assignment or dither about in Murphy's office and you're kicked out of the game and you're again faced with the lengthy musical introduction unless you had the foresight to save the game beforehand.

During the short session with Murphy, another slight game weakness revealed itself. Among other things, he asks if you're scared of going on the mission. Being a bit of a smart alec (as well as a crafty games tester), I answered his question with the totally illogical response, "macaroons" to which the game came back with "Murphy nods understandingly".

Now either Murphy knows something about macaroons that I never suspected, or else this is a bit of sloppy programming. In fact, Murphy nods understandingly at any response to that particular question.

Your immediate task is to fly over to Miami where you must contact a professor Beneker of the Archaeological Institute. On arrival at Miami airport, a taxi driver offers to take you, but suggests that since it doesn't open until later, you might be better going to a hotel.

If you accept his advice, you end up being mugged by him and it is back to square one again. No hint of a warning is given, which strikes me as a little unfair.

However, if you refuse the cabbie's advice, he'll take you to the institute without further hesitation. But it looks like you're too late anyway – an ambulance and police cars are parked outside when you draw up. It turns out the Prof has been murdered. Somebody is one step ahead of you.

Inside the institute, you can rummage around the Professor's office for anything useful. What you will certainly find handy is a parrot called Paco. When you open his cage, he flies to your shoulder and remains there.

If at any time during the game you should require a hint, simply typing PACO will cause the parrot to assist, though he's not always right. In addition, the documentation contains some coded clues.

Back at the airport, you're given a pretty substantial amount of equipment for your next stage. Before Paco can squawk, "Who's a pretty adventurer, then?" you've parachuted into the heart of the Amazon jungle.

One of the less pleasing elements of Amazon is the slowness at certain times, generally at major turning points in the adventure. Here, either a piece of text is printed slowly down the screen or a snatch of music issues forth and continues to burble away until it is good and ready to let you continue. There's nothing to do but sit and wait it out.

The graphics are fairly simple pictures of certain locations and events. Despite its purported authorship, the textual descriptions are somewhat terse, although there are some signs of originality in the plotting and execution. The command parser is reasonably good and the vocabulary adequate.

While this two-disc adventure is entertaining enough fare, it doesn't come up to the standard of Perry Mason or Fahrenheit 451, two other recent ASL adventure releases. Worth a play though.

Bob Chappell

Presentation	***6***
Atmosphere	***5***
Puzzlement	***7***
Value for money	***5***
Overall	***6***

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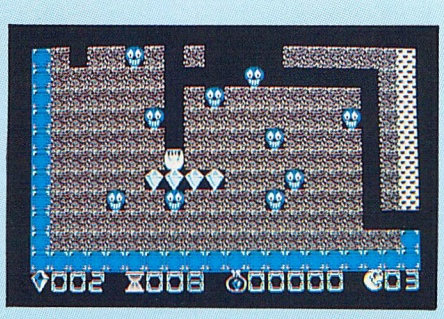
Miner arcade hit

Program: Skull-Diggery
Price: £19.95
Supplier: Nexus, DSB House, 30 The High Street, Beckenham, Kent BK3 1AY.
Tel: 01 658 5723



DON'T let's beat about the bush. Despite its title, this is really a near-clone of our old friend Boulder Dash (which in turn was not a million miles away from the original Dig-Dug), with a touch of Gauntlet and Pac-Man thrown in for good measure.

Still, there's rarely anything new under the sun and in my book there's nothing wrong with a little harmless imitation provided the look-alike has something new to offer – and this one has.

Skull-Diggery has you tunnelling away through no less than 100 caves. In each one there are treasures to be collected, creatures to be avoided and some mind-bending puzzles to be solved.

At first sight the differences between this game and Boulder Dash are marginal. The little foot-tapping figure of Rockford is replaced by what looks like a lecherous Pac-Man – a grinning, black-eyed, chubby head which turns to face in one of the four directions it can move (north, west, south and east).

Instead of boulders there are skulls, but disappointingly, no satisfying crash as they come tumbling down when undermined.

There are more creatures than you'll find in Boulder Dash and they are also far better graphically animated. In places the action gets very frantic as nasties come pouring out in hot, if not always intelligent, pursuit.

Where this game really scores is in its simultaneous two-player mode – Gauntlet fans please note. In this, you and a pal can really set to work with a vengeance, working on a split screen either as a team or in competition against each other.

If at any time the going gets too contentious, either of the players can be exterminated by a single keypress – the player's character that is, the game's not that competitive!.

There are many hazards within the caves including exploding crystal bats and crazy ghosts that follow your excavated paths, creeping vines and stone walls – breachable by an explosion.

Also featured are undiggable earth, walls that react to being hit by a falling object and escape tunnels that appear when you've collected a required number of diamonds. An extra life is awarded on gobbling up any cup-cakes found in the caves.

The game can be played with joystick or keyboard (two-player mode offers play with two joysticks or joystick and keyboard) and you can start on any of five different screens up to screen 16.

For some reason, the programmers seem to have forgotten to turn the disc drive off when the game has loaded. Turning the drive off manually didn't seem to interfere with the game so you may want to do the same unless you find a whirring drive undistracting.

Like its predecessor, Skull-Diggery turns out to be highly addictive and, with 100 screens to conquer, it's going to take a long time to complete, even in two-player mode.

Harmless, contagious, dotty fun – definitely worth buying.

Bob Chappell

Sound	***7***
Graphics	***8***
Playability	***9***
Value for money	***9***
Overall	***9***

A good bet

Product: Vegas Gambler
Price: £24.95
Supplier: Eidersoft, The Office, North Okendon, Upminster, Essex. RM14 3QH
Tel: 0708 856468

HAVE you ever had the urge to fly to Las Vegas and blow all your hard-earned savings in one wild night in a casino? A much less painful way of doing just that is now available for ST owners.

Vegas Gambler, from California Dreams, is a suite of four programs – Blackjack, Poker, Roulette and a Slot machine. A 43-page manual is included which gives information not only on running the program, but also about the rules of the various games.

The graphics do full justice to the ST's capability – the picture playing cards have got to be seen to be believed. The sound is very well done too. When moving between gaming rooms you are accompanied by the swinging strains of Scott Joplin's ragtime melodies.

A lot of effort has been spent by the writers to provide a high degree of realism. When playing the slots, you have to pick up a coin using the mouse and pointer, place it in the slot and then pull the handle. If you let go of the coin before you've reached the slot it falls to the floor as it would in real life.

The slot machine is of the multi-winline variety. For each coin you spend, up to a maximum of five at each go, you get one chance of winning.

Blackjack is better known as Pontoon or 21. The object of the game is to get a hand with a higher face value than the dealer's without going over 21.

Roulette is the fastest way of winning – or losing – your money, even with the house limit of $200. As you watch the wheel spin, waiting for the ball to drop into a numbered slot, you can feel the beads of perspiration break out on your forehead.

The only game which disappointed me was Poker. Although well programmed with good graphics, it's the slot machine version which can be seen in many arcades. You have only one chance to better your hand and there is no raising of bets.

When you start the game you are given $500. Your winnings and losses are carried with you between rooms – so if you win $200 on the slots and decide to go to the Blackjack tables you will take $700 with you.

Vegas Gambler is a nice relaxing way to spend an evening. All the excitement of Caesar's Palace is there – but in the morning you are still solvent and you don't have to drive off into the sunrise in your Volkswagen Golf.

Ken Hughes

Sound	***9***
Graphics	***9***
Playability	***9***
Value for money	***7***
Overall	***9***

VIP PROFESSIONAL

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- VIP is currently available for the AMIGA, ST and APPLE IIc, IIe and IIGS.

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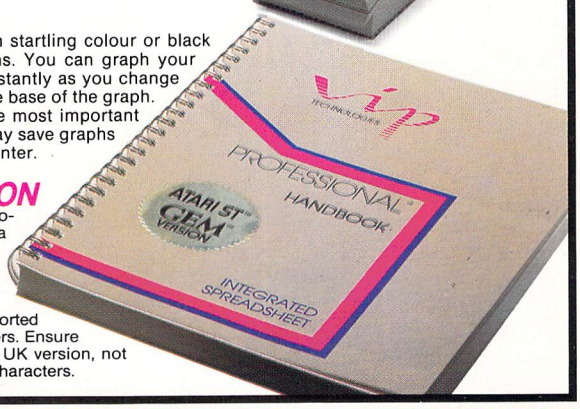
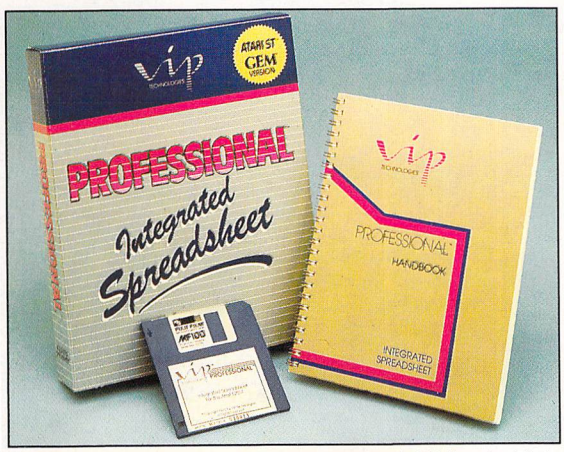
The official UK version of VIP Professional has a pound (£) sign as a standard part of its character set. Other versions have also been imported unofficially from the USA and have a dollar ($) sign instead of a £ sign. These versions will not be supported by the UK distributors or their dealers. Ensure that the VIP you buy is the official UK version, not an unofficial import with incorrect characters.





VIP Professional is available from Atari ST Dealers throughout the UK. If your local dealer does not have VIP in stock, it can be obtained by mail order (P&P free) from:

SILICA SHOP Ltd, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX Tel: 01-309 1111

All comparisons made to Lotus 1-2-3™ are to version 1A. E&OE

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Another brick in the wall

Product: Addictaball
Price: £14.95
Supplier: Alligata Software, 1 Orange Street, Sheffield S1 4DW.
Tel: 0742 755796

Product: Impact
Price: £14.95
Supplier: Audiogenic Software, Winchester House, Canning Road, Harrow HA3 7SJ.
Tel: 0734 303663

A HISTORY lesson for our younger readers: In the beginning there was Breakout. Then came Super Breakout. Many years later the software houses, having learned their lesson from the record industry, decided to re-release the old original and call it Arkanoid.

This proved to be so popular everyone wanted to jump on to the bandwagon and a follow-on program was required – hey presto! – let's revive Super Breakout.

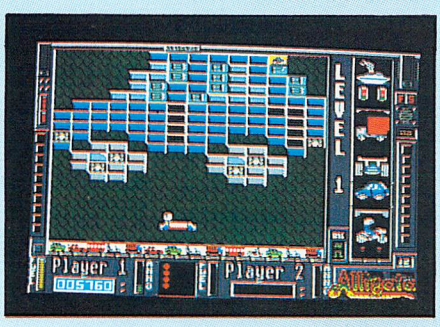
True, the latest releases from Alligata and Audiogenic are as far removed from Super Breakout as Star Glider is from Space Invaders, but the theory still holds good.

In Alligata's Addictaball you have control of a bat and are expected to keep a ball in play, knocking bricks out of various objects. You can acquire laser guns plus ammunition and a thruster drive for your bat with fuel along the way. These accessories are essential to completion of the game and you are given five lives to complete the task.

The base line at the bottom of the screen is closed initially so the ball will bounce off it and return to the playing area. Certain bricks release fireballs when hit and if these aren't intercepted by your bat they will burn holes in your lower defences – all eye watering stuff!

Most of the bricks are as harmless as the common or garden red house variety – others fight back. There are some tasty black ones bearing a skull and crossbones: These will take a section of your base line with them as they scroll off the bottom of the screen.

Others release extra fuel or ammunition, rebuild a section of the lower wall or halt the scrolling for a short while. One particularly unpleasant species releases little red or green video nasties that will destroy your bat if they come into contact with it – they can be shot down if you have enough ammunition.



Addictaball

Each level has a theme associated with it. Level one is transport orientated, the second concentrates on sport, level three is the flags of all nations and so on. The bricks form shapes that match the theme – cars, lorries, bikes, footballs and pool tables or whatever.

All you have to do is catch the fireballs, shoot the nasties, avoid approaching bricks and other moving objects and dodge the radio. The radio?

Yes, there's an old-fashioned radio – actually it's a secret hyperspace transporter according to Alligata – floating down the screen at odd places in the game.

It's invincible from below, but if you can arrange for your ball to hit it enough times on the top of its bakelite case, you will be miraculously transported to the next stage of your present level.

Impact, from Audiogenic, arrived in the *Atari ST User* office on a wintery Thursday morning. I loaded the disc, turned the monitor sound to full and was immediately surrounded by the entire *Atari ST User* staff.

If I could have found a way of connecting a coin slot to my ST I would now be driving round in a Porsche Turbo instead of my Citroen 2CV. It was only by imposing extreme self-discipline that this issue reached the news stands at all.

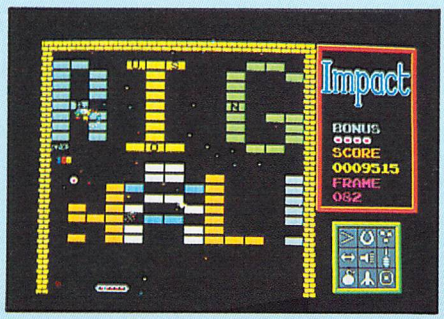
Impact is more like the original Breakout, but with additions. As well as the brick-built shapes, there are many varieties of alien floating around the screen. They are mostly harmless – you can hit them with your bat and kill them for 100 points, or simply ignore them.

There are only two ways in which you can lose a life – miss the ball with your bat or commit suicide by blasting a reflective brick with your laser and catching the beam on its return journey. Unfortunately you don't know it's a reflective brick until you hit it.

Certain aliens drop tiny yellow stun bolts and if one of these touches your bat you are immobilised for about one second. – and the ball can travel quite a long way in that time.

You start the game with five lives and your bat. An extra life is gained with each 50,000 points or, on some screens, by knocking out bricks with letters on them to spell BONUS in the right order.

As you destroy the bricks, some of them will release a yellow token which floats down the screen. Collect them with your bat and you can trade them in for extra weapons. One token buys you a slow ball, two gives you a magnetic bat and so on.



Impact

If you get through a screen with any unused tokens they are taken off you and an extra 1000 points per token is added to your score. If you lose a life, any weapons bought are lost, but unspent tokens are still available.

Impact comes with 80 predefined screens. If you get through these there are another 48 which you can design yourself.

After every 10 screens you are given a password which, if entered at the start of the game, takes you straight to the level where you were given the code.

There are sound effects in both games, but Impact's are really stunning – each time the ball bounces off an object a set of musical notes is played – a case of striking the right chord. The visual displays make excellent use of the ST's astounding graphics.

If you liked Arkanoid you'll love Addictaball and Impact – they don't need strategy, planning or complicated game play, just pure, unadulterated, mindless violence.

Peter Hartley

Addictaball	
Sound	*7*
Graphics	*9*
Playability	*8*
Value for money	*10*
Overall	*9*

Impact	
Sound	*10*
Graphics	*9*
Playability	*10*
Value for money	*10*
Overall	*10*

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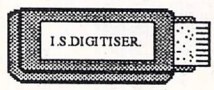

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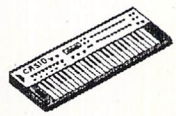

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Rolling along . . .

Stephen Hill shows how to multiply and divide in Part 5 of his guide to assembly language programming

IN last month's article we ended with a small assembly language program which printed any number between 0 and 15 as a single hexadecimal digit.

I'll now demonstrate how this simple routine can be expanded to enable us to output the entire contents of a register to the screen.

In order to incorporate last month's procedure into the new routines, I will be making extensive use of the BSR, or branch to subroutine, instruction.

This has the same effect as using the GOSUB command in Basic. Like GOSUB it ends with a Return instruction, which we have already encountered in the form of RTS (return from subroutine). So to call a subroutine at location *label* we enter:

```
BSR label   GOSUB label in Basic
```

One thing you need to remember about the BSR instruction is that it only works for labels which are less than 32k away from the calling routine. If you want to access a subroutine any further away, or a specific address in memory, you would have to use a JSR – Jump to SubRoutine instruction. So:

```
JSR 1000
```

will jump to a subroutine starting at location 1000.

Let's start off with an example which will illustrate the techniques to be used in our program. If we want to convert the binary number:

1000110000010110

into hex, we first split it up into groups of four:

1000 1100 0001 0110

and then replace each group by a single hexadecimal digit:

1000 = 8
1100 = C
0001 = 1
0110 = 6

This is 8C16 hexadecimal.

Now we can write a small 68000 program to automate this process. Remember we already have a routine to print out the hexadecimal character contained in the four least significant binary digits – we developed it last month.

All we have to do is to move each of our groups of four in turn into the end position, then we can simply print them out using the routine from last month. Figure I shows how it works.

One snag with this system is it generates the digits in reverse order. Therefore our number would be printed out back to front – that is, 61C8 instead of 8C16.

