To boldly go... with your ST

- Is Degas Elite the ultimate ST graphics package?
- Three ST communications programs compared
- How to create your own speaking clock
Your one stop mega-compustore for home, education & business needs!
Atari launches Mega-ST flagships

NEW flagships of the Atari line, the Mega-ST workstations – just announced in Las Vegas – provide stunning power without the price in desktop publishing and professional applications. The new machines incorporate one, two or four megabytes of RAM respectively, and come with integral 800 floppy disc drive, graphics processor and detachable ergonomic keyboard.

Although they look completely different, all three models use 100% compatible with the existing Atari 520ST and 1040ST models.

Enhancements incorporated in the Mega-ST range include a battery-backed real-time clock, internal storage space for an additional circuit board, and full external routing of the 68000 bus. The architecture is left wide open for further enhancement which includes ram expansion capability up to 16M and networking.

Each Mega-ST is housed in a system unit 22 x 22 x 2.5 in containing the CPU, double-sided floppy disc drive and internal power supply. The normal complement of ST ports – D-M, RS-232 serial, parallel, disc, video, cartridge, MIDI, mouse and joystick – plus an additional port for the keyboard, are included.

The unit is reinforced to support a monitor and can be stacked with other components, notably the enhanced 20MB hard disc drive.

The slimline Winchester drive, incorporating an extra port for Daisy chaining with other DMA-compatible peripherals like the new laser printer, was announced at the same time as the Mega-STs.

A sleek new chassis contains a redesigned ST motherboard. Standard equipment includes a battery-backed clock calendar which runs off alkaline penlight batteries.

Mega-ST architecture is wide open, permitting internal and external expansion with add-on circuit cards.

The new design provides full access to the 68000 bus and power supply, and fixtures have been provided for installing a circuit board inside the case.

Further expansion is possible by routing the bus outside to an external card cage.

The new keyboard can be lap-held, but has adjustable legs for desk use and can be adjusted to the user's preferred typing angle. Internally the keyboard has been enhanced with high quality key switches for improved tactile and auditory feedback, better feel and increased reliability.

The Mega-ST range, priced from $1,000 up, was described at the launch by Atari Corp spokesman Neil Harris as "our flagship products.

He added: "They are also proof that Atari has been listening to its users and taking their advice seriously."

The revolutionary Atari laser printer, shown in prototype at Las Vegas, matches or exceeds the performance of other laser printer systems while costing only half as much at about $1,500.

Coupled with the power of an ST the printer will form the output stage of a desktop publishing system costing less than $3,000.

Designed to interface with the ST's high-speed DMA port and incorporating a standard laser engine, the Atari laser printer will produce print quality at 300 dots per inch resolution, and it can handle multiple and standard page description languages.

Atari hardware engineering division head Shiraz Shivi said: "We have designed an admirable flexible system that includes all the advantages and few of the disadvantages of present laser printer architecture.

"The printer will be able to handle multiple fonts and standard page description languages at the discretion of the software. Moreover, adapting present software to take full advantage of the capabilities of the laser printer should be fairly simple providing it has been written in conformance with GEM standards."

ST SOFTWARE GALORE

A survey has shown that more than 1,000 titles are now available for the ST range. This compares with some 300 recorded in September last year and 659 in November. Although these are global figures UK software houses have accounted for almost half of the packages.

The British will also figure prominently in the next wave, with more than 430 companies reporting to be currently developing new products.

This demonstration of support for the ST has been warmly welcomed by Roland Whitehouse, Atari UK's new marketing support manager software.

"We believe there is no reason why the current total should not have doubled by the end of the year", he told Atari User.

However, ever since on Roland Whitehouse and his team will be placing the emphasis on quality rather than quantity. In the light of this, Atari has been particularly pleased by the number of major software houses who have thrown their weight behind the ST.

"When you get firms like Grafix with Logistics and MicroSoft with Write jumping on board then you know you are on target", said the new software boss. "We are also aware of many other firms of that status who are developing products for the ST. The big boys are on their way."

A breakdown of the 1,000 title bonanza for the...
ST SOFTWARE

Karate Kid II 23.95
World Games 23.95
Donald Duck 22.95
Thai Boxing 19.75
Harrier Strike Mission 42.50
Shanghai 22.95
Int. Karate 19.95
Make It Move 39.95
Mercenary 23.95
Joust 27.95
Pinball Factory 27.95
Starglider 22.50
A Mind Forever Voyaging 32.50
Chess 24.00
Sundog 29.95
Printmaster 35.00
Art Gallery 25.00
Time Bandits 27.50
Cards 19.95
Leader Board 23.50
Winter Games 24.99
Paintworks 34.99
Mean 18 42.50
Colourspace 18.95
Silent Service 21.95
Word for Word 35.50
Hacker II 42.50
Area 27.95
Deep Space 32.50
ST Karate 23.95
Space Station 24.95
Hitchin Hiker Guide 27.95
B.B.S. bulletin Board System 29.00
Leather Goddesses of Phobos 27.50
Tass Times 23.95
Maps & Legends 27.50
Trivia Challenge 18.95
Basketball 2 on 2 22.95
The Animator 27.95
Protector 18.95
Superheux 37.50