I'll show you how we can solve this problem later, but in the meantime, have a think and see if you can work it out for yourself.

In Figure I we shifted each number four places to the right and then fed in zeros from the left. This type of operation is known as a logical shift and is performed by the 68000 instructions LSR – Logical Shift Right, and LSL – Logical Shift Left. Figure II shows some more examples of these instructions.

As you can see, the actions of the instructions LSL and LSR directly correspond to either a multiplication or a division by two respectively. It is important to note, that if the numbers we are using are too large, an error known as an overflow will occur.

The number following the LSR in the examples is used to denote the number of times the shift operation should be performed. This is the shift count and can be either entered directly in the instruction, or contained in a data register as follows.

```
LSL #2,D0
```

This shifts the contents of D0 two places to the left while:

```
LSL D1,D2
```

shifts the contents of D2 by the contents of D1.

Although the logical shift operations work fine for unsigned numbers, they fall down rather badly if you try to use them to perform arithmetic calculations with negative values.

The 68000 microprocessor provides you with a separate set of arithmetic shift instructions called ASL and ASR which can be used with such numbers. These use exactly the same format as their logical equivalents, and are commonly used as a fast way of multiplying or dividing a number by a power of two.

There is one final shift operator available to the programmer in the form of the rotate instruction. The main difference between this operation and a logical shift is any digits which are shifted off one end of the number are immediately fed back in from the other side, as in Figure III.

We now have enough information to enable us to make an initial attempt to implement our routine:

```
start   MOVE.L #$8C168C16,D2
        MOVE.L #7,D1
hex     MOVE.L D2,D0
        BSR digit
        LSR.L #4,D2
        SUB.W #1,D1
        CMP.W #0,D1
        BGE hex
        RTS

digit   AND.L #15,D0
        CMP #9,D0
        BLE number
        ADD #7,D0
number  ADD #48,D0
        MOVE.W D0,-(A7)
        MOVE.W #2,-(A7)
        TRAP #1
        ADD.L #4,A7
        RTS
```

This will produce all the hexadecimal digits correctly, but they will be in the wrong order. Try it for yourself and see. ▷

11110000_2 $F0_{16}=240_{10}$	LSR 1_{10}	$=01111000_2$ $78_{16}=120_{10}$
00110001_2 $31_{16}=49_{10}$	LSR 2_{10}	$=00001100_2$ $0C_{16}=12_{10}$
00001110_2 $0E_{16}=14_{10}$	LSL 1_{10}	$=00011100_2$ $1C_{16}=28_{10}$
11100000_2 $E0_{16}=224_{10}$	LSL 2_{10}	$=10000000_2$ $80_{16}=128_{10}$ overflow

Figure II: Logical shifts

1000 1100 0001 0110 8 C 1 6	The first number is already in place so print 6
0000 1000 1100 0001 0 8 C 1	Shift the number four places to the right and print 1
0000 0000 1000 1100 0 0 8 C	Shift number again to bring C into line and print it
0000 0000 0000 1000 0 0 0 8	Repeat the operation again and print 8

Figure I: Generating hexadecimal numbers

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Operation	Old value	Result
ROL 1	10000101	00001011
ROL 2	11110000	11000011
ROR 1	10000101	11000010
ROR 2	11110000	00111100

Figure III: Rotates

This uses the *digit* subroutine from last month's article.

In order to get our routine to print out the number the right way around, we will need to reverse the hexadecimal digits in some way before we output them to the screen.

Probably the simplest solution is to use the fact that any data you place on a stack is taken off in reverse order.

Usually this property is just a pain in the neck, but in this case it is rather useful. All we have to do is to push each shifted number on to the stack and then use a separate loop to generate our digits in the correct order:

```
start   MOVE.L #$8C168C16,D2
        MOVE.L #7,D1
hex     MOVE.L D2,D0
push    MOVE.W D2,-(A7)
        LSR.L #4,D2
        SUB.W #1,D1
        CMP.W #0,D1
        BGE HEX
        MOVE.L #7,D1
output  MOVE.W (A7)+,D0
        BSR digit
        SUB.W #1,D1
        CMP.W #0,D1
        BGE output
        RTS

digit   AND.L #15,D0
        CMP #9,D0
        BLE number
        ADD #7,D0
number  ADD #48,D0
        MOVE.W D0,-(A7)
        MOVE.W #2,-(A7)
        TRAP #1
        ADD.L #4,A7
        RTS
```

You may be wondering why the instruction at *push* used the extension .W when the *digit* routine only needs to access the end four binary bits of the number. The reason I didn't just push the byte containing these digits on to the stack was that you can only perform operations using words on an even address.

Therefore anything which can make register A7 odd, such as the instruction MOVE.B (A7)+,D0, will invariably cause the ST to crash when followed by the MOVE.W D0,-(A7) in *digit*.

As it stands, the program works perfectly well. There is, however, a way of simplifying it considerably using the decrement and branch instruction DBRA. Its action is identical to that of this sequence:

```
loop .
     .
     .
     SUB.W #1,D6
     CMP.W #0,D6
     BGE  loop
```

These can be replaced by the single instruction:

```
loop   .
       .
       .
       DBRA D6,loop
```

Here is an example of the use of the DBRA instruction in a simple loop:

```
       MOVE.W #15,D3     D3=15
loop   MOVE.W D3,D0      D0=D3
       BSR digit         GOSUB DIGIT
       DBRA D3,loop      D3=D3-1
                         IF D3>=0
                          THEN LOOP
       RTS
```

This prints out all the hexadecimal digits from 0-F in reverse order.

In addition there are also a wide range of other decrement and branch instructions. These perform another test before checking the contents of the data register, and are equivalent to the following four lines of code:

```
loop  .
      .
      .
      Bcc exit
```

where *cc* can be any condition code, such as NE or GE:

```
SUB #1,D5    D5=D5-1
CMP #0,D5    Compare D5 with zero
BGE loop     IF D5>=0
              THEN GOTO loop exit
.
.
.
```

This is exactly the same as:

```
      loop  .
            .
            .
            DBcc D5,loop
      exit
```

● *Next month we will use some of these instructions to great effect when we discuss the ST's screen and show how it can be manipulated from within your own 68000 assembly language programs.*

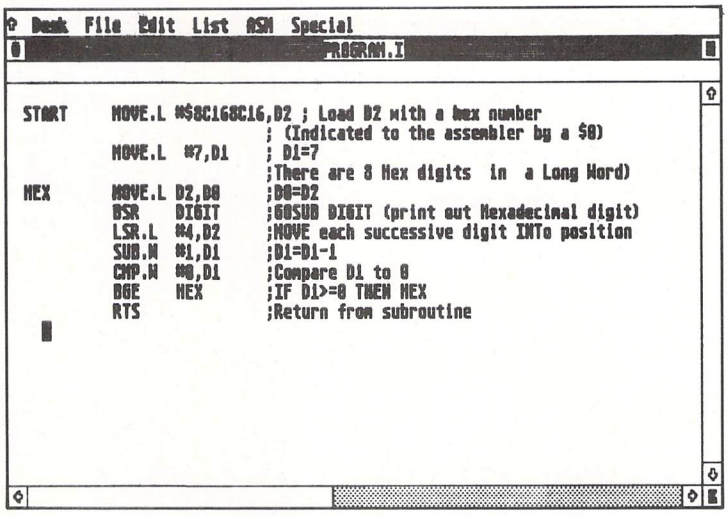


Figure IV: Printing a hexadecimal number – but in reverse order

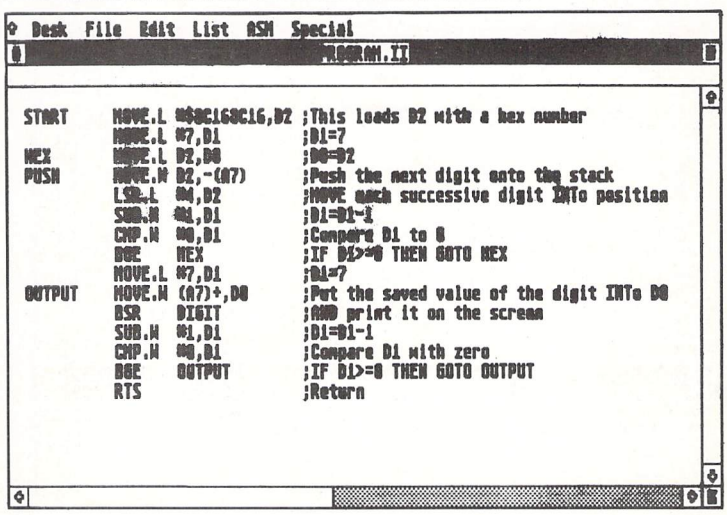


Figure V: Using the stack to print a hexadecimal number in the right order

Calligrapher

The Document Processor

This completely new word processor has been written specifically for the Atari ST, running under GEM, and contains many features only previously found on desk top publishing programs. However, Calligrapher goes further than any of these by providing an incredibly comprehensive range of word processing facilities.

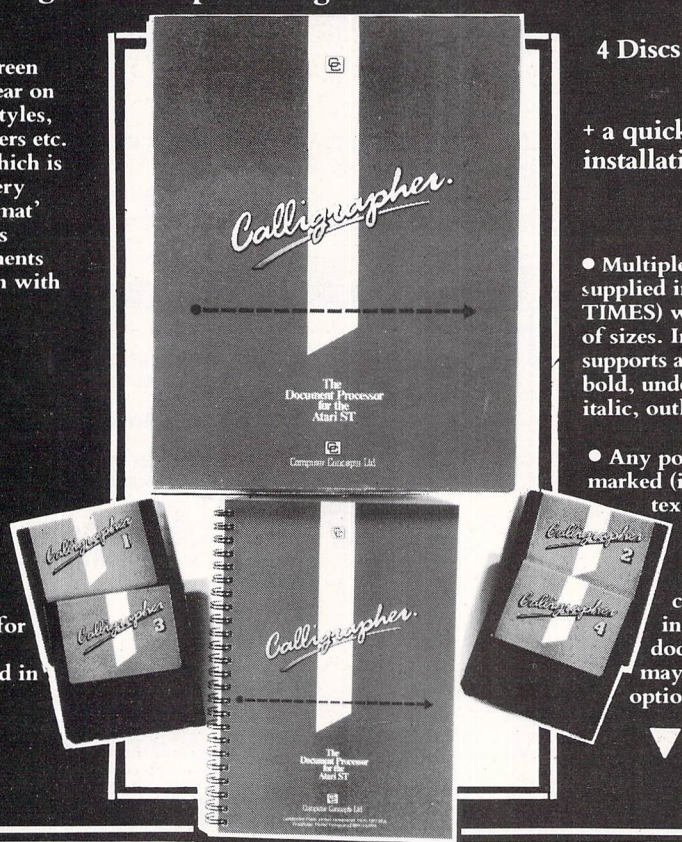
Package includes

Professionally written 210 page manual,

4 Discs

+ a quick reference card and installation instructions.

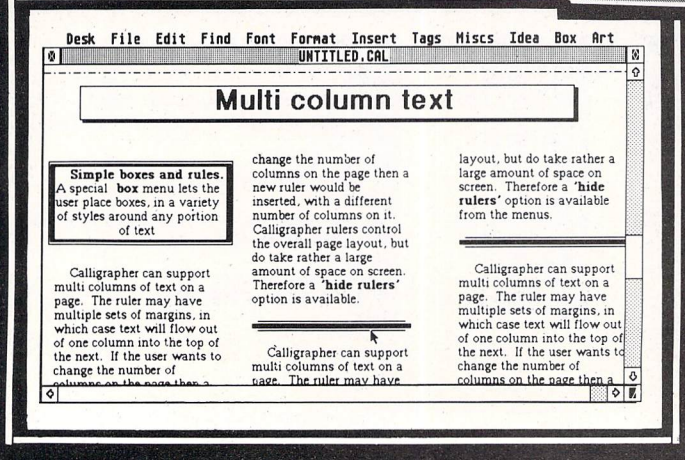
Calligrapher is a pure WYSIWYG document processor. It shows on screen the document exactly as it will appear on the paper, including different font styles, graphics, page breaks, headers, footers etc. It supports multiple column text which is automatically re-formatted after every change. This means there is no 'format' key to press and ensures the screen is always up-to-date. Up to ten documents can be held in memory at once, each with their own window.

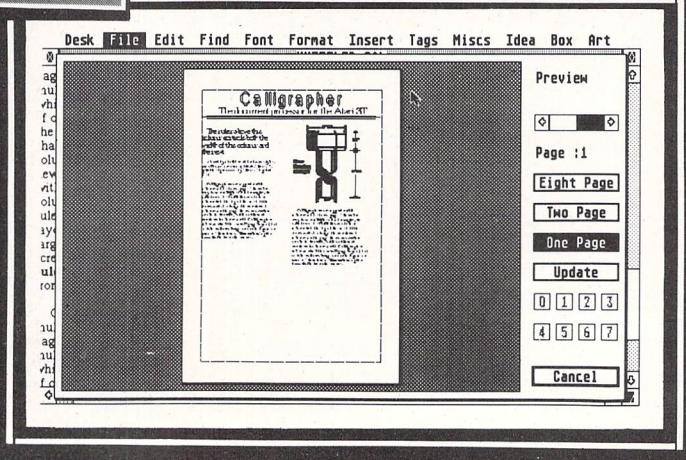


• Multi-column text. The layout of text is controlled by rulers. There can be any number of rulers at any point in the document and these control the margins, tab settings (both normal and decimal), the number of columns below the ruler etc. And because the text is automatically re-formatted, any change to the ruler, for instance dragging the margin indicators, will instantly be reflected in the text.

• Multiple on-screen fonts. Two styles are supplied in the package (SWISS and TIMES) which can be printed in a variety of sizes. In addition, Calligrapher supports a variety of text effects such as bold, underline, sub and superscript, italic, outline and strikeout.

• Any portion of the document may be marked (including rulers, graphics and text), just by clicking the pointer at the start of the region and dragging. Once marked this region may be copied to the clipboard—and from there pasted in to any other part of the document. The text style and size may be easily changed from a menu option.





for the Atari ST

• Printers. Since Calligrapher works under GDOS it will work with any printer supported by GDOS. At the moment we supply GDOS drivers for Epson FX and compatibles (9 pin), Star NB15 24 pin. Printout samples from the Epson and Atari laser are available on request. Hopefully the range of GDOS printers and fonts will increase over time and these will be made available to Calligrapher owners as and when we receive them.

• Boxes and line styles. This simple, but very effective, feature enables boxes to be placed around any part of the text, such as headings. Also a variety of column break lines can be placed in the text to liven up the appearance of documents.

• Multi-page preview. One, two or eight page preview facilities are available. This shows an accurate scaled down image of the final page, including graphics etc., and enable the overall document layout to be checked prior to printing.

• Auto page and paragraph numbering. Page numbering is, of course, supported, but in addition there are facilities for automatically numbering any sequence of objects such as paragraphs, or chapters etc. If a new paragraph is inserted then all subsequent paragraphs can be automatically re-numbered.

• Powerful search and replace. Calligrapher provides very extensive search and replace facilities, allowing single and multiple wildcards and the ability to search for embedded codes for font changes, graphics, rulers etc.

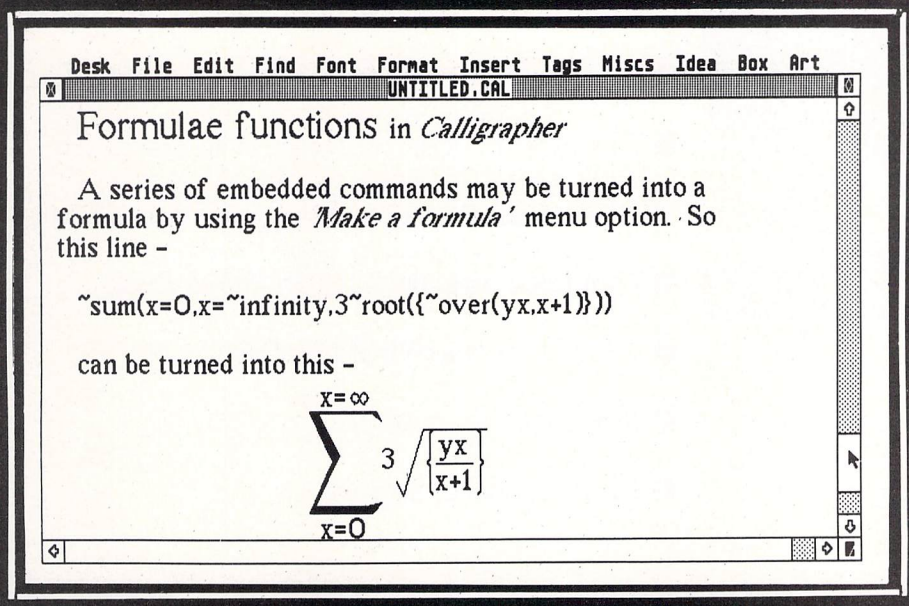
• Import and export. A variety of utilities are supplied on disc that allow text to be imported from ASCII or 1st Word files and output as ASCII. It is also possible to convert Degas and Neochrome to the required .IMG monochrome format.