Many more available

BUSINESS SOFTWARE

K-Spread 47.50
K-Resource 37.95
Degas Elite 75.00
Fast Comm 45.95
1st Word Plus 23.95
Fast Basic 84.95
K-Switch 27.95
K-Word 47.50
Degas 37.50
Trimbase 84.95
D.B. Cali 47.95
D.B. Man 89.00
Thunder 37.50
VIP Full Version 179.00

A.S.T. 1000 1meg Drive 99.00
Cumana Single 1meg Drive 159.00
Cumana Twin 1meg Drive 269.00
A.S.T. 5.25 Drive 124.00
Philips 0533 med/res coll monitor 285.00
20 meg Hard/Disk 650.00
Haba Digitizer 279.95
Caslo C220s 279.95
Centronics GLP II NLC Printer 155.00

Dealer for AST PRODUCTS

HV Battery Back Up Clock 39.95
Internal Fitting includes Software

ST HARDWARE

520 STSM Built in DiskDrive Ring

1040STF including Hi-Res b/w monitor and printer 799.00
1040STF including Hi-Res b/w monitor 699.00
1040STF Keyboard only (inc mouse) 599.00
520STFM Including built in half Meg drive and Hi-Res b/w monitor 489.00
520STFM Including built in half Meg drive 389.00
520STM Including mouse + 16 discs 285.00
520STMc Includes mouse +16 discpe plus 1Meg memory 385.00
Atari Med-Res. Colour Monitor 379.00
Atari SF 314 1Meg Drive 189.00

I would like to order:-
1.
2.
3.
4.
5.

Please send orders and make cheques/P.O.'s payable to:-
Homeview Video
296 Brockley Road, Brockley, London SE4 2RA

Name__________________________
Address_______________________

Tel No.

Enquiries welcome call in or phone with any problems for friendly advice regardless of where purchased Phone orders send same day - open 7 days a week: Mon, Tues, Wed, Fri and Sat Open 8.00pm Thurs & Fri Open till 8.30pm Sun until 11am-3pm.

24 Hour Answer Service
HOMEVIEW BBs
01-592 7767 300/300 1200/75 8
bit none parity 1 stop bit.

Prices Include VAT and FREE
P&P on most items - Overseas
orders welcome

CALL FOR BEST PRICES.
CREDIT CARD

HOTLINE 01-691 0207
RING HOMEVIEW NOW
296 BROCKLEY ROAD, BROCKLEY,
LONDON SE4 2RA
ST shows that entertainment software provides the largest category with 20 per cent. But this is followed close behind by word processing, utilities and languages—all with 10 per cent—then accounts, comms, music, education and graphics with around 5 per cent each.

At the bottom of the percentage league table come spreadsheets and CAD. But this situation is unlikely to remain this way for long, for the second generation of ST software is likely to find vertical applications figuring prominently.

"This year is going to be a very exciting time for the ST market here in the UK in particular", says Roland Whitehouse.

SOFTWARE SNAG SOLVED

Since the recent launch of the 520STFM, a number of cases have been reported of people returning the machines to dealers claiming they were faulty. Closer examination revealed that the problem lay not with the hardware but with some copy protected software, in particular with Arena, Cards, Deep Space, O Ball and World Games.

An investigation by Atari experts revealed that protection schemes which involve the use of disc drive tracks outside the normal operating specification may not run on all ST disc drives.

Technical boss Les Player explained: "This is due to the fact that disc drive manufacturers—which for the ST—guarantee the performance of their drives up to certain track limits. Access to tracks beyond this limit is not guaranteed.

"For example, the 520ST currently uses a Chinnon 6ms drive which is guaranteed to access tracks between 1 and 81. Some software developers use track 82—which can normally be written on—from which to read a protection code. This drive cannot access track 82 because it is beyond the specification of the hardware and therefore the software fails to load due to the protection code failing to load.

"Some software also uses protection based on timing techniques which may also cause load problems on certain manufacturers' disc drives".

Atari has now informed all the developers of these facts and problems should not occur in the future.

SHOT ACROSS PIRATES' BOWS

A LEADING duplicating house has come up with a revolutionary technique which it claims will put ST software pirates out of business.

Top Copy has spent the last year designing a black box which connects to a normal disc drive. The box destroys part of the magnetism on one of the tracks of the disc, making sectors on this track unstable. Every time a checksum is taken a different number is returned.

"To make the system secure the customer is asked to pick a number from one to 80 and the relevant track is then amended", said John Juleff, managing director of Top Copy.

Routines can be added to the original program to check the sector and verify that the disc is an original. The disc cannot then be copied by normal software means.

"There is no way to crack the system without the use of a black box and we're not selling these off because we want the duplicating business", said Juleff.

Prices for the service range from £1.50 a copy for a minimum of 100 discs to £1.15 a copy for a maximum of 100,000 discs.

MacEMULATOR ROMs ARRIVE

A SHIPMENT of roms needed to make the controversial "MacEmulator" work on the Atari ST has arrived in the UK.

It has been brought in by Eagle Computers of Cardiff who are now marketing them for £29.95 a pair.

This follows the importing of the boards from America by Middlesex-based distributor Rottak last month.

Now by combining the board—being sold for £169.95—with two of the roms, it is claimed that an ST can be effectively turned into an Apple Macintosh. As well as providing access to an entire new range of top flight business software, the emulator also opens the possibility of professional desktop publishing on the ST.

It was first shown in America early last year but was hurriedly withdrawn when Apple threatened legal action.

This was because the original design incorporated two Macintosh roms necessary for an effective interface between software and machine.

It was subsequently re-released without the roms, leaving purchasers to persuade Apple dealers to sell them roms.

Since then Apple has threatened to strike off any dealers who supply them for this purpose. However, Howard Kennedy, a director of Eagle Computers, told Atari User that he thought his company was on safe ground selling the roms in the UK.

"First of all, we are not an Apple dealer", he said, "and we are supplying them completely independently of Rottak. So we are very happy for people to know what we are doing".

Asked how successful he thought the emulator would be, Kennedy replied:

"All I know is I've sold an awful lot of these roms. On the basis of this alone, I believe they must have sold 1,000 boards already. But that's hardly surprising when you consider that for around £500 you can effectively have a Macintosh built around a 520STFM".

Asked about the source of his roms, he replied: "That's one thing I'm not going to tell you".

There has been little in the way of official comment from Atari itself about the emulator. However one informed source who had seen one says he believes it has at least one major drawback: "You need a Macintosh alongside your ST with emulator in order to convert programs to ST format", he said.
COMPUTERS
With Built In Disc Drive

1040 STF + Mono Monitor £699.95
1040 STF + Colour Monitor £899.95
520 STFM Keyboard £399.95
520 STFM System (includes SM125) £499.95

ATARI ST ACCESSORIES

SH204 (20 Megabyte Winchester) £660.00
SF314 (D/Sided Drive 820k) £180.00
SF354 (S/Sided Drive 360k) £137.00
SC1224 (12" Med Colour Monitor) £799.95
SM125 (High Res Mono Monitor) £149.95
Mouse (as of 1/1/87) £25.30

AS & T ST ACCESSORIES

AST 1000C Without PSU £99.00
PSU for AST 1000C or F £25.00
Twin Disc Drive with PSU £199.00
AST 1000F (5.25" Drive with 40/80T switch) £124.00
AST 520 (520 STM .5 Megabyte RAM upgrade) £39.99
Philips CM6533 (14" Colour Monitor) £299.00
Multisync Monitor (can display Mono & Colour 0.31 mm tube) £699.00

UPGRADED 520 STFM's

.5 Megabyte Ram upgrade Add £57.50
2 Megabyte Ram upgrade Add £350.00
3.5 Megabyte Ram upgrade Add £650.00
Internal D/Sided Disc Drive (using NEC1036A Drive) Add £80.50

520 STFM DSD + SYSTEM

To match the 1040 TST System Plus
TV output for colour. £637.50
Without the SM125 £537.50

PRINTERS
Leads Included

SMM 604 80cps £199.00
Epsom FX 880 200cps £25.00
Epsom FX 1000 200cps £42.00
Star NL10 120cps £269.00
Star NX15 120cps £385.00
Star N315 300cps £342.00
MP 165 160cps £215.00
Juki 5510 180cps £329.00
Juki 6100 20cps (Daisywheel) £235.00
QSM K8 ( Laser Printer) £228.00
Ribbons from Alternate Daisywheels £5.00
PAPER
11" X 9.5" 60gsm 2000 £14.00
11" X 9.25" 100gsm 1000 £30.00

MODEMS
Leads Included

WS 4000 £172.44
Ideal for Prestel etc. and 300 Baud BBS's £569.25
WS 3000 Professional £49.95
V22 1200/1200 Baud Supported £49.95
Fastcom £49.95
Prestel, Viewdata & Terminal software. £49.95
BBS V2.0 £49.95
Bulletin Board System.

1040 STF RAM UPGRADES

1.5 Megabyte £350.00
3 Megabyte £650.00

520 STM without Mouse £259.95
520 STM with DIS Drive £377.00
520 STM with 1 Meg RAM £377.00
520 STM+ & AST1000 £467.00

CABLES

RGB video leads for Sony or Grundig TV with Euro connector.
Philips CM6533 leads, Composite video leads,
6 foot Atari Drive Leads, Atari to 5.25" Drive,
Atari to 3.5" Drive,
Centronics Printers,
Serial Interface Printers,
Modem Leads £15

MIDI INSTRUMENTS

Casio CZ230S £295.00
Digital Synthesiser £59.95
Easy Track £59.95
Midi Software

BOX OF 10 DISCS
Sony 3.5" S/S D/D £22.00
Sony 3.5" D/S D/D £29.00

WE ALSO STOCK AMSTRAD

PC 1512 S/D MM £516.35
PC 1512 D/MM £542.85
PC 1512 D/D CM £383.35
PC 1512 HD20 CM £1033.85
PC 1512 HD20 CM £1229.35
PCW 8256 £458.65
PCW 8512 £573.85
SOFTWARE