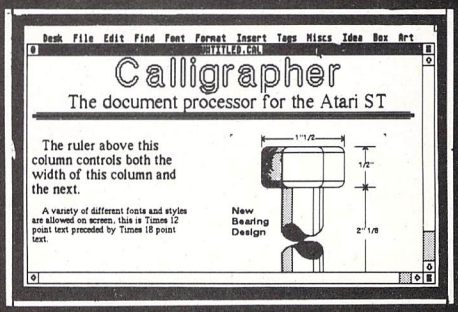
• Keyboard shortcuts. Being menu driven makes Calligrapher easy to learn, but the experienced user will probably find these cumbersome. Therefore the program supports keyboard shortcuts to all the common Calligrapher functions.

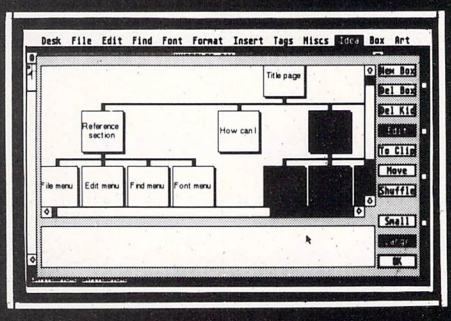
• Formulate functions. Complex formulae are difficult if not impossible to create in most word processors. Calligrapher has a special formulae creation mode that supports over 60 common mathematical symbols and Greek letters etc. See examples.

• Spelling checker. A 60,000 word dictionary allows very fast spelling checking—even checking as you type with no loss of typing speed (1040 only). Misspelt words are shown highlighted in context, and Calligrapher will suggest some alternatives, at this point the suspect word may be ignored, corrected or added to the user dictionary.

• On the page graphics. Calligrapher can import both .GEM and .IMG graphics files and display them anywhere on the page. The user may re-scale any graphics images (either enlarge or reduce) to fit the required space. Conversion utilities are provided that allow Degas and Neochrome pictures to be used. If you don't want to import the graphics from other programs then Calligrapher contains its own drawing tools.







• Outlining facilities. Calligrapher supports a highly graphical outliner, or ideas processor. This helps in the creation of complex documents and helps the user create the correct structure for a document before writing in earnest. The outline for a document may be displayed graphically as a tree structure or may be pasted into the document in a more traditional textual way with each 'level' of the structure being further indented.

OTHER CALLIGRAPHER FEATURES:

• Substitutes. Commonly used phrases or long words may be assigned to special key combinations.
• Multi-line footers, headers and footnotes.
• Table making facilities.
• Text mode. For quick text only printing or for driving printers other than those supported by GDOS—even daisy wheels.
• Mail merge. Multiple field records may be merged with a document as it is printed allowing such things as personalised letters etc.

Package includes Installation details
Price £69.00 (inc VAT and postage)

• A full specification is available on request.

24 hour despatch service available—just ring 0442-63937.

• Calligrapher works with the Atari 520 ST (with some restrictions on the number of fonts and the dictionary) and on the 1040 and Mega STs. It also supports both Mono and colour medium res. monitors.

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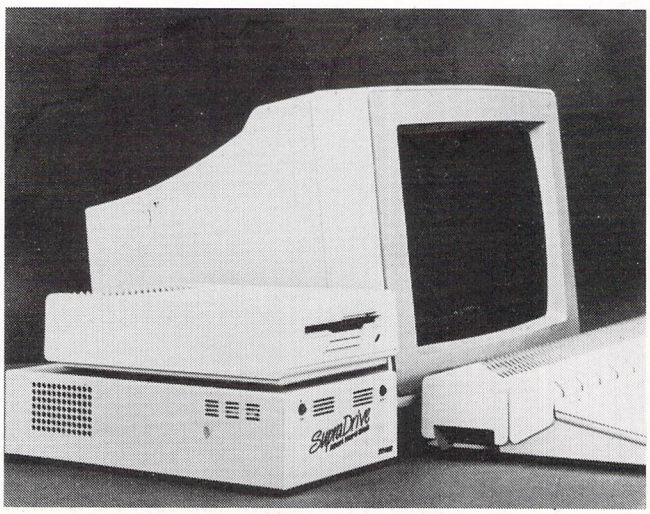

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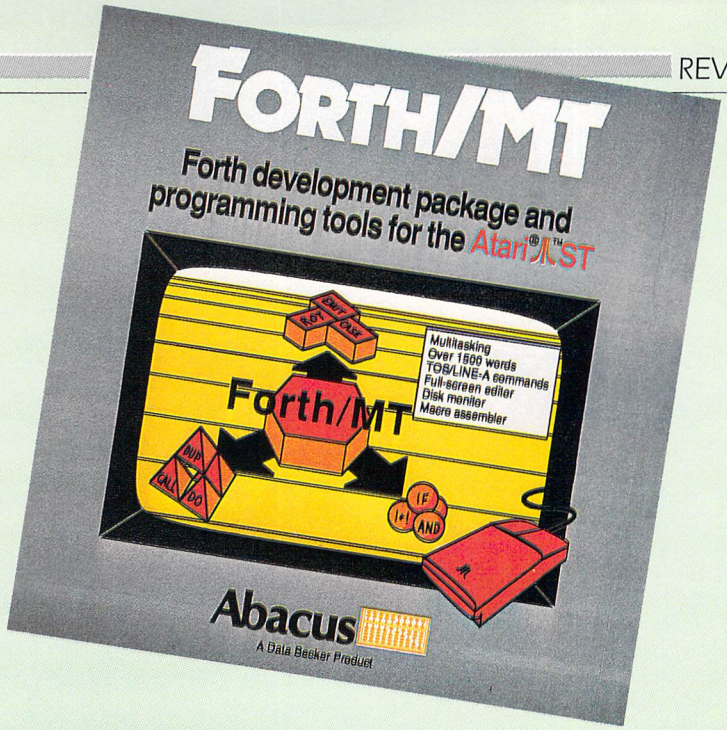

May the Forth be with you

Stephen Hill reviews Abacus' Forth, a multi-tasking language for the ST

I HAVE been a fan of the Forth programming language ever since those heady days of 1982 when I first became the owner of a Jupiter Ace micro.

I therefore relished the prospect of getting my hands on the new Forth system from Abacus – following in the footsteps of its excellent Assempro assembler.

Abacus Forth comes on one single sided disc which contains two distinct versions of the language. One is designed to facilitate multitasking; the other is only capable of dealing with a single program at a time.

The disc also incorporates about 300 separate Forth screens which are used to store a number of useful programs. They include a screen editor, a 68000 assembler and a comprehensive set of floating point routines.

Before you can execute either version you need to run a special loading program called START.PRG. This first prompts you for the filename of the version of Forth to be used and then loads it into a specific portion of the ST's memory.

I found all this rather tedious, particularly since Abacus chose complicated filenames like dbstsi.dat and dbstmu.dat to denote the different Forth systems.

On startup, you are presented with the ubiquitous white screen and flashing cursor so indicative of the Tos programming environment. This is the only mode you can use because for some strange reason, this implementation of Forth doesn't support Gem at all.

Other than that Forth/MT meets the full Forth-83 specification and incorporates a number of powerful extensions which enable you to access the individual Gemdos, Bios and Xbios functions of Tos.

There is also a special Forth vocabulary which allows you to easily utilise the ST's powerful Line-A routines in your programs. On an unexpanded 520ST you are left with about 78k for your own applications, which is really rather a lot when you consider the inherent compactness of Forth code.

Most of the language works fine in all three screen modes, but the screen editor – as it comes – will only work correctly in high resolution. However, it's relatively easy to modify it for use in medium resolution and instructions for this are included in the documentation.

Although the editor is adequate, in many respects I found it distinctly lacking in power, especially when compared to the equivalent system provided by Abacus' assembler package.

One feature notably lacking is an easy method of outputting Forth screens directly to the printer. In my opinion this is a regrettable omission.

The Forth Editor, like all the other utilities contained in the screens, is loaded using the Forth word LOAD. Although this generally worked fairly well, one serious flaw in the command was the lack of error trapping. It allows you to happily attempt to load screens far beyond the range capable of being safely addressed.

The inevitable result of such an action, was to make my drive emit a noise which can only be described as an horrendous scream! So far no damage appears to have been done to either the system disc or to the drive itself by this phenomenon, but this sort of carelessness is not only extremely worrying, it is also totally unnecessary.

The 68000 assembler is designed specifically for use within the Forth environment and is not really capable of being used outside it to create stand-alone 68000 programs. Like many Forth assemblers, the format used to input instructions is rather unusual, with the command MOVE.L D0,(A3) for instance, being entered as D0 (A3) MOVE.L.

The floating point package, is itself entirely written in Forth and provides an excellent demonstration of the 68000 assembler in action. In order to use it, you type in the FP command and thereafter many of the operations which used integer arithmetic will now automatically use the new routines.

The bad news is that there are quite a few exceptions to this rule and these have a disturbing tendency to crash the system if you aren't extremely careful.

As can be seen from the benchmarks in Table I, the performance of Forth M/T is very impressive indeed, with the integer routines in particular leaving a language like Fast Basic standing in its tracks. Despite this, I have a number of reservations about this package.

It may be both efficient and reliable, but is also excruciatingly unfriendly and incredibly unwieldy. This renders the system relatively unsuitable for use by beginners to the language.

For me, the package is spoilt as a possible development system because of its lack of support for Gem, and the absence of any facility to produce independent programs executable directly from the desktop. But to many people, however, the sheer power of the system may well outweigh any of these deficiencies. □

Product: Forth/MT
Price: £49.95
Supplier: Abacus, c/o Precision Software, 6 Park Terrace, Worcester Park, Surrey KT4 7JZ
Tel: 01-330 7166

	Fast Basic	Forth Int	Forth Float
Benchmark 1	0.150 secs	0.014 secs	0.238 secs
Benchmark 2	0.580 secs	0.070 secs	0.196 secs
Benchmark 3	1.290 secs	0.210 secs	0.720 secs
Benchmark 4	1.460 secs	0.246 secs	0.750 secs
Benchmark 5	1.515 secs	0.258 secs	0.762 secs
Benchmark 6	2.590 secs	0.354 secs	1.920 secs
Benchmark 7	3.970 secs	0.764 secs	2.800 secs
Benchmark 8	2.735 secs	----------	5.000 secs
Sieve	2.635 secs	0.43 secs	----------

Table I: Benchmarks for Forth M/T

SAMPLING THE DELIGHTS

Ian Waugh reviews the IS Sampler and Pro Sound Designer hi-fi upgrade kit

WITH its massive 512 or 1024 bytes of ram, the ST is capable of many applications which would be impossible on a lesser computer. Sampling is one of them.

It requires large amounts of ram to store even a short sample. No wonder then, that quite a plethora of budget-priced samplers for the ST has recently appeared on the market.

Eidersoft's Pro Sound Designer and Microdeal's Replay samplers arrived almost simultaneously (you'll find a comparative review in the July 1987 issue of *Atari ST User*) pipping Innovated Software's ST-Digitiser to the post by a matter of weeks.

The IS Digitiser, available from Data Direct, is more expensive than the other samplers so let's see what it has to offer.

The case is larger than your average ST sampler and an inch of PCB sticks out at one end. This plugs into the cartridge port – at least 1/8in of it does because the box is too large to fit into the cartridge port recess, so it hangs there rather precariously.

It's an odd choice of box, because the gubbins inside nowhere near fill it. It was a review copy however, so perhaps the finished versions will be a more appropriate size. There are also audio in and audio out phono sockets.

On to the software now, and the first slight disappointment is the fact it is not controlled completely by the mouse – I reckon if you have one you should use it. That apart, it has lots of interesting features.

There is only one screen – shown in Figure I. The bottom half is used to display the waveform of the sample. The centre of the top section contains an oscilloscope display and on either side are lists of keys to press and their functions.

The mouse is used to set the markers and these are used to determine the active area of the waveform buffer. There's a buffer size indicator and a counter which shows you how far along the buffer the left marker is. These are updated when you press the left or right mouse buttons.

Most of the major sampling operations are controlled by the function keys. There are 12 sampling rates ranging from 4kHz to 25kHz which can be cycled through by pressing F1.

The quality at 4kHz is pretty poor, but speech is quite acceptable at 8kHz. If memory allows you to sample and playback at 16kHz, you'll find the quality of most sounds rather good.

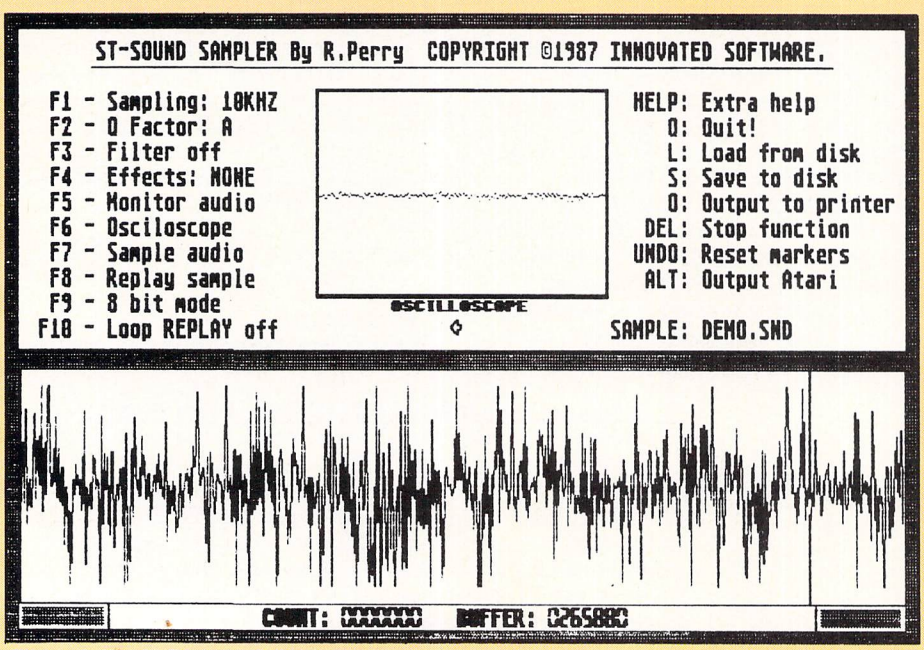

Figure I: The IS Digitiser editing screen

F2 brings in a low-pass filter. This has eight settings and generally cuts down on the treble signal. F3 switches the filter in and out. It can only be used with sampling speeds of 16kHz or less.

F4 introduces a reverb or echo effect. This is quite effective although it does reduce the volume.

F5 lets you monitor the incoming signal without recording it. This is a good idea, as you can tell what the sample is going to sound like before sampling it.

F6 activates the oscilloscope, which displays the ups and downs of an incoming signal so you can adjust its volume. If it is too high it will clip as it bangs on the top of the oscilloscope screen. The unit can accept quite a hefty signal before it starts to do this.

F7 starts the sampling. There is no trigger facility to automatically start sampling when a sound reaches a certain volume, but it is easy enough to delete any leading silence.

F8 plays back the sample at the current sampling speed, not necessarily the recorded one, so you can make Uncle Harry sound like Minnie Mouse. F10 will loop the sample in between the markers.

F9 swaps between eight bit and four bit output. Eight bit resolution obviously gives a better quality, but a 16kHz sample output with four bit resolution uses the same space as an eight bit 8kHz sample.

The manual includes a few hints about using this to produce quality samples in half megabyte machines, but it could have gone a little further.

Other options include loading and saving files and resetting the markers. You can also get a printer dump of the sampled waveform – actually a dump of the whole screen.

Editing controls include zoom (but no telescope although you can reset the markers with the Undo key), delete, copy, reverse, clear and mix areas. All facilities are very easy to use.

The Digitiser also has a waveform editor which lets you draw your own waveforms. It's fun to mess around with, but it's not quite up to drawing your own string ensemble.

The manual says it can be used to edit sounds and remove spikes and clicks, but there isn't a separate erase function and it's altogether such a fiddly process, it is hardly worth the effort.

You can only edit a buffer with a size of

610 bytes; you get an error message if you try to edit a larger one.

The error window remains on screen, covering part of the waveform, and can be removed only by selecting a load or save option. This window overwrites the error window and is cleared properly.

All the samples I took contained clicks. In fact, clicks appeared even when no sound source was connected which seemed to indicate they were generated by the hardware itself. Again, perhaps this was due to this being a review copy.

A demonstration disc was included and as it's public domain software it shouldn't be too difficult to get hold of a copy. The quality of the demonstration is superb.

It consists of three samples which almost fill a one megabyte 1040 and it plays for 40 seconds at 17kHz. You don't need the hardware to play this back, so you can test the sampler before buying it. There is also an impressive demonstration on the system disc. No clicks on these samples!

The playback routine, in fact, makes rather a good job of routing the sound through the ST's monitor, and I was very happy with this. Using the audio out to play the sound through a hi-fi, however, seems to catch rather more background noise. You can switch output between the monitor and hi-fi with the Alternate key.

There are files on disc which allow you to play samples from Fast Basic (with comments that conversion to ST and GFA Basic is quite easy) plus source and assembled versions of the playback routine. There is also a program which allows you to show a picture and play a sampled sound at the same time.

The demonstrations prove that excellent results can be produced with the digitiser, but not, alas, with the version I had. Assuming the production version will be capable of such results, I can give it the thumbs up and say the quality is superior to Pro Sound and Replay. But then it is £20 or so dearer.

Unlike Replay and the IS Digitiser, Pro Sound Designer doesn't have a hi-fi output facility. As the main use of these samplers will be to include sound in games and programs which play through the monitor anyway, you may think hi-fi output unnecessary.

Perhaps Eidersoft is to be congratulated on not including a facility which many buyers will not use.

If you want hi-fi however, you can now have it. It requires an easy-to-fit chip which plugs into an empty IC socket on the sampler's PCB. The board already contains the hi-fi out socket.

I have a feeling my board wasn't working quite as it should as the output was rather thin and tinny.

The upgrade kit also contains a disc of 15 samples taken from an Akai X7000 sampler. They include some rather good Simmons drums and power bass guitar sounds, all sampled at 16kHz. It also contained a really heavy welcome from someone with mud in his wellies. He has, what they call in the trade, a deep-brown voice.

In spite of the undoubted quality of the samples, there is still a fair amount of noise on playback, and this is especially noticeable after running the digitiser program. You basically get what you pay for I suppose.

The disc also contains two improved routines for playing back samples from your own programs. One produces an even louder output from the monitor speakers – with the introduction of more noise – while the output of the other is quieter with a little less noise. The routines are identical in use to the one supplied with the program.

If you want to play the sampler through your hi-fi it's worthwhile getting the upgrade, but not I'd suggest, for the samples alone.

Sampling is great fun whether you simply want to experiment with sound or use the samples in your own programs to show friends. The nice thing is, you don't need the hardware to play the samples back.

Have you noticed how many games now include sampled sounds?

Product: IS Digitiser
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Extra connection

Andrew Donald develops a user port interface in Part 1 of a new series

THE ST is well endowed with external connectors, and at first glance it would seem there is plenty of scope for interfacing a user's own hardware projects to the machine.

However, there is a problem. The external connectors are all designed for specific applications – cartridge, printer, disc drive, mouse and so on.

It is possible to use these connectors for other applications, there are for example hardware add-ons for sale which plug into the cartridge port, but this presents difficulties if you want to use a cartridge at the same time as your add-on.

This results in cartridges being continually swapped and prevents both devices from being used simultaneously. This is true of all the connectors, there being no port for general purpose use.

This series of articles will describe a method of adding a simple user port to the system which will overcome the problems outlined.

Looking at the possibilities of having a general purpose interface, the printer port comes nearest to an ideal specification. It is one byte wide and has two extra control lines for handshaking.

Although as a printer port it is used exclusively for output, it is interesting to note that the port is perfectly capable of operating in input mode.

For the technically minded, it uses the 8 bit, bidirectional port B of the YM-2149 sound generator chip for parallel output (data), bit 5 of port A of the same chip as a control output line (strobe) and bit 0 of the input/output port on the multi-function peripheral chip, MFP 68901, as an input control line (busy).

All these are controlled from the operating system software to act as a Centronics printer port. It is possible for a user to take over software control and use the lines for other purposes – this makes a very useful general purpose port.

This of course, does not overcome the original problem. The port was designed for a printer and we may well wish the printer to be connected as well as other devices.

One answer is to demultiplex the printer port, provide a second connector and make it possible to switch control between the two connectors, preferably switching by software rather than hardware.

The printer port has 10 lines – eight data and two control. We want to be able to switch these lines between a printer socket and a user socket.

There is a CMOS chip, the 4053, which will perform this function for us. It comprises essentially three, single pole, double throw switches. The chip is shown schematically, in its digital configuration, in Figure I.

A digital high or low on control pins A, B or C will operate the switches. For our 10 lines we require four of these chips. Other considerations in designing the user port are that we would like a software control signal to do the switching and it would also be useful to have a source of power available to drive small projects.

There are two possibilities for providing the control signal. The sound chip has a general purpose input/output port which has two spare lines available. One of these lines comes out on pin 3 of the monitor socket.

It is designated as a general purpose user output. This could be used for control, but it seems likely it has been provided on the monitor socket to allow switching between low and high res monitors. It is possible this line will be used in future so is best left alone.

The other spare line on the I/O port is available at pin 14 of the sound chip, YM 2149F. This is not connected on the circuit board, so is unlikely ever to be used in future add-ons and is ideal for our purpose of switching between the printer and the user port.

The only disadvantage of using this line is it means going inside the computer to solder a wire to the pin. However, that does offer the opportunity to make a connection to the 5 volt supply line and bring it out to the user port. It is then possible to use this power supply to drive both the switching circuitry and small user projects.

Let's have a summary of the possibilities at this stage. Since there are a variety of ways in which this set up could be arranged, I will enumerate the possibilities and leave it to you to decide which you prefer.

The first possibility is to use the printer port as a user port without modification. Advantages are that it is a useful general purpose I/O port very similar in form to the user port provided on the BBC Micro. No hardware modification to the computer is needed.

Disadvantages are that it would be necessary to disconnect the printer when you wanted a user port. The printer and other devices could not be used simulta-▷

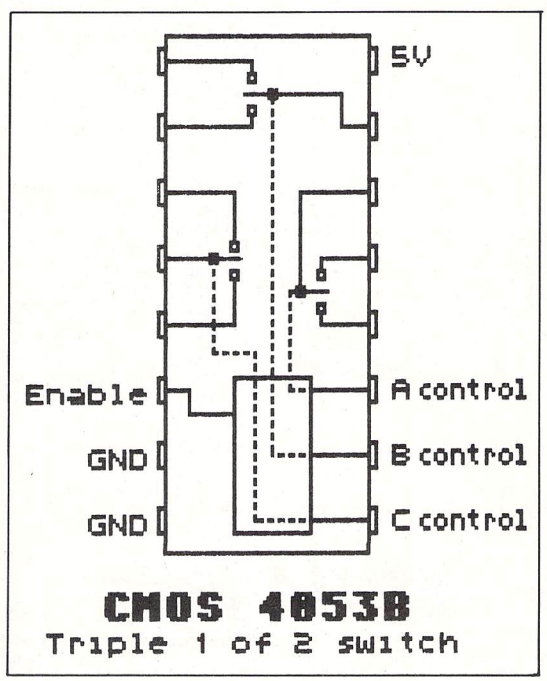

Figure I: Block diagram of a CMOS 4053B chip

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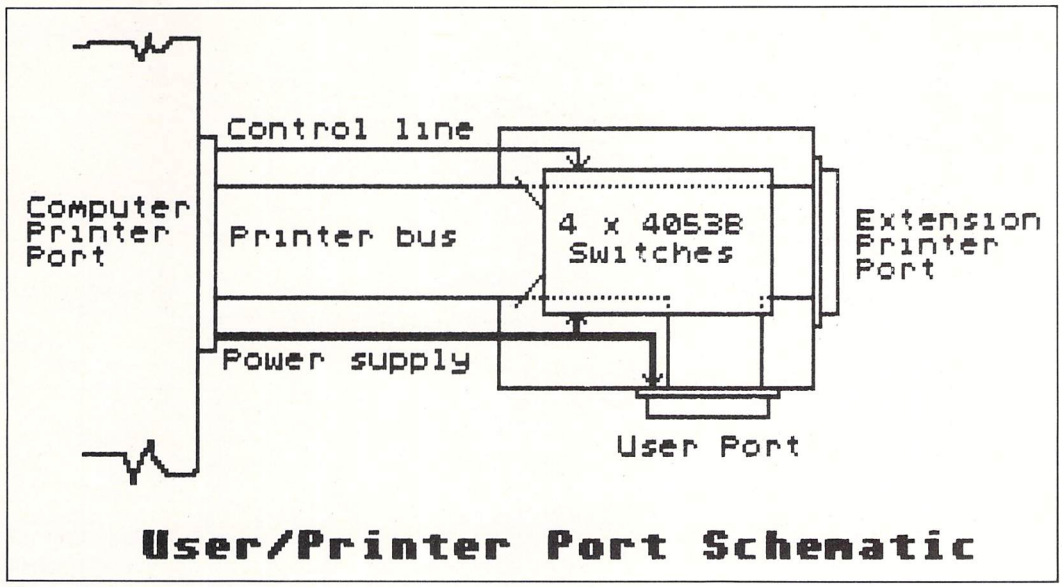

Figure II: Schematic diagram of the user port

◁ neously and there is no power supply available at this socket so an external source would be necessary.

A few milliamps could be taken from the cartridge socket or the joystick port, but it would all be rather untidy.

So I don't upset the purists I had better explain what I mean by simultaneous operation. All operation will in fact be serial but, under software control it will be possible to switch between printer operation and user port operation with such a high frequency both will appear to be operating simultaneously.

The second option is to build the circuit described in this series which will switch the printer port function to operate as either printer or user port, but to avoid the modifications inside the computer. The advantage is that plugging and unplugging is avoided and the computer remains unmodified.

Disadvantages are the power supply would need to be external and switching between port usage would have to be by means of a switch on the circuit board. Perfectly possible, but to my mind, much better handled under software control.

The third option is the full conversion. The circuit board plugged into the ST's printer port with the power supply and control coming from inside the computer. This set-up is shown schematically in Figure II.

Advantages are that the set-up may be permanently left in place. The printer is always available without having to change anything, as is any peripheral device plugged in the user port.

The default condition on power up is that the printer will be on line, but software can put the user port on line at any time. Add-ons may be left in the user port and their power source is drawn from its connector.

The main disadvantage is the necessity of going into the computer and thus invalidating any warranty – although the modifications required internally are not very severe. No track cutting is needed, just the soldering of an extra wire for control and another for the power supply.

The modifications are easily removed should the user port be not required in future. It should be noted that this modification will make the printer port non standard, so once the modification has been made the printer should only be connected via the new circuit board connector.

So there it is. The choice is yours. Just let me add that I have the complete conversion on my ST and it has been working well without problems for some time now.

The only difference from a normal ST' is I now have an extra, general purpose I/O port available for my hardware projects. The printer itself operates happily whenever I want it, just as before. The photograph in Figure III shows the finished unit.

The port could also prove useful to users in other, very specific areas. The scientific user could find it useful as a data logging port. External instrumentation could be controlled or monitored without loss of any of the computer's normal facilities.

The business user could well find it useful as a second printer port. It would be perfectly possible to switch output between a dot matrix printer and a daisy wheel or laser printer from a simple software command.

In future issues of *Atari ST User* we will present a series of projects which operate through the user port. It will be possible to connect these directly into the ST's printer port and use an external power supply – but how much better to have a specially dedicated port ready for these projects?

● *Next month we will look in detail at the construction of the user port.*

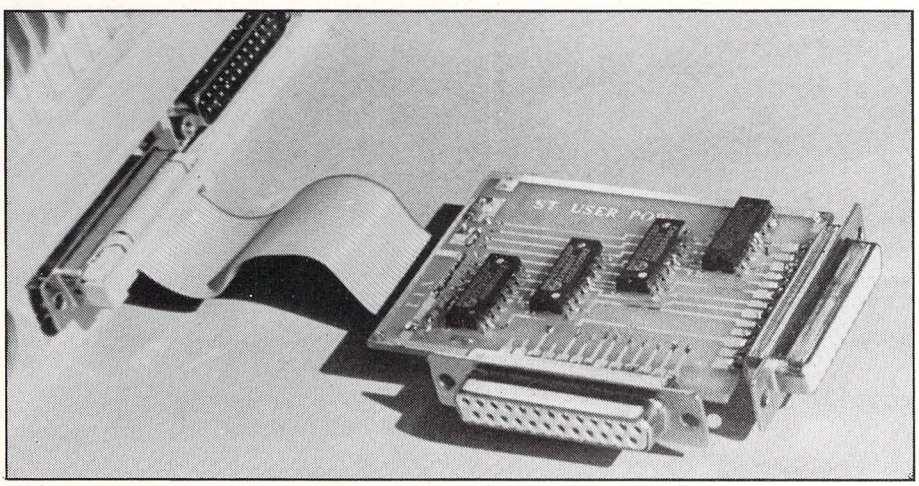

Figure III: The finished interface

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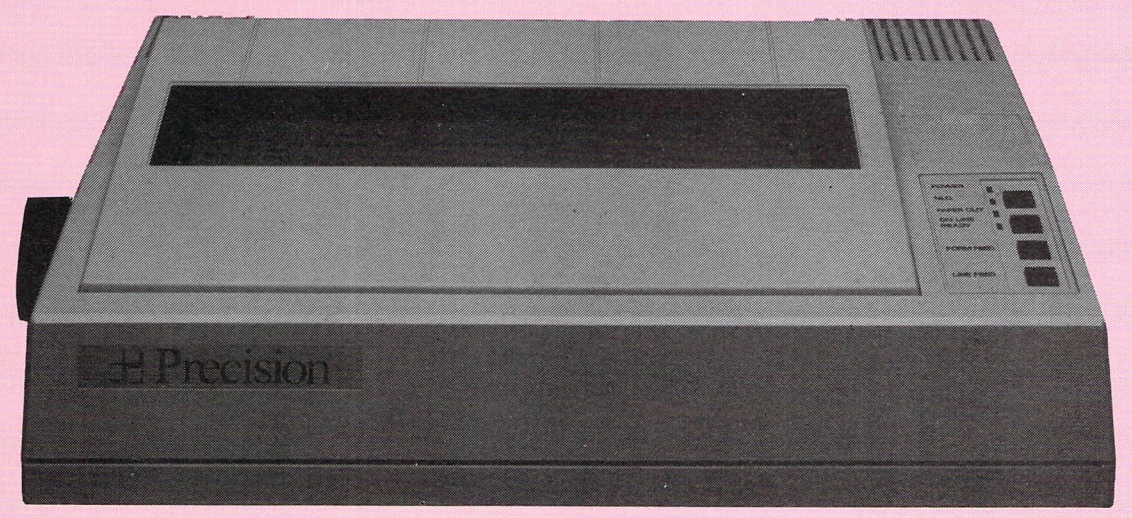


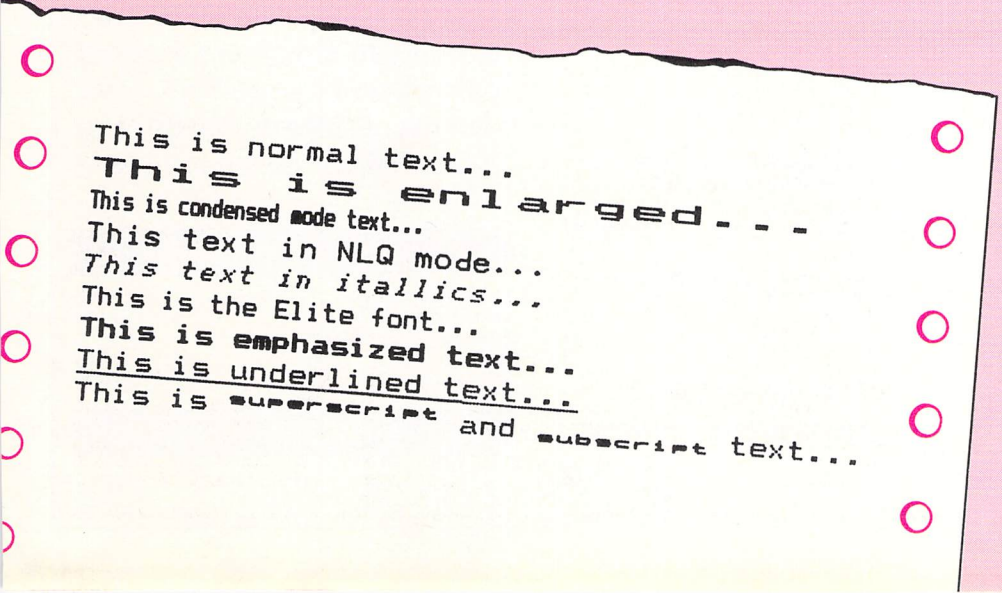
Are four heads better than one?

Peter Hartley reviews Precision Software's four-headed printer

WHEN the press release announcing the arrival of the Precision 4010 dot matrix printer proclaimed that it had four print heads, noone in our office believed it.

The printer itself arrived a week later and sure enough, there were four print heads mounted horizontally in line. The theory is simple: If one print head travelling over 80 columns can produce 120 characters per second (cps), four heads travelling over 20 columns each should print at 480 cps.

To give you an idea of how fast 480 cps is, a 1000 word document which occupies about 6k of ram will take 26 seconds to print out in draft mode. In near letter quality (NLQ) mode the print time is just under three minutes, while a screen dump takes just under one minute.



As you can probably imagine, four times the noise is also generated, but the 4010 has a very effective top cover which reduces the decibels to an acceptable, but still quite loud, level.

The design seems to have been very well thought out. There is the usual bank of switches for setting various modes such as carriage return with or without line feed, various character sets, line spacing and so on.