VIP Professional £194.35 Text £228.85 Gem
Accountant+ £199.95 Sage software
ST Accounts £172.50
General Ledger Synsoft
DEMAN £113.85
PC Board Designer £199.95
PC Intercomm £124.00
PRO Fortran 77 £146.35
Megamax C £157.55
Modula II £99.95
Trimbase £89.95
Degas Elite £79.95
Typsetter Elite £34.95
Thunder £39.95
K-Word £49.95
K-Graph II £49.95
K-Spread II £79.95
K-Ram £29.95
Brattacass £34.95
CAD 3D £49.95
Colour Space £19.95
Leaderboard £24.95
Little Computer People £24.95
The Pawn £24.95
Psion Chess £24.95
Silent Service £24.95
Star Glider £29.95
Sundog £24.95
Terrestrial Encounter £14.95
Time Bandit £29.95
Winter Games £24.95
World Games £24.95
Karate Kid II £24.95
Art Directors £49.95
Film Directors £59.95
Make it Move £39.95

HOW TO ORDER
Prices include VAT. We accept Access and Visa. Cheques made out to AS & T Ltd. Government and Educational Authority official orders accepted. Discount for payment with orders. Cheques require 7 days to clear. We are authorised Atari & Amstrad business dealers.

POSTAGE
Small items i.e. cables, discs, & software sent by recorded post £1.50
Boxes of paper & metal cases by parcel £3.00
All drives, modems, monitors & computers are sent by carrier (signature reqd.) £5.00
Drives and Modems £7.00
Monitors and Computers £7.00
Computer systems £11.00

Address: Advanced Systems & Techniques Ltd.
87 Bournemouth Park Road
Southend on Sea
Essex SS2 5JJ
We are open to the public. Monday to Friday 9.00 to 17.30, Saturday 11.00 to 17.30
Phone (0702) 618201 or 618202

We reserve the right to change prices and specifications.
GFA BASIC for your Atari ST

- Compact high-speed interpreter
- 11 digit mathematical precision
- Simple GEM programming
- User-friendly Editor

Only £59.95 including VAT

GFA BASIC is rapidly becoming the accepted standard Basic for the Atari ST throughout Europe, with over 12,000 copies sold. Now available in Britain from The Glentop Press, this ultra-fast Basic Interpreter exploits the full potential of the ST. The system disc contains numerous programs and utilities. Also included is a 'RUN-ONLY' facility, allowing the production of programs that will run on any ST without GFA BASIC installed.

Available soon:

GFA BASIC COMPILER
A fast two-pass compiler that creates high-speed object code, which requires no run-time module. Only £69.95 (inc. VAT).

GFA DRAFT
A GEM-based professional quality CAD package. Can be used for producing two dimensional drawings for many applications. Only £99.95 (inc. VAT).

Available from ST dealers or good computer shops. In case of difficulty contact:

GLENTOP PRESS LIMITED
Standfast House, Bath Place,
Barnet, Herts EN5 5XE
Tel: 01-441 4130
Long on expertise, short on interest

Reviewed by Douglas Wooller

TO put it simply, QBall is something of a combination of Newton’s Cradle and three-dimensional billiards. The screen is divided vertically into two halves. To the left is a large, transparent cube containing several billiard balls. To the right is the game logo and input prompt.

The aim of the game is to pot the six red and one yellow balls into any of the eight corner pockets of the table by cannoning a black cue ball into them.

The table is really a large suspended cube with its front face open so that you can see what is going on inside. By using the appropriate cursor keys, the cube can be rotated horizontally and vertically.

When horizontally shifted, the cube rotates smoothly and swiftly before your eyes. When rotated vertically, the picture simply switches to show the new position.

The game is played using the ST’s numeric keypad. The first step is to move the cue ball to any position you like within the cube. Next, a pulsating, black ball will appear – this represents the spot at which you are aiming and can similarly be moved around.

The amount of power, friction and spin are then optionally set. The more friction you use, the faster and longer the balls will career around the cube.

When all is ready, pressing the asterisk key fires your cue ball. If struck, the balls will start bouncing about the cube like demented bubbles, and with a bit of luck at least one may pop down a pocket. The yellow ball must be the last one potted, otherwise it just keeps reappearing.

A countdown timer keeps the pressure on you to set up your next play. When the timer reaches zero the cue ball will automatically fire, ready or not.

And that’s about it, really. You just keep potting away until all the balls are safely tucked up in bed. It may sound easy, but because of the 3D element, it’s anything but.

As a programming feat, QBall is quite impressive. As a sort of executive toy, you could even say that it has a certain restful fascination about it. But as a game, I am afraid that QBall simply doesn’t have enough going for it. Despite the undoubted challenge it provides, it lacks excitement and variety.

I may be wrong, but I would think that most games enthusiasts are unlikely to be kept interested beyond the first few plays. And £20 is a lot of money to spend on an executive toy.

Sound: 4
Graphics: 8
Playability: 7
Value for money: 6

Overall: 6

Program: QBall
Price: £19.95
Supplier: English Software, 1 North Parade, Passage Gardens, Manchester M2 2NH.
Tel: 061-833 1358
HAVING seen just how impressive Paul Woakes' Mercenary was on the 8 bit Atari micros, I wondered if it could be bettered on the ST. It has—and how!

Apart from the much sharper graphics, the game seems at first sight to be almost identical to the original.

The neat opening sequence has you going out of control in outer space and crash landing on the planet Targ. Nearby is the conveniently abandoned alien space craft which will be your initial means of transport around the planet.

You step into the craft, start her up... and then you'll be struck dumb. Ever gone from 0 to 1,000 mph in a second? You will in Mercenary.