Unlike the majority of printers, the switches are not tucked away at the rear of the case, or worse still, somewhere inside, but are on the front panel under a removable lid and they can be set with human fingers not microscopic pin points. On the underside of the lid is a list of the switches' functions and how they were set at the factory.

NLQ, draft mode, on/off line, form and line feeds are accessed by push buttons on the main panel. LEDs indicate power status, NLQ mode, paper out and ready.

The 4010 operates in IBM and Epson modes – selected by a switch. Although IBM mode won't be of much interest to Atari ST owners. If you have been using an IBM printer and all your programs are configured to output to that machine, it means you can plug in and go without having to load in new printer drivers.

Epson mode has all the facilities you would expect, normal Ascii and inter-

◁ national characters all available in NLQ, italics or draft quality.

Both IBM and Epson modes have pica and elite typestyles, condensed and double width printing styles and superscript and subscript facilities. All these options are software selectable by sending the appropriate escape codes.

There is very little to complain about and I experienced few problems with the printer. The multi-strike carbon ribbon caused the only hic-cup experienced with the 4010.

When we first set up the printer, the ribbon was prone to jamming. The thin carrier film would stick between the pinch rollers. This problem was soon solved with the aid of a small jewellers screwdriver. The other problem was much more serious.

Printing the screen dumps for this issue of *Atari ST User* caused me to join the Black Hand gang. The carbon "ink" didn't want to stay on the paper. It migrated onto my fingers, the printer case, the computer keyboard and various other intimate places. Worse still it smudged on the paper very easily. This resulted in more than one dump having to be redone. There doesn't seem to be much point in having a printer working at four times the speed if you have to print out four times as much paper!

To be absolutely fair, we use a high quality paper with a very hard surface. The normal quality of fanfold paper has a more fibrous surface and may retain the carbon to a much higher degree. The option of a standard fabric ribbon would be a welcome accessory.

With the exception of the ribbon problems, the printer performed exceptionally well over the review period.

The manual supplied with the 4010 is very comprehensive. As it's printed in Japan where the printer is made, there are a few examples of that special blend of Japanese/English we have all come to know and love: "Beside of the buffer conditions in paragraph (3), in case of printer status error (in such the case of paper out) occurs, the flag is set also".

Regardless of this, there is more than enough information provided to allow you to get the most from your new printer. Items covered range from technical specifications, through installation procedures, software switches and escape codes to complete lists of available characters in both IBM and Epson modes.

For all the high technology, the cost of the 4010 is a very reasonable £424. I would guess long term reliability would be good because each head is doing only a quarter of the work.

The specifications reveal the expected head life is 200 million characters and average output before failure is 10 million lines – although the printer head and ribbon drive unit (which must be the hardest working component), are excluded from this figure.

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Timeless wonder

Bruce Smith previews Timeworks' Desktop Publisher

BRITISH software house GST, originator of the 1st Word Plus word processor for the Atari ST, has combined with American software giant Timeworks to come up with a DTP package for the ST that looks set to knock all other comers into touch.

I was lucky enough to be invited along to Cambridge for an exclusive pre-launch look at the new software for *Atari ST User*.

The best seller of software in the DTP world and also the best all-feature package, is the PC based Ventura Publisher from Xerox. This runs under Gem and so it isn't surprising to learn that Timeworks DTP bears an uncanny resemblance in operation to Ventura.

It has all of the facilities to be found on mega products like Ventura, but does lack a few of the bells and whistles of its big brother – automatic index generation for instance – but with Timeworks DTP costing just a little more than one-tenth of Ventura who cares?

There are two types of DTP packages – the page processor and the document processor. Page processors are geared towards the production of single page sheets which may vary in design during the course of a 16 page newsletter for instance.

Document processors tend to be frame orientated, you draw frames into which text and graphics are simply dropped, and although these can be used to produce small publications they excel when it comes to producing long publications such as manuals and books.

Timeworks DTP falls into the document processor category and like other similar products it has paragraph styles and style sheets. Any document is constructed from a variety of typeface styles.

Headings have a different size and often typeface to the main text. Similarly, tables and listings might be set in a different style.

By using the paragraph style option these attributes can be assigned to a name. When a particular format is required for a section of text it can be highlighted, the paragraph style or tag selected by name from a menu at the side of the screen, and the highlighted paragraph will change to the attributes so specified.

What's more, standard styles can be saved as a style sheet for loading each time a new document is to be created.

Of course you are not restricted to sole use of paragraph style and the feature can be over-ridden should you wish to alter a word or sentence in any way – to italicise it, for instance.

In addition to style sheets, master pages are also supported. A master page is a template from which new pages are created. There can be two such master pages if so required, one for left hand pages and one for right. They may contain text frames for immediate use and this is ideal for publications where the page format is unlikely to change very much – books are a prime example.

Timeworks DTP is not a word processor, although it does support rudimentary editing facilities. So text really should be prepared in a dedicated word processor first of all.

Having said that, Timeworks DTP does support a number of word processing features, typically search and replace, not normally found in other DTP packages.

At present text created in Word Writer I, Gem Word Writer, 1st Word and 1st Word Plus can be imported directly. For those not supported, Ascii text files can be created and used instead.

The text is then ready to be placed on to the page. This can be created from a master page or from a blank one on to which the component frames are drawn simply by switching to the frame mode of operation – one of four modes selected from a menu permanently displayed on the screen for easy access. Text can then be placed into the frame.

By selecting a series of frames using a menu option they can be linked together so text will flow from the first frame, to the second, to the third and so on. This is useful for creating columns, book pages and complicated newsletter layouts.

If a frame is placed within a frame and these are not linked the text will simply flow around one side of the intruding frame.

The speed of the program is clearly seen when frames containing text are picked-up and dragged or re-shaped – the text immediately re-flowing through the frame or frames.

A wide range of typographical facilities are on hand. At the time of writing the number of fonts supplied with the standard package has yet to be decided upon and the point sizes of these will be limited to the fonts available on the currently selected printer. Leading, the space between lines, can be specified in points (a point being 1/72nd of an inch).

Hyphenation, the splitting of words across two lines, is performed automatically following a built-in set of rules. An exceptions dictionary exists that can be edited to over ride these rules should you so require.

A wide range of formatting styles are available and many of these may be attributed to a paragraph style – ragged right, ragged left, centred and justified text are common. Hanging indents are also catered for and so are bullets – black blobs.

Kerning, the moving together of two characters in a word, for instance, making an o sit under a T, is available as a manual option.

The cursor can be placed between the two letters to be kerned and by using a key press combination the letters moved towards or apart from each other. This method is far superior to the method offered by most other DTP software.

Headers and footers are catered for and are implemented in a similar fashion to that used on 1st Word Plus. Each item can have three components – left, right and centre – and automatic page num-

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Graphics: Line style, Fill style, Scale picture, Crop picture, Edit picture, Show grid, Grid spacing, Snap to grip.
Help: Quick keys, Menu items, Tips.

Figure I: Menu options

bering can be inserted with the use of a hash character.

Headers and footers can be specified for left and right pages though they do not form part of the master page and a separate dialog box is used to define them.

Graphics, like text can be dropped into frames and basically Timeworks DTP can handle metafiles produced by Gem Draw and Gem Paint and other graphics such as those output by Gem Paint, Gem Snapshot, and Gem Scan.

A variety of graphics tools are available when the graphics mode option is chosen from a small selection box. These can be used within frames to create new or edit existing artwork.

Tools are available for drawing a variety of lines to various thicknesses, freeform curves, circles, boxes and ellipses to name but a few.

All options and choices are selected from pull-down menus in the normal fashion. There are nine of these in all, including a help menu although most functions are also available from the keyboard as a sequence of key presses.

Printer support is vital for any DTP product as after all, the hard copy output is what in the final analysis, the software is judged on.

Here Timeworks DTP is well endowed and will be supplied with a comprehensive suite of printer drivers ranging from dot matrix to the de facto standard the Apple LaserWriter Plus.

Timeworks DTP will work on a standard Atari ST and requires no other hardware or software though obviously a word processor and printer are vital.

At £99 Timeworks Desktop Publisher is a full value for money product. The screen display is crisp and I have yet to see a package redraw Gem metafile pictures so quickly.

It looks capable of doing everything you need to do a thorough job. The lack of bells and whistles is by no means a hinderence to effective operation. What GST has done is to pay attention to the finer details which make the product a pleasure to use.

It is also not unimportant that the GST software team has some 20 years printing experience.

While I reserve my final decision until I have used the release version to the hilt, it would on this showing seem to be set to clean up. It is certainly the DTP package to go for on the Atari St and it should be in the shops by Christmas. □

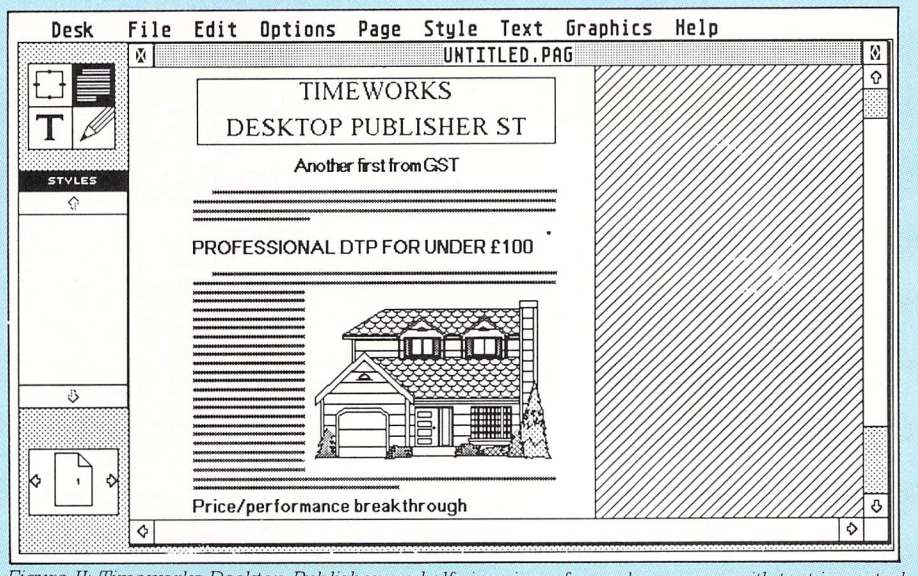

Figure II: Timeworks Desktop Publisher – a half-size view of a made up page with text imported from 1st Word Plus and graphics imported from Easy Draw. Some of the text is too small to read, so it has been "greeked" by the display software.

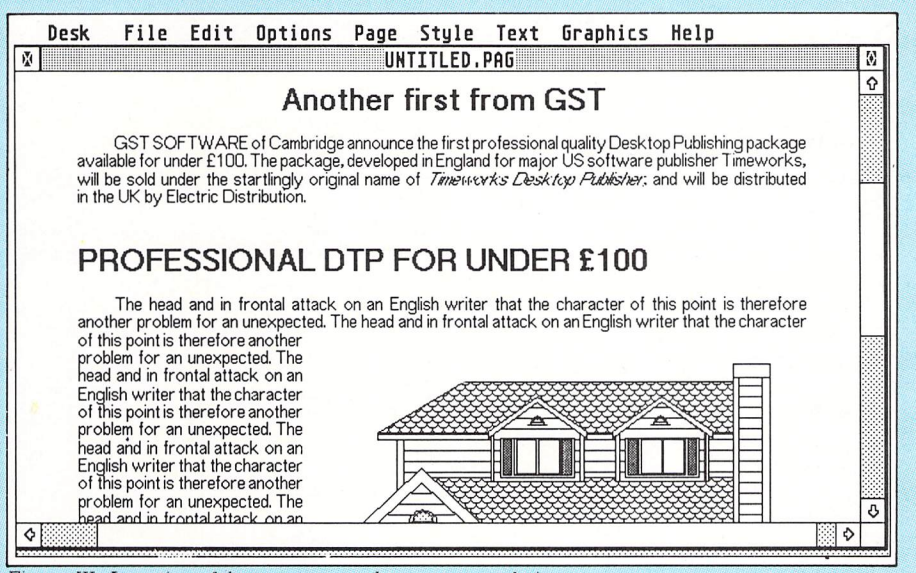

Figure III: A portion of the same page shown at normal view with the page window expanded to maximum size

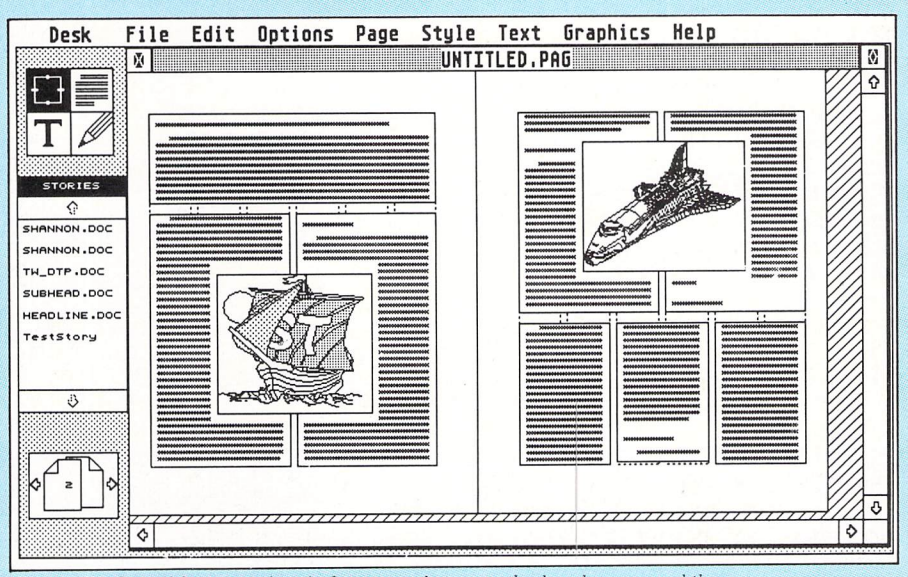

Figure IV: A double page view in frame mode – note the borders around the frames, and how the text has flowed automatically round the pictures.

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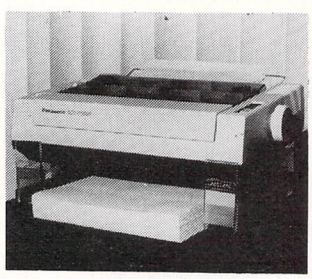

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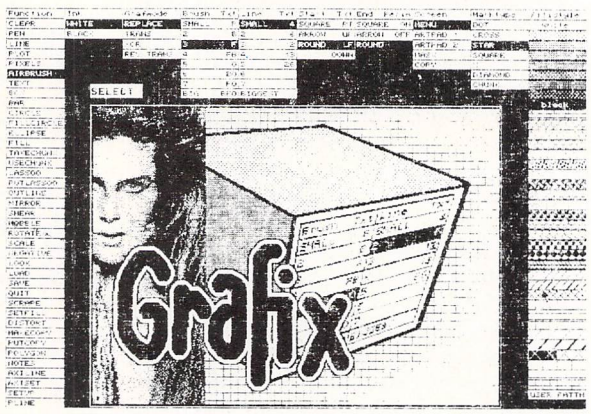

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GRAFIX will run on all ST's with mono monitors and is Blitter compatible.

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ShackSoft

Tame your printer

Charles Quekett examines printer drivers in Part 1 of his new series

IN this series of articles I'll be showing you how to make your printer do what you want and not what it wants.

We will concentrate on using 1st Word with the Citizen 120-D printer. This gives us the combination of an inexpensive 9 pin dot matrix printer, which can be configured as an Epson or an IBM printer, plus a word processor which most Atari ST owners had given free when they bought their machine.

The routines described will work for all printers capable of being controlled from software. You will need to have the manual for your printer handy to check that the codes we give are the same for your printer. In most cases you will find they are the same or similar.

So let's start at the beginning and you will see that printer drivers are really quite easy. First of all we shall look at a file produced with 1st Word. In Figure I I have used Michtron Utilities to look at a sample 1st Word file – if you have a disc editor you can try it for yourself.

To make sense of the information shown, refer to your ST Basic Sourcebook and turn to page 208 – which shows the Atari character set.

Inside your Atari each letter of the alphabet is represented by a numeric code known as its Ascii value. For instance, if you find the capital T in the table you will see it is represented by a value of 84 in decimal or 54 in hexadecimal. From now on if we are talking about a hexadecimal (or hex for short) value I will write a small h in front of the number. Hex is easy to get used to – it's just a matter of counting in sixteens instead of tens.

Looking at Figure I we see, on the right hand side, a column showing the words typed in. The text starts "This is a...". In the middle column you will see the Ascii value in hex of each character appearing on the right. So if you find a capital T on the right, you find the corresponding h54 in the middle column.

The next item to look for is the ruler line with the tab points that appears near the top of the screen in a 1st Word document.

In the middle column starting on the second line there is a repeated sequence of h2E h2E h2E h2E h7F. Turning back to the ST Basic Sourcebook you will see this represents four full stops followed by a triangle. You can also see there is a square bracket at either end of this repeated sequence.

Another useful landmark is the pair h0D h0A which are the Ascii values for the carriage return plus linefeed sequence. That explains most of the middle column, but what are all the other hex values which aren't text or the ruler line? These are the codes 1st Word inserts to specify text styles such as bold, underline, italics and so on.

Unfortunately your printer probably won't understand these instructions, so they have to be translated into the codes your printer will respond to correctly. This is the simple task your printer driver performs for you.

In order to see what this sample file looks like when it arrives at the printer I have used the hex dump facility on my printer. If your printer has this feature try it out for yourself. The hex dump is shown in Figure II.

If we look for the ruler line we find it has gone – we wouldn't want that printed out at the top of our text. All the words are still there in the right hand column with their Ascii values in hex in the middle, but all the control codes have been translated so the printer will understand them.

As an example find the line of text that begins "This is Bold...". This is represented in the middle column by h54 h68 h69 and so on.

To the left of this sequence, still in the middle column, you can see the sequence h1B h45. If you check in your printer manual you will probably find this ▷

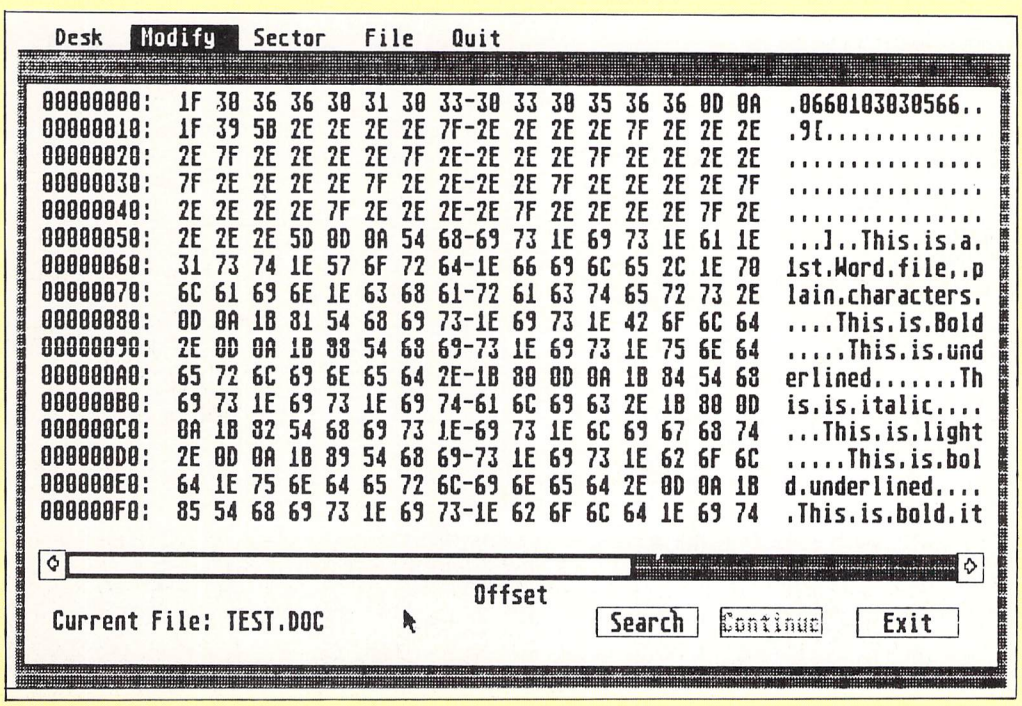

Figure I: Sector of a 1st Word

```
      <CITIZEN>      120-D          ◆◆◆  HEXA DECIMAL PRINT  ◆◆◆
(0000) 12 1B 46 1B 21 00 1B 78 01 1B 54 1B 2D 00 20 20 20 20 20 20 20 20 1B 42 01 00 0B 20 20 20
(0020) 20 20 20 20 20 1B 42 02 00 0B 20 20 20 20 20 20 20 20 20 1B 42 04 00 0B 20 20 20 20 20 54
(0040) 68 69 73 20 69 73 20 61 20 31 73 74 20 57 6F 72 64 20 66 69 6C 65 2C 20 70 6C 61 69 6E 20 63 68
(0060) 61 72 61 63 74 65 72 73 2E 1B 42 05 00 0B 1B 45 20 20 20 20 20 20 20 20 54 68 69 73 20 69 73 20
(0080) 42 6F 6C 64 2E 1B 42 06 00 0B 1B 46 20 20 20 20 20 20 20 20 1B 2D 01 54 68 69 73 20 69 73 20 75
(00A0) 6E 64 65 72 6C 69 6E 65 64 2E 1B 2D 00 1B 42 07 00 0B 1B 21 40 20 20 20 20 20 20 20 20 54 68 69
(00C0) 73 20 69 73 20 69 74 61 6C 69 63 2E 1B 21 00 1B 42 08 00 0B 1B 78 00 20 20 20 20 20 20 20 20 54
(00E0) 68 69 73 20 69 73 20 6C 69 67 68 74 2E 1B 42 09 00 0B 1B 78 01 1B 45 20 20 20 20 20 20 20 20 1B
(0100) 2D 01 54 68 69 73 20 69 73 20 62 6F 6C 64 20 75 6E 64 65 72 6C 69 6E 65 64 2E 1B 42 0A 00 0B 1B
(0120) 2D 00 1B 21 40 20 20 20 20 20 20 20 20 54 68 69 73 20 69 73 20 62 6F 6C 64 20 69 74 61 6C 69 63
(0140) 2E 1B 42 0B 00 0B 1B 46 1B 21 00 1B 53 00 20 20 20 20 20 20 20 20 54 68 69 73 20 69 73 20 73 75
(0160) 70 65 72 73 63 72 69 70 74 2E 1B 54 1B 42 0C 00 0B 1B 45 1B 53 00 20 20 20 20 20 20 20 20 54 68
(0180) 69 73 20 69 73 20 62 6F 6C 64 20 73 75 70 65 72 73 63 72 69 70 74 2E 1B 54 1B 42 0D 00 0B 1B 46
(01A0) 1B 21 40 1B 53 00 20 20 20 20 20 20 20 20 54 68 69 73 20 69 73 20 69 74 61 6C 69 63 20 73 75 70
(01C0) 65 72 73 63 72 69 70 74 2E 1B 21 00 1B 54 1B 42 0E 00 0B 1B 45 1B 21 40 1B 53 01 20 20 20 20 20
(01E0) 20 20 20 1B 2D 01 54 68 69 73 20 69 73 20 62 6F 6C 64 20 75 6E 64 65 72 6C 69 6E 65 64 20 69 74
(0200) 61 6C 69 63 20 73 75 62 73 63 72 69 70 74 2E 1B 46 1B 21 00 1B 2D 00 1B 54 1B 42 0F 00 0B 20 20
(0220) 20 20 20 20 20 1B 42 3C 00 0B 20 20 20 20 20 20 20 20 1B 42 3D 00 0B 20 20 20 20 20 20 20 20
(0240) 1B 42 42 00 0B 1B 40
```

Figure II: Printer output in hex dump mode

◁ is the printer command that turns on emphasised print, or at least something similar.

The printer manual probably gives the command in Basic as:

```
CHR$(27) "E"
```

If you refer back to your Ascii table you will notice that 27 in decimal is equivalent to h1B or Escape and that E is equivalent to h45. Now we are beginning to understand what is going on it is time to make a large, clear table of printer commands.

Take the largest sheet of plain paper you can find and rule 9 vertical lines so you have 8 columns across the page. Head the columns as follows: Printer Feature, On(Hex), On(Basic), On(Character), Off(Hex), Off(Basic), Off(Character) and Notes.

If you have Back-Pack write On(Decimal) and Off(Decimal)instead of On(Basic)and Off(Basic).

In the first column enter the printer features you find listed in your manual. Here is a suggested list to start with:
Near letter quality, draft, pica, elite, continuous expanded, compressed, proportional print, emphasised, double-strike, italics, underline, reverse print, superscript, subscript, vertically enlarged, line spacing, page length, switch configurations and backspace.

If you find your printer doesn't have one of these features just leave it out, apart from near letter quality which we will fix in a later article.

Now start filling in the On(Hex) and Off(Hex) columns from your manual with the codes that turn a feature on and off again.

Change any Escapes you may come across to their hex equivalent of h1B and leave out any symbol that tells you a value is in hex, such as the h I am using. If you have Back-Pack, fill in the On (Decimal) and Off (Decimal) columns by converting the hex values to decimal ones.

To save your arithmetic, use the calculator in Back-Pack or the Ascii table in the ST Basic Sourcebook. If you don't have Back-Pack, fill in the codes in Basic from your printer manual.

Don't worry about the character columns for the moment because we are going to use those later on for some clever tricks. Nor should you be concerned that 1st Word doesn't support reverse print or vertically enlarged print, because it will by the time we have finished. Once your table is completed we'll be ready to start trying out these commands.

If you have Back-Pack, enter typewriter mode and type in the first few codes in decimal, first on followed by the name of the feature and then off. For instance F1 might read "27 69 Emphasised on" and F2 might read "27 70 Emphasised off".

Now put some paper in the printer and turn it on. Try pressing F1 then typing "Testing emphasised" followed by a Return to send it to the printer. Remember to send the command to turn the feature OFF or you will have some unexpected results.

You can now work through the list of commands that affect the appearance of the print. I suggest you start with the same word each time you type so you can compare the effect easily. If you can't work out why something doesn't seem to work, just leave it for the moment – the reason will become clear at a later stage.

If you want to experiment further try combining the commands. For instance, try vertically enlarged with continuous expanded. If you don't have Back-Pack, load ST Basic and try the same thing using the LPRINT command to send the codes to the printer. The equivalent would be to enter the line:

```
LPRINT CHR$(27)"E";"Testing emphasis
ed"; CHR$(27) "F"
```

followed by a Return to execute the command. If you succeed with all these experiments, I suggest you save the results so you can refer to them later.

So far we have several useful tools to help us understand what our printer is doing. We have a large table of printer commands and a way of testing their effect with Back-Pack or ST Basic.

We are able to look at a 1st Word file with a disc editor and look at the file when it reaches the printer with the hex-dump facility. If you can do this don't try and understand everything you see at this stage.

● *Next month we'll start altering the PRINTER.HEX files on your 1st Word disc in simple stages to make our printers do everything we want. And that is where it gets interesting.*

Printer Feature	On Hex	On Basic	On Chars	Off Hex	Off Basic	Off Chars	Notes
NLQ	1B,6E	27,110	ESC+n	1B,50	27,80	ESC+P	
Elite	1B,4D	27,77	ESC+M	1B,50	27,80	ESC+P	
Double	1B,0E	27,14	ESC+SO	14	20	DC4	
Compress	1B,0F	27,15	ESC+SI	1B,50	27,80	ESC+P	
Italics	1B,34	27,52	ESC+4	1B,35	27,53	ESC+5	
Emphasis	1B,45	27,69	ESC+E	1B,46	27,70	ESC+F	

Table I: Printer feature codes

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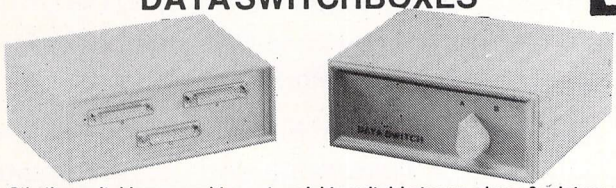

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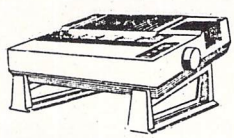

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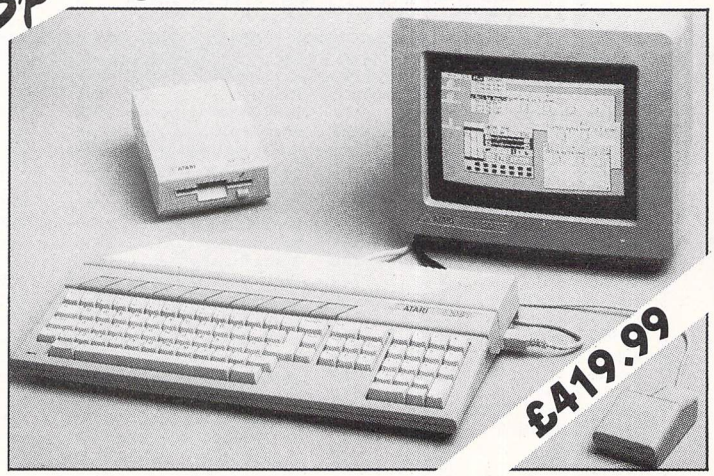

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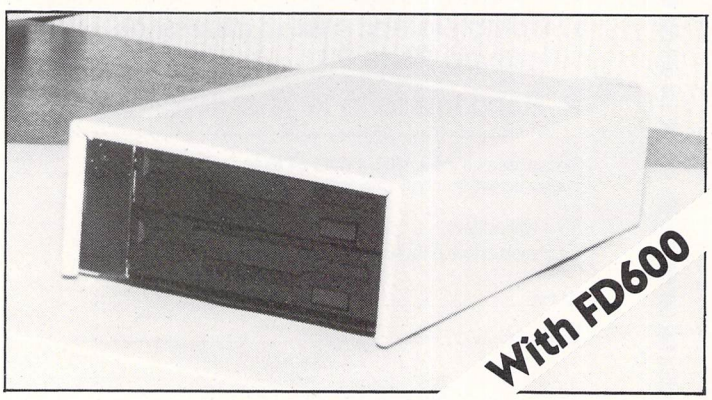

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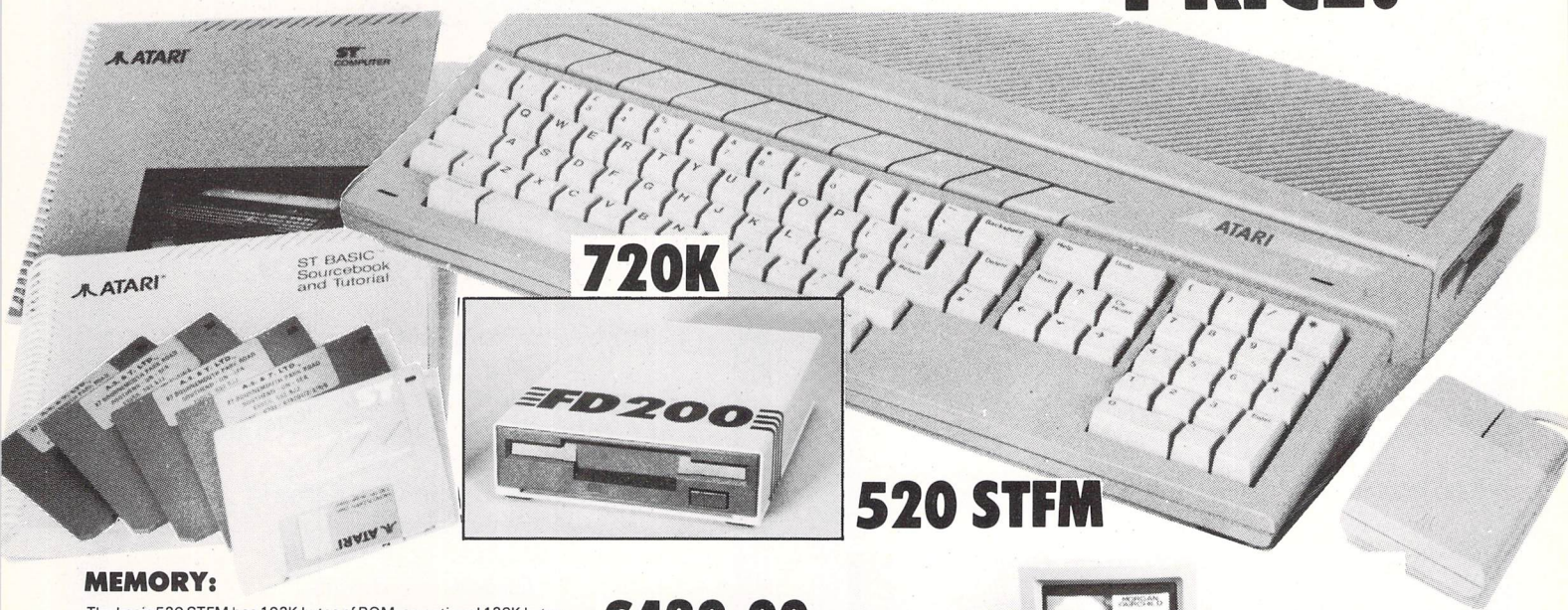

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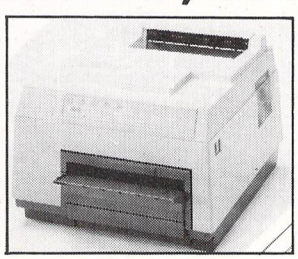

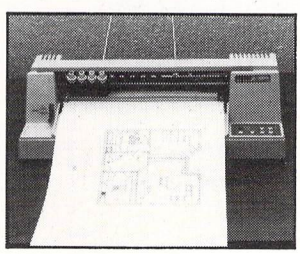

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by Dave Clemans

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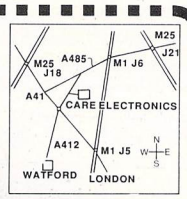

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A word in your ear

Alan Owen explains the intricacies of word processing

MOST people understand what is meant by the term word processing, but for the few who don't my definition is the electronic manipulation of text. An over simplification would be to say that a word processor program turns your computer into a sophisticated electronic typewriter.