The game's speed is sensational, and incredibly smooth too. Switch to top speed and you can hurtle along the ground or through the air, screaming past, through, around, or over the many three-dimensional wire frame structures that adorn this strange land. It's totally exhilarating and quite stunning.

And there's more good news—Mercenary has been packaged as a compendium. For your money you get two games—the original Escape from Targ and its sequel, The Second City, together with the Targ Survival Kit.

The latter is a sumptuous help package, containing a comprehensive map of Targ, charts and a 27 page novella which itself provides an insight into the game's many secrets. The Kit comes in a sealed envelope bearing the legend "Only to be opened in an emergency"... but can you resist the temptation?

Mercenary is a superb blend of arcade action, adventure and flight simulation which uses astonishingly fast 3D vector graphics.

In Escape from Targ you play the part of an intergalactic soldier of fortune. You have crash-landed among an alien civilization of two mutually hostile races, the Mecanoids and the Poly-

ars. Who will you choose to side with, bearing in mind that your ultimate objective is to escape?

The plot of The Second City is similar but the craft, landscape and locations have all changed. Conspiracy is rife and escape will be much more difficult—and you'll get no help from the Survival Kit either!

Mercenary is the most exciting and intriguing game so far released for the ST. By itself, Escape from Targ would be worth every penny, but as a compendium, Mercenary cannot be topped for value. Three cheers for Paul Woakes and Novagen.

**Reviews by Bob Chappell**

**Program:** Trivia Challenge
**Price:** £19.95
**Supplier:** Microdeal, PO Box 68, St Austell, Cornwall PL25 4YB
**Tel:** 0726 698020

Who haunts Hastings Castle? Where are the live frog-eating championships? Which member of the British Royal Family had 11 fingers? Why am I asking such oddball questions? If you have the sort of rubbish tip mind that is stuffed with more redundant knowledge than a treatise on the digestive tract of the Outer Mongolian liverwort, let me tell you that your hour of glory has come.

Equally, if you happen to be the type of wealthy egghead who can't walk past one of those Trivia arcade machines so beloved of pubs and hamburger joints without feeding umpteen 20 pence pieces into it, then you're also going to save yourself a heap of silver.

Trivia Challenge I is styled exactly like one of those aforesaid arcade machines. The idea is to gain as high a score as you can by correctly answering questions from any of five categories—general knowledge, pop music, art, sport and science. There are 4,000 teasers all told.

You begin with a balance of $10. Each play will cost you either a $1 or 25 cents (like the machines, you get better value for money with the larger sum). Depending on the coin deposited, you will be given a number of credits. Once they have been exhausted you must feed in more money.

You select your subject from a drop down menu. Click on the Play icon and a question on
MIRRORSOFT

DESIGNER COLLECTION
ON THE ATARI ST

Whether you're creating simple designs, storyboards, or complex professional presentations, Art Director gives you every tool you could possibly need.

For home movie-making and professional animation studio work, Film Director allows you to create, assemble and control on screen every element of an animated sequence.

Desktop publishing really comes into its own on the Atari ST, and the Fleet Street series uses the machine to its fullest capabilities.

Here's just a taste of the features included:
- Turn any part of your design into any shape or size of brush.
- Distort, bend, and change the perspective of any element of a picture.
- Sixteen colours in each of two palettes available at any time, all of which can be almost infinitely remixed.
- Use time cycling or run test animation sequences.
- Smudge, smear, scrape, rotate, move - all the tools of the professional graphic artist are at your disposal.

The unique double-screen facility allows you to create pictures in each of two screen-sized panels, or mix text using the fonts supplied, then preview on screen the full A4 artwork in colours or shades of grey.

Art Director is completely compatible with Film Director and Fleet Street Publisher, and is supplied complete with demo files and comprehensive manual.

Fleet Street is supplied complete with demo files and comprehensive user manual.

Fleet Street Publisher
CITY OF LONDON EC4

Publisher

More detailed brochures on each of these packages can be obtained from MIRRORSOFT at the address at the foot of this page.

Fleet Street Publisher runs under GEM and will output as standard to a dot matrix printer. Laser printer drivers will be available in the New Year, together with additional fonts and graphics libraries.

Fleet Street Publisher is supplied complete with comprehensive manual.

£39.95 inc VAT

£59.95 inc VAT

£115 inc VAT

Andromeda Software, 200 Brent Street, London NW4. Tel: 01-203 6366
SDL, 1-4 The Mews, Hatherley Rd, St. Cccap, Kent DA1 4 DX. Tel: 01-309 1111
Haha Systems Ltd, Lonbridge Delta, Pier Road, North Felham Trading Estate, Middlesex TW14 0TT. Tel: 01-765 6451

PS Don't Forget! MIRRORSOFT publish games for the Atari ST too!
your chosen subject appears. After a pause long enough for you to read the question, three answers appear, only one of which is correct. A timer starts to count you down.

The faster you click on the correct answer, the more points you’ll earn. Gain 1,000 points and you’ll win $1,1500 points $1.50, and so on. Slow but sure may be a better tactic, though – answer two questions incorrectly and that play is over.

The game also includes a simple facility for designing your own question sets and storing them on the master disc. Your sets can have any title but only one can be called up and stored in memory at any time (it always occupies the General Knowledge slot).