In this short series I intend to review the current position of word processing relative to the Atari ST, along with some of the new developments coming along. In the process I hope to look at the word processor from three viewpoints:

- The home user, only needing to produce perhaps the occasional letter, short memo or curriculum vitae – though you will probably find a lot more uses.
- The small to medium sized business, which produces a considerable amount of correspondence, often of a repetitive nature – perhaps also producing reports or written estimates.
- The educational user, who may require all of the above facilities along with the production of good quality worksheets, the school or college magazine, theses or large quantities of open learning material.

If you are thinking of starting word processing, the ST is a first class machine to do it on, especially with the excellent monochrome monitor – I have yet to see a clearer monitor than the SM125. The 1040ST is probably best if you wish to use spell checkers without running out of memory.

You will of course, need a printer. An Epson or compatible will make life easier, but drivers are usually provided for many different types.

If your documents are going to be very long and you require near letter quality (NLQ) printing, the more expensive printers will give you a greater print speed and will be more reliable.

It is also true that some of the more expensive printers have buffers – memory built into the printer to store text – and this can speed up the process even more. However, for a combination of speed – 8 to 10 A4 sheets per minute of text, slower if incorporating graphics – and real quality, a laser printer cannot be beaten.

These have the speed of a good quality photocopier and can cope with a large throughput in the region of 10,000 to 100,000 pages per year, depending on the price you pay. This can range from about £1800 to over £4000, depending on its speed, capabilities and memory.

Atari has brought out its own laser printer which is reasonably priced, but it uses a lot of your STs memory. Because of this it needs one of the new Mega ST's to drive it.

Having got your printer, how do you choose your word processor program? The final choice has to be a personal one, very much guided by your own needs and the amount you are prepared to pay.

If you only have the odd letter to write or perhaps short essays then the 1st Word program – which at one time was bundled free with new STs – would be adequate.

If you do not have this program, you may be tempted to buy the cheapest one available. However, I do urge caution because you will find you need more facilities once you discover how useful a word processor program can be. I would recommend you buy the best program you can afford.

The problem at the moment is the choice for is limited. At the time of writing there are less than 10 programs readily available on the British Market.

The choice is wider for IBM compatibles, but of those available for the ST are as good as most and in some cases easier to use.

Prices vary from free (1st Word) to over £200 (Signum) – the more expensive ▷

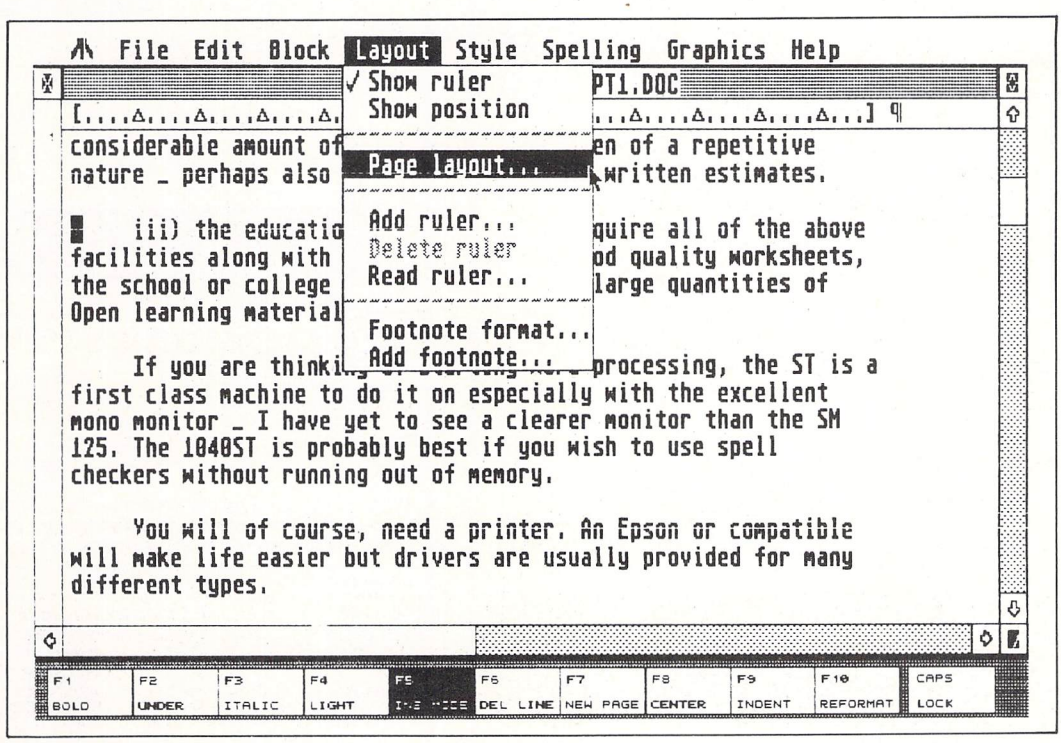

Figure I: 1st Word Plus editing screen

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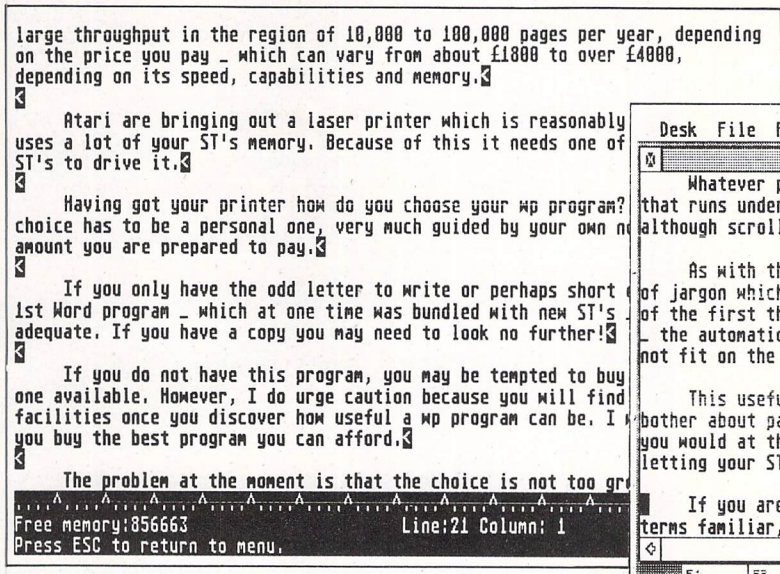

Figure II: Using ST Writer

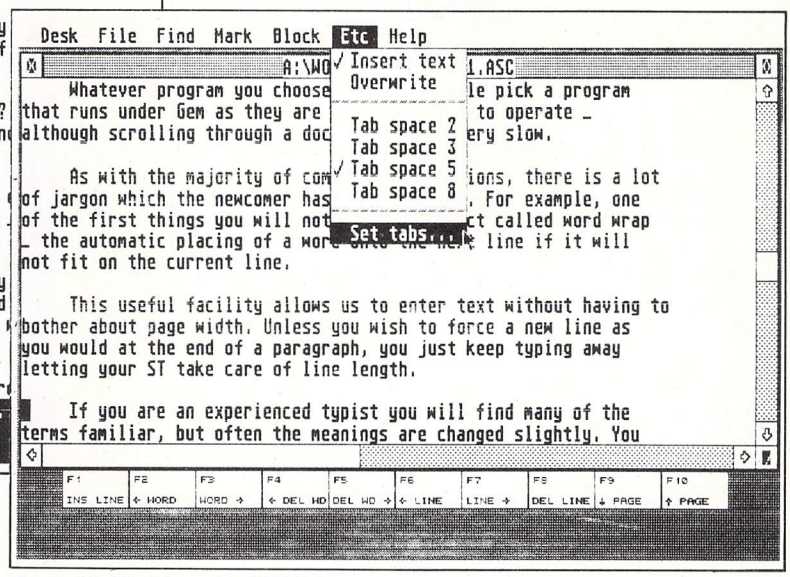

Figure III: Working with GST-Edit

◁ ones are those which allow graphics, mail merge and other advanced facilities. Signum in particular gives almost laser quality print output from a standard dot matrix printer.

I have heard a whisper that Microsoft is bringing out an ST version of its program Word. This is worth looking at if Microsoft brings the price down – at the moment it sells for around £300.

Whatever program you choose it is advisable pick one that runs under Gem as they are usually easier to operate – although scrolling through a document can be very slow.

As with the majority of computer applications, there is a lot of jargon which the newcomer has to understand. For instance, one of the first things you will notice is an effect called word wrap – the automatic placing of a word on to the next line if it will not fit on the current one – so words are not split over two lines.

This useful facility allows us to enter text without having to bother about page width. Unless you wish to force a new line as you would at the end of a paragraph, you just keep typing away, letting your ST take care of line length.

If you are an experienced typist you will find many of the terms familiar, but often the meanings are changed slightly. You will find most things, especially laying out text, easier and some things are possible on a word processor that are virtually impossible on a typewriter.

For instance, in most word processors it is possible to justify the right margin as well as the left. In other words, the edges of the columns will be straight, as in a newspaper or this magazine.

If you are used to a manual typewriter you will find the keys of your computer very light to use. There are also some extra keys, such as the Enter key which is the equivalent of the carriage return lever, a Backspace which usually erases the characters as the cursor passes over them, a Delete key, a numeric pad and the Cursor keys.

And we must not forget the mouse which, when working with a Gem program such as 1st Word, makes the formatting of documents fast and very easy.

An extra bonus is that in some word processors you can easily obtain statistics about your document, such as a word or sentence count, the average length of sentences and how much disc space it will take up when saved.

An accessory program which will give you all these facilities and several more, while checking your spelling too, is Thunder, by Batteries Included.

For the businessman, we have already touched on some of the differences between a word processor and a typewriter, but we have barely scratched the surface.

The most obvious advantage is the ability to format and correct text before committing it to paper. Most word processors are described as being WYSIWYG (What You See Is What You Get).

This allows to see what the finished document will look like before it is printed out: If you don't like what you see it's easy to make changes.

If you are using a dot matrix printer you can have many different fonts, diagrams, graphs or even pictures incorporated into your document.

You can easily call up a document and make alterations – which on a typed document would have meant completely retyping the whole thing. This, of course, will improve the efficiency of any typist.

On the more expensive word processor programs you can check your spelling and automatically hyphenate long words. This is particularly useful when you are justifying a document as the spacing with justification is sometimes rather odd to look at.

An important point here concerning justification and hyphenation. If you are submitting manuscripts for publication, for instance to *Atari ST User*, neither operation should be done. The editor has to undo all the styling – something which will not endear you to his heart.

The real power of word processing lies in the fact that once written, text can be formatted and reformatted as many times as you want.

You can delete or insert portions of text in existing documents, copy and move blocks of text around, and – in most programs – cut and paste blocks from one document to another.

You can also save and load blocks of text rather than whole documents – useful if you have standard text which you use in different letters.

On the output side, whole documents, defined blocks or separate pages can be printed. In most word processors you can program the output to appear exactly how you want it.

A 520ST can hold about 60 A4 pages of text and the 1040 around 200. If your documents are longer than this the better word processors can chain together documents and print them out as if they were one file.

Tables of contents and indexes can be generated and page numbers included automatically – even on opposite corners of alternate pages for binding them into book form if required.

● *Next month I'll look at the educational aspects of word processing and provide a glossary of the more common terms encountered.* □

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SCRAP BOOK

WE venture into the world of mathematics with our first Scrapbook entry this month.

A.F. Stratton of Warminster in Wiltshire has sent us a factorial evaluation program written in ST Basic which runs in any resolution.

The program first requests a number which it will then evaluate to every digit – for instance, 3!, 4! and 5! (3, 4 and 5 factorial) is:

3 x 2 x 1 = 6

4 x 3 x 2 x 1 = 24

5 x 4 x 3 x 2 x 1 = 120

As you can see, the larger the number the more time will be taken in evaluation – numbers greater than 1000 could take several days.

Extra facilities such as saving and loading calculated factorials, sending results to the printer or continue calculating from a factorial previously calculated could be added.

If any of our readers can suggest a faster method than the one here, perhaps by using a compiled language – we would like to hear from them.

The next three programs come from **S. Potts** of Church Stretton, Shropshire and demonstrate the workings of various types of sort routine.

In many applications it is important to be able to present information sorted in alphabetical or numeric order. Over the years a variety of routines have been written each with a varying degree of efficiency.

The first demonstration is of a bubble sort – so called because the higher values drift to the top in much the same way as the bubbles in a fizzy drink.

SCRAPBOOK is a regular feature consisting of short, simple programs sent in by our readers. It's a place where we can publish all of the interesting little routines that don't end up in our regular features but are too good for us not to share with other readers.

If you have a short program which you think other readers would find useful, send it to:

Scrapbook, Atari ST User,
Europa House, 68 Chester Road,
Hazel Grove, Stockport SK7 5NY.

```
10 REM ********************
20 REM *                  *
30 REM * Factor Evaluation *
40 REM *  By A F Stratton  *
50 REM * (c) Atari ST User *
60 REM *                  *
70 REM ********************
80 REM
90 REM Written in ST Basic
100 REM
110 CLEARW 2:FULLW 2
120 c%=1000
130 k=1
140 DIM a%(3000)
150 a%(1)=1
160 PRINT
170 INPUT "Factorial";f%
180 FOR i%=1 TO f%
190 p=0
200 FOR j%=1 TO k
210 p=p+a%(j%)*i%
220 a%(j%)=p-INT(p/c%)*c%
230 p=INT(p/c%)
240 NEXT j
250 WHILE p<>0
260 k=k+1
270 a%(k)=p-INT(p/c%)*c%
280 p=INT(p/c%)
290 WEND
300 NEXT i%
310 PRINT "=";STR$(a%(k));
320 FOR i%=k-1 TO 1 STEP -1
330 PRINT ",";
340 b$=""
350 b$=STR$(a%(i%))
360 FOR j% =0 TO 3-LEN(b$)
370 PRINT "0";
380 NEXT j%
390 PRINT RIGHT$(b$,LEN(b$)-1);
400 NEXT i%
410 PRINT
420 PRINT "Press a key when ready"
430 q=0
440 WHILE q=0
450 q=INP(2)
460 WEND
470 END
```

Program I: Factorial Calculator

```
10 REM  Bubble Sort Demo
20 REM    by S. Potts
30 REM
40 REM Written in ST Basic
50 REM (c) Atari St User
60 DIM a$(100)
70 c=1
80 WHILE a$(c-1)<>"*"
90 READ a$(c)
100 c=c+1
```

```
110 WEND
120 c=c-2
130 flag=0
140 FOR p=1 TO c-1
150 IF a$(p)>a$(p+1) THEN SWAP a$(p),
a$(p+1):flag=1
160 NEXT p
170 IF flag=1 THEN 130 ELSE FOR p=1
TO c:PRINT a$(p):NEXT
180 DATA A,C,G,F,C,D,E,N,A,B,*
```

Program II: Bubble sort

The DATA statement in line 180 can be made longer as long as an asterisk is used as a termination marker. The data doesn't have to be single letters – it can be words, numbers or even whole phrases.

The next program shows an exchange sort, where a data item of higher value is exchanged for a lower one until all the data is sorted.

This routine is quicker than a bubble sort where the data list is completely unsorted, but a bubble sort would be quicker where one item is added to a previously sorted list.

Finally we have the Shell sort – so named after its inventor Donald Shell. It is one of the fastest general purpose sorts there is.

Briefly, the array *a$()* is divided into two and the top data items in each half are compared, being swapped where necessary. Next the second pair are compared and so on through the list.

Once each half has been worked through, the number of items being compared is halved and the whole process starts again. This is repeated until the gap is down to one and no swaps have been made.