However you could probably get round this single slot limitation by giving your sets the same names as the original categories, regardless of the contents, for example you could have a set about gardening but entitled science.

You would need to save the original question sets to another disc before deleting them from the master disc. Files can be copied, written, and deleted to the master disc as long as you don’t reformat it.

The game only runs in medium resolution so you might have difficulty in reading the questions and answers unless you have a monitor or a good TV. Judging by the number in the title, sequels seem a distinct prospect.

The same questions can appear in a single session but since by then you should know the correct answer, at least that gives you an easy chance to rack up your score. Sound is minimal (a few beeps) and the graphics are rudimentary – but does that matter in a game of this nature?

Trivia Challenge I is good, cheap, trivial fun. Buy it, play it then bare everyone to death with your new-found knowledge.

---

520 STM 1040 ST

ATARI ST

NEW LOWER PRICES

PLEASE CALL FOR DETAILS

EDUCATIONAL AND EXPORT ENQUIRIES WELCOME

PART EXCHANGE FINANCE SERVICE UPGRADES

HUGE RANGE OF SOFTWARE AND PERIPHERALS IN STOCK

BATH COMPUTER SHACK
8E Chelsea Road, Lower Weston, Bath, Avon
0225 310300

TROWBRIDGE COMPUTER SHACK
8 Timrell Street, Trowbridge, Wilts
02214 67299
Storage solution for ST programs

The first question this month comes from Alan Thompson who is writing a Computer Aided Design (CAD) modelling program for the ST. He is having trouble removing techniques for hidden line removal, a method whereby lines which appear behind 3D objects aren’t drawn.

A visit to your local university book shop will provide you with some useful, if expensive, books. Probably the best of these is Fundamentals Of Interactive Computer Graphics by Foley and Van Dam from Addison Wesley, which costs around £35.

Mr. M. Bann from Basildon asks why most ST programs insist on placing help files on disc rather than in memory. He argues that this means that you waste space on all your discs which could be used for data storage.

The main reason behind having help files on disc is that most software companies want to be able to sell their programs abroad. To translate a program into French or Spanish, they only have to rewrite the text files on disc, rather than having to rewrite and recode the entire program.

One possible solution to your program is to run your program from a double sided or hard disc drive. In this way, you will have more room for your data files.

Mr. Bann also asks why some ST programs display a message when running them, asking you to set the correct resolution, while others simply change the resolution themselves.

Although it is possible for a program to change from one resolution to another, you will find that programs that use Gem rarely do, because the Gem desktop cannot cope with having its resolution changed without rebooting.

If a Gem based program such as a word processor changed resolution from, say, low to medium and then returned to the desktop, the ST would almost certainly crash. Programs which do change resolution, such as Starglider, do not return the user to the desktop and therefore do not have to worry about Gem.

Gavin Johnson from Green Woton wants to know if his copy of Starglider has a bug. In our review in the December issue of Atari ST User, I stated that it takes more than one missile to destroy Starglider One. Gavin complains that on his copy it only requires one missile.

On the lower levels, the game is much easier to play than when you have progressed. If you manage to reach the higher levels, you will find that it takes much more than one missile to destroy Hermann’s flagship.

Mr. D. Leigh wants to know more about the internal workings of his ST and wants to know which books are best. I recommend the First Publishing range of ST books. They cover Gem, TOE, assembly language and C in depth, but without leaving the beginner with a lost feeling.

Jeff Gardiner from Hemel Hempstead writes to ask about blank 3.5in discs. We have all seen adverts from companies that sell discs at prices which seem almost free when compared to those of the high street stores and Jeff wants to know if discs without a big name label on them can safely be bought for the ST.

Like video tapes, blank discs of all sizes are made by a very small number of companies, most of which are based in the Far East. All the discs are tested for reliability. Those that fail the double sided test are sold as single sided and those that fail the single sided test are thrown away.

A percentage of the good discs are labelled with big names, while the remainder are left unlabelled. These latter are used by duplicating companies which produce discs for software companies, and by some of the smaller disc companies.

Therefore, if you own a brand name disc which cost £3.50 and an unlabelled disc which you bought for £1.50, there is a good chance that they both started life in the same factory.

HINTS AND TIPS

My thanks to Reg Williamson who has written to tell me how to stop Fast Basic from producing the same set of random numbers continuously. The solution is to place:

```
RND (T-NUM)
```

at the start of your programs. This will produce a new seed for the random number generator and thereby produce different random numbers.

Matthew Westby has supplied me with three hints for using Atari’s Neochrome more easily.

- Double clicking the eraser will delete the area of the drawing which is showing.
- When in Pencil mode, pressing the right mouse button will turn the pencil into an eraser.
- Pressing the right mouse button in Line Draw mode will draw a line made up of all of the colours in the current palette between the two markers.

Send your Atari ST queries to:
Atari ST User
Europa House
6B Chester Road
Hazel Grove
Stockport
SK7 5NY.

February 1987 Atari ST User
Speaking Clock

David Jones gets his ST to tell him the time

IF you've just bought a copy of Computer Concepts' Fast Basic cartridge for the ST, you'll probably have been playing with its fascinating built-in speech module. This Fast Basic program uses the module to turn your ST into a speaking clock — albeit a very expensive one.

Speaking clock works in any screen resolution. The current system time is displayed in the centre of the screen and every 10 seconds the program speaks the time adding "o'clock".

To use it, simply set the system clock with the control panel desk accessory and then run the program from Fast Basic. To stop the program press any key and the Fast Basic windows will be restored.

The program is split into several procedures. Resolution finds out which screen mode is being used and sets clock position and colour accordingly.

initialisation sets up the array which holds the numbers in text form ready to be spoken and loads the speech module from the disc.

Time extracts the hour, minutes and seconds from the system clock and converts them into words ready to be spoken by the speech module. Close clears the screen and restores the windows and mouse pointer.

```
FOR i=1 TO 23
READ number(i)
NEXT

PROC resolution
PROCini
PROCproc
PROC time
PROC store sec=seconds
REPEAT PROCtime PRINT 7680 x,y TIMES key=timexs UNTIL sec=seconds MOD 10=0 OR key<>1
IF seconds=seconds THEN stored seconds sec=seconds +1
NEXT
PROC close
PROC
PROC
PROC
PROC
PROC
PROC
PROC
PROC
PROC
PROC
PROC
PROC
PROC
PROC
PROC
```

Mandlebrot Set
from P.S. Hand

This program generates a fractal-like Mandlebrot set on the ST's low resolution screen.

The program takes over two hours to complete the image and then saves it to disk under the name "PIC.BAS".

If you don't fancy waiting for 2 hours, you can speed up the program by changing lines 2 and 5 to:

2 for p=8 to 300 step 10 if p=0 to 160 step 9: ... [rest of line]
5 color 1 define p/8,.(p/8)^2 next p,1: ... [rest of line]

These changes will make the program plot the same picture using characters rather than individual points.

Line Breakdown
1. Clears the screen and sets the horizontal and vertical magnification constants.
2. Initialises the two loops and starts the calculation.
3. Completes the calculation and performs a check to see if an acceptable value has been reached.
4. Checks on the number of colours already used.
5. Sets the colour, plots the point and goes to the next screen position. Saves the picture to disk when finished.

```
def p=800 def @=p for y to 160 step 10
for x to 360 step 10
r=x^2+y^2
next x
next y
```

Polys
from Dr. S. Cherian

The POLY primitive in ST Logo is fiddly and difficult to use. POLYS is an alternative which will draw a polygon (including triangles and squares) at any chosen focus on the graphics screen.

The inputs are: length of side, number of sides, line colour and x and y coordinates of start position.

Line Breakdown
1. Defines the routine POLYS and takes the inputs.
2. Places the pen at the start position and sets the colour.
3. Draws the sides of the polygon.
4. Moves the pen inside and fills the polygon.
5. Ends the routine.

```
to polys :side :num :col :x :y
pu seti 1 x betv 1 setpc @col pd
repeat :num cfd :side rt 360 / :num,
pu rt 50 fd 10 pd fill ht
end
```
FAST BASIC

Atari ST cartridge

A new and very fast BASIC interpreter ROM cartridge for the Atari ST computers. This 128K program has been written specifically for the Atari ST computers and so makes full use of and gives the programmer full access to all the special features of this machine.

Based around BBC BASIC, but considerably extended, FAST BASIC is a modern structured programming language. It is the ideal environment for those who want to experiment with the ST and to find out about GEM and 80000 assembly etc.

Speed

With an average PCW benchmark speed of 1.8 seconds, this is the fastest BASIC available faster than any other ROM have ever used and is faster than BASIC running on the new Commodore 64 with 64K memory.

See table for other comparisons.

Editor

A full GEM based scrolling editor is included. Supports search and replace, cut, copy, paste, and very fast scrolling speeds. Multiple programs may be held in memory at once, and each program can have its own editing window and associated icon. A special immediate window allows commands to be used immediately part of the BASIC program.

Program size

There is no limit to program size, other than available memory, and there is no speed degradation for running large programs as this is on many other interpreters. Strings may be up to 64K long, arrays may be over 1K.

Fast BASIC includes:

- ROM Cartridge - it uses no RAM, leaving the maximum available for BASIC programs. It does not have to be loaded from disc and so offers instant start-up and can be permanently available.

- Example disc containing a range of example programs from simple loops to complete GEM examples.


- Quick reference card

Comparisons

<table>
<thead>
<tr>
<th>BASIC</th>
<th>PCW Benchmark</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM PC</td>
<td>16.9</td>
<td></td>
</tr>
<tr>
<td>BBC B</td>
<td>14.6</td>
<td></td>
</tr>
<tr>
<td>MAC BASIC</td>
<td>7.1</td>
<td></td>
</tr>
<tr>
<td>ST BASIC</td>
<td>9.2</td>
<td></td>
</tr>
<tr>
<td>FAST BASIC</td>
<td>1.8</td>
<td>8.1</td>
</tr>
</tbody>
</table>
BASIC

Structured
Programs are normally written without line numbers. This, in addition to named procedures and functions, ensures that FAST BASIC programs are easier to write and simpler to understand than any other programming language. It also supports REPEAT, UNTIL, WHILE and multi-line IF-THEN-ELSE constructs, and in addition a powerful SWITCH/CASE END SWITCH structure eliminates the use of multiple IF-THEN statements. FAST BASIC supports many of the best features of languages like PASCAL or C, but without the drawbacks.