The data in this program is entered from the keyboard. As in the previous two programs you can enter data in any format you like – remember to tell the program you have finished entering data by making the last item an asterisk.

```
10 REM Exchange Sort Demo
20 REM    by S. Potts
30 REM
40 REM Written in ST Basic
50 REM (c) Atari St User
60 DIM a$(100)
70 c=1
80 WHILE a$(c-1)<>"*2"
90 READ a$(c)
100 c=c+1
110 WEND
120 c=c-2
130 FOR a=1 TO c-1
140 FOR b=a+1 TO C
150 IF a$(a)>a$(b) THEN SWAP A$(a),A
$(b)
160 NEXT b
170 NEXT a
180 FOR a=1 TO c
190 PRINT a$(a)
200 NEXT a
210 DATA A,C,G,F,C,D,E,N,A,B,*
```

Program III: Exchange sort

```
10 REM Shell Sort Demo
20 REM    by S Potts
30 REM
40 REM Written in ST Basic
50 REM (c) Atari St User
60 DIM S$(100)
70 n=0
80 WHILE s$(n)<>"*"
90 n=n+1
100 INPUT s$(n)
110 WEND
120 m=n
130 m=INT(m/2)
140 j=1
150 k=n-m
160 IF m=0 THEN FOR c=1 TO N:PRINT s
$(c):NEXT c:END
170 i=j
180 l=i+m
190 IF s$(i)>s$(l) THEN SWAP s$(i),s
$(l):i=i-m:IF i>0 THEN 180
200 j=j+1
210 IF j>k THEN 130 ELSE 170
```

Program IV: Shell sort Demo

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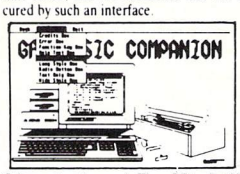

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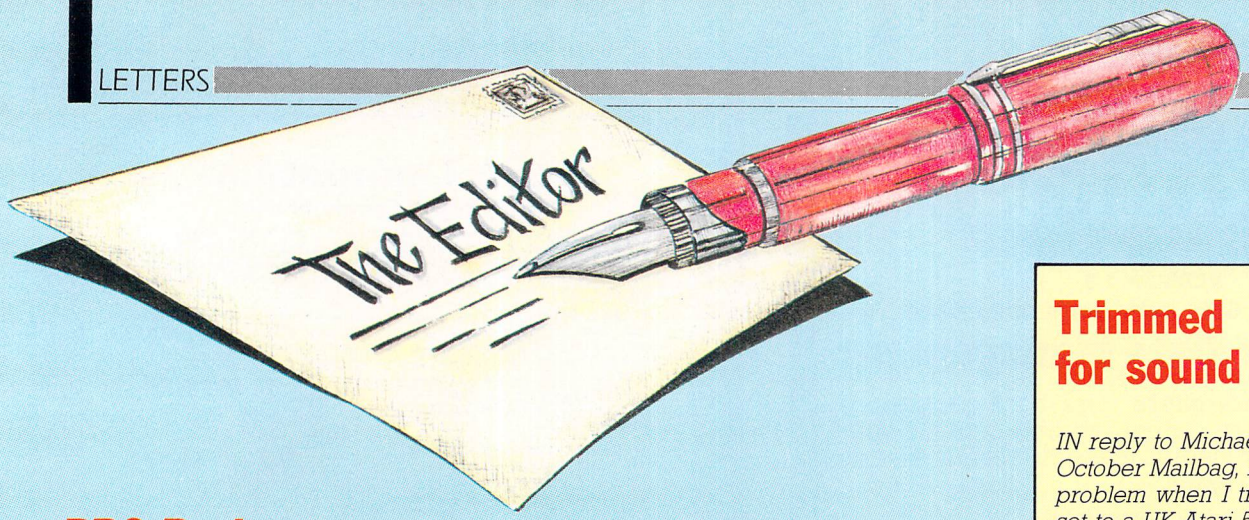

BBC Basic on the ST

PLEASE can you tell me where I can buy or order a disc so I can convert my son's Atari 520ST to BBC Basic.

This would help me a great deal as the school where I teach only uses BBC Micros and I don't want to invest in another computer if at all possible. – **R. Hodgson, Gilmorton, Lutterworth.**

● Unfortunately, BBC Basic isn't available for the ST. However, Computer Concepts Fast Basic is very similar and was written by Jeremy Rushton and friends – a well known BBC Micro expert.

The ST's screen handling is totally different to the BBC Micro's so the text and graphics commands are different, but these apart, Fast Basic and BBC Basic are pretty compatible.

Code Breaker, our game of the month in the September 1987 issue of *Atari ST User* was originally written in BBC Basic. After being transferred to an ST and the plot and draw commands altered it ran first time.

Commercial software won't run of course, but home grown programs can usually be adapted without too much difficulty.

Blackbox blackout

I AM a subscriber to Atari ST User *and enjoy the magazine very much. I was delighted to find the type-in game Molecule since I own the board game and no one wants to play against me.*

I was further pleased to find that the listing was in ST Basic. However, I found a bug which turned out to be an omission in line 900.

I have one other niggle: Having typed in the whole listing and run it, I could tell something was not quite right. I read the article and found that a high resolution monitor was required.

Fortunately for me, I only had to unpack mine from its box, but for those less fortunate, I think it would have been sensible to put a REM statement to that effect at the start of the listing.

Having said all this, I am addicted to the game and my best score is nine with five balls. – **Suzanne Reynolds, Edmonton, London.**

● Our apologies to Suzanne and other readers who typed in Molecule from the October issue. The following commands need to be added to the end of line 900:

```
GOSUB drawlittlebox:COLOR 1,1,1,PAT
T2,PATT1:GOTO pressbuton
```

The fact that the game only runs in high resolution is mentioned on line three of the first paragraph of the accompanying article.

Basic education

I WOULD be grateful for your advice on what should be a quite unnecessary question – how can I learn about Atari ST Basic?

After months of searching I have not found the information I need. I am very familiar with Sinclair Basic so most of the first half of Atari's ST Basic Sourcebook and Tutorial is easy to follow, but it stops just short of where I need to start.

For instance, on page 123 the half dozen lines and the example on Gemsys are totally meaningless to the newcomer. Even terms such as global, addrin or gintout are without obvious meaning and are not listed or described anywhere.

I would be most grateful for any assistance you can give me. – **Alan Bruce, Orpington, Kent.**

● Some excellent books are available for the student of ST Basic. The Abacus range distributed by Precision Software (Tel: 01-330 7166) or the Simple Introduction to Basic by Longman Press (Tel: 0279 26721) are well written and easy to follow.

The free Mini cards given away with the May, June and July 1987 issues of *Atari ST User* should be very useful. The June issue also describes how to use the Vdisys routines.

These are available by completing the back issues form on Page 93.

The broad spectrum

I AM led to believe there was a Spectrum emulator program in a recent issue of Atari ST User.

Could you confirm if this is true, and if it is, perhaps you could advise me which issue it was in. – **Dr. W.M.F. Dean, Glasgow,**

● Sorry Dr. Dean, we haven't heard of such a program. We reviewed an Apple Macintosh emulator in our April 1987 issue and Kuma's K-Max transputer in September, but nothing at all for the Spectrum.

Trimmed for sound

IN reply to Michael Winch's letter in the October Mailbag, I experienced a similar problem when I tried to connect my TV set to a UK Atari 520STM.

I got a splendid picture, but no sound output through the TV speaker. However, there is an easy fix to this silent misfortune, but it involves opening the ST and removing the metal shielding.

Once this has been done the modulator box can be seen in the centre of the printed circuit board. Removing the lid from the box will reveal a grey plastic trim screw – there is also a green one but this should be ignored.

You should now connect the TV, disc

Stock market topic

WE are currently working on a Stock Market analysis program which will run on the ST. It will have all the necessary share price editing and viewing facilities and may also have the ability to view graphs and trends in the share prices.

We had hoped to include the ability to read the daily share price updates directly from the Stock Exchange information service, Topic, but we are having great difficulty finding information on the service.

Can any readers provide me with information about Topic? – **M. J. Edwards, Rocksoft Programming, Ridge Cottage, Pertenhall, Beds. MK44 2AX.**

Best port for communications

I RECENTLY bought an Atari 520STFM after using a Spectrum for five years. I am an electronics enthusiast and I want to be able to use two way communications (parallel), on my ST.

I am aware that I can use my printer port for reading from – or even the joy-

drive and power leads and load a program with decent sound output – such as a music demo. By carefully adjusting the trim screw with a small flat blade screwdriver, you will soon be hearing sound through your TV set.

When satisfied, turn everything off, disconnect all the leads and reassemble your ST. This adjustment works fine for a Swedish TV which is of the same type as those used by Mr. Winch in Switzerland. – **Patrik Sanfridsson, Borensberg, Sweden.**

● Readers should note that opening up your ST will invalidate any warranty – also there are high voltages inside the case which can seriously damage your health if you come in contact with them.

If you are at all unsure about your electronic capabilities you should consult your local computer service shop.

stick port. As I am new to the Atari, how do I detect the inputs from ST Basic or Fast Basic?

Could you also tell me how to change the default colours – I need eight shades of grey. – **Dani Miller, London.**

● In either versions of Basic, the printer, auxiliary (RS232), console (keyboard) and Midi ports can be read using the following command:

```
x=INP(n)
```

where *n* is in the range zero to three where zero is the printer, one the RS232, two the keyboard and three the Midi.

Setting colours in Fast Basic is done using a command line like:

```
PALETTE p,r,g,b
```

where *p* is the palette number – 0 to 15 in low res, *r* is the red index, that is the amount of red required between 0 and 1000, *g* is the green index and *b* the blue. Using this command, white would have an *rgb* index of 1000,1000,1000 and black would be 0,0,0.

The same function is performed in ST Basic by the next routine:

```
100 POKE contrl,14
110 POKE contrl+2,0
120 POKE contrl+6,4
130 POKE contrl+12,2
140 POKE intin,p
150 POKE intin+2,r
160 POKE intin+4,g
170 POKE intin+6,b
180 VDISYS(1)
```

again, *p* is the palette number from 0 to 15, and *r*, *g* and *b* are the red, green and blue indices between 0 and 1000.

From this you will see why more people prefer Fast Basic to ST Basic.

Fast flying discs

BEING a newcomer to ST computing, one of the first programs I bought was Sub Logic's Flight Simulator II.

I have noticed that the program accesses the disc to load in scenery data while flying the aircraft. During this the simulator stops.

If my ST has 520k of ram and the maximum capacity of a disc is 349k, why couldn't the whole program be loaded in one go to save the annoying pauses? – **D.W. Powell, Lancing, West Sussex.**

● While it's true your ST has more memory than could be filled from a single sided disc, not all of it is available to the program.

Memory is reserved by the system for such things a keeping track of system variables, input or output buffers and so on.

Also, the data on disc is in a highly compacted form, which when expanded, takes up a lot of memory.

Booting from a hard disc

I HAVE a hard disc drive with my 520STFM. Is it possible to arrange the ST so it boots from the hard disc.

The reason for this request is that loading Desktop accessories from floppy disc is so slow. Also, is it possible to arrange for the ST to execute a program on switch-on?

I am a keen programmer and would prefer advice as to how to solve the above problems myself rather than buying software. – **Peter J Potts, Cambridge.**

● Your first query has no easy DIY solution. There is a program available in the STuff package from Microdeal called Hardauto which allows to load autoboot accessories from your hard disc. STuff was reviewed in the October 1987 issue of *Atari ST User*.

The answer to your second question is very simple. Any program – with a filetype of .PRG placed in a folder called Auto will automatically run when the ST is booted.

Full font Star program

WITH reference to Mr Kinnear's letter in October's mailbag, on the subject of downloading characters to the Star NL-10 printer, I have written a program in Fast Basic which provides a full font design system for this printer in NLQ mode.

While the program is by no means elegant, it does work. I have used it extensively without finding any bugs. It enables you to design characters very quickly.

Requirements are any ST, a Star NL-10 or Star compatible printer, a high resolution monitor and preferably, 1st Word or 1st Word Plus.

The program is too long to be published in the magazine, but NL-10 owners can contact me. On receipt of a blank, formatted disc and a stamped, self addressed envelope I will provide a free copy of my program plus the Fast Basic run-time module so that those who don't have Fast Basic can use my program.

As I am currently studying at Durham University, communications received outside of term time will obtain the quickest response. – **Adam G. Banks, 32 Dudley Street, Great Grimsby, S. Humberside DN31 2AB.**

Quick flash on FM

I OWN a 520STFM which I bought in June. I read with interest the letter in your August 1987 issue of Atari ST User *about the computer overheating due to inadequate ventilation. I say this because I think this may have happened to me.*

I was using my ST with modem when all of a sudden there was a faint pop and a flash immediately followed by the total breakdown of my computer.

It all came from the transformer area of my ST and I was wondering if this was due to the ventilation slots being too small. If this is the reason, how do I rectify it? Can I send the computer to the dealer to have the work done under guarantee?

I would be most grateful if you could help me as I am no computer expert and would like to be able to use my ST without having to send it back to my dealer all the time due to overheating. – **V. Reeves, Skegness, Lincs.**

● There has been a problem with the power supplies in 520STs bought around that time and the same problem occurred with one of our machines. Return the computer to your dealer, who will correct the fault under guarantee.

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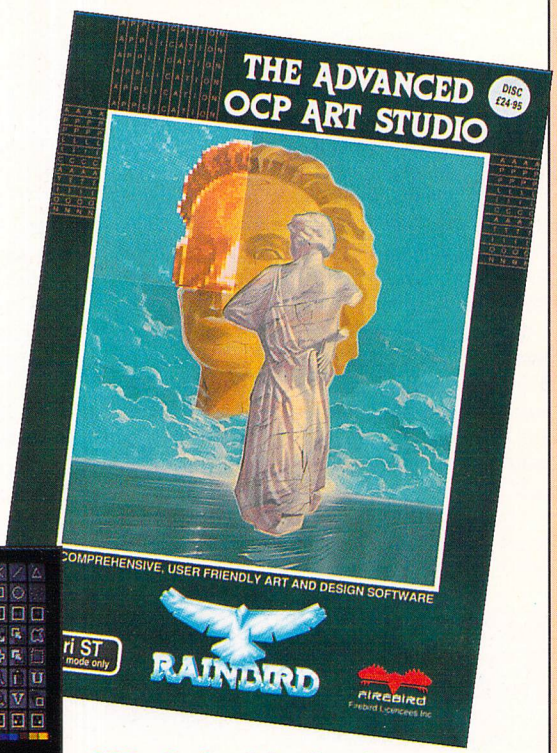

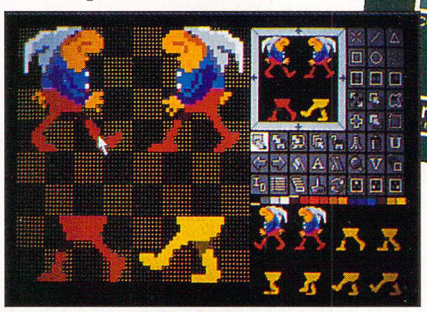

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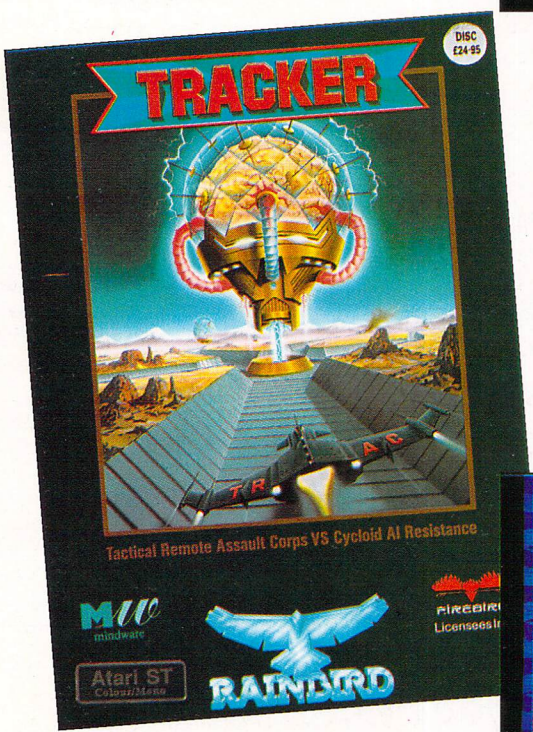

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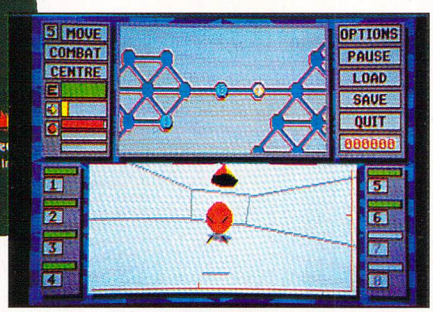

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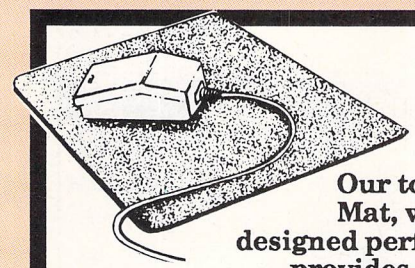

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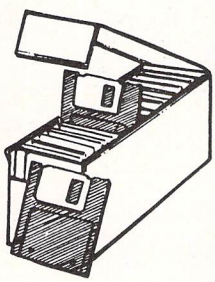

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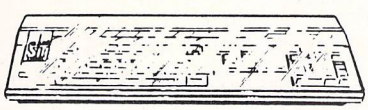

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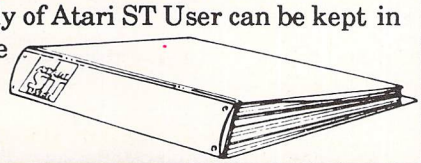

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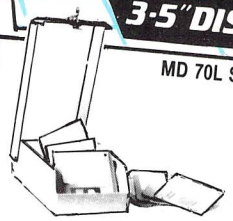

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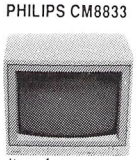

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