Review
"it positively flies.
"Students of structured programming will be well pleased.
"Perhaps the most staggering advantage of Fast BASIC over the official line concerns using the many facilities offered by GEM.
"it's a vast improvement on Atari BASIC.
"Popular Computing Weekly

Review
"The Fast BASIC package provides a complete system for the home programmer; the language is beautifully structured.
"The cartridge spans the gap between high and low level programming languages and combines some excellent high level structures...It seems to have the advantages of languages like C and Pascal, without the restrictions.
"Bear in mind the fact that the cheapest assembler for the ST costs £39.95, this can only leave you to conclude that Fast BASIC really is phenomenal value for money.
"If you need a good programming language for home, business or educational use, buy FAST BASIC. If you would like to program GEM applications but do not feel competent enough to tackle C, buy FAST BASIC if you need a macro assembler with a good editor and environment, buy FAST BASIC.

Compatible with all 520 and 1040ST computers

Example Screen

Money Back Guarantee
If for any reason you are unsatisfied with FAST BASIC we offer a full, no quibble, money back guarantee.

STAND ALONE DISC
Now available this disc enables FAST BASIC programs to run without the cartridge being present. Once a BASIC program has been written with the cartridge fitted, it can be converted, using this disc, to a stand alone GEM application program. Simply double click on its icon and it will execute the program as if it were a normal GEM program. This enables BASIC programs to be run while the cartridge slot is used for other things. Also programs can be written in FAST BASIC and given, or marketed, to others who do not have the cartridge. We ask no licence fee or royalties.

£0.99 VAT

Review
"just about every command you could ever ask for is supplied, plus a good many others beside.
"the execution speed has to be seen to be believed.
"if you own an ST - even if you are a C or machine code programmer - you should own a copy of FAST ST BASIC.
"I don't know of a BASIC on any other machine which is so feature packed and yet still easy to use.

ST User magazine - Oct 86

Express Orders
Access/Bankers card accepted.
All orders despatched within 24 hours.

Computer Concepts

Goddessden Place, Hemel Hempstead, Herts, HP2 6EK. England. Telephone (0442) 63937

Dealer enquiries welcome.
SOFTWARE FOR THE ATARI ST

NEW - GEM-FORTH £69.95
This is THE definitive Forth for the ST. Gem-Forth is a fast interactive language providing the advantages of a high level language with the speed and flexibility of assembler. Gem-Forth provides a full development environment which includes a macro assembler, full screen editor (probably the best Forth screen editor yet!), file management tools, full interface to GEM - with sources, files of source code examples and full, easy-to-use documentation.

LATTICE C £99.95
The well known Lattice C compiler, used by professionals and developers. Many commercial ST packages have been written with this powerful and robust compiler, a full Kernighan and Ritchie implementation. Comprehensive libraries of UNIX and utility functions. Compatible with Lattice compilers on IBM-PC, Commodore-Amiga, QL etc. Full IEEE format floating point arithmetic. Powerful data types including pointers, arrays, structures, unions, register variables etc; macros, conditional compilation and other pre-processors. Includes Menu + and screen editor.

MCC PASCAL £89.95
A powerful Pascal compiler that meets the exacting ISO 7185 standard (level 0). A fast, single pass compiler, generating native code. Comprehensive error handling. 32 bit IEEE format floating point arithmetic and full 32 bit integers. Includes Menu + and screen editor.

MCCASSEMBLER £49.95
A professional quality macro assembler with many useful features for the serious programmer. Standard Motorola 68000 mnemonics. Macro expansions. Over 160 explicit error messages. Fully formatted listings. Large range of directives. Includes the source of a simple debugger, Menu + and screen editor.

CAMBRIDGE LISP £149.95
Metacomco is proud to open up the world of Artificial Intelligence to ST owners. Cambridge LISP is unique and perhaps the most powerful language yet available for the ST. It is particularly appropriate for work in robotics, symbolic algebra, natural language interfaces and for expert systems. Cambridge LISP is a fully integrated development environment featuring interpreter and compiler which includes full interface to GEM functions and comes complete with Menu +, screen editor, and a free example expert system.

BCPL £99.95
BCPL is a popular yet fast and powerful language suitable for applications including systems software, applications programs and games. This BCPL compiler contains not only standard BCPL language functions but also many useful extensions. Includes GEM libraries, Menu + and screen editor.

METACOMCO MAKE £49.95
Metacomco MAKE is an intelligent batch file which is an invaluable tool for maintaining any computing project. MAKE guarantees source and object code integrity by automating the process of compiling, assembling and linking programs. Includes a screen editor. Based on the UNIX MAKE utility.

ALL METACOMCO PROGRAMMING LANGUAGES FOR THE ST HAVE THESE ADVANTAGES:
- Integrated range of languages on the ST and Amiga (68000). Metacomco's range of languages for the ST provides an integrated and consistent programming environment for ST programmers. Program modules written in different languages can be linked together. Metacomco's ST languages are compatible with their languages for Amiga and QL.
- Efficient code. All Metacomco languages come with a set of METCOMCO libraries, making it easy to program graphics and the other features of the ST.
- Full source code. Metacomco's libraries for GEM and SIM are provided, allowing programmers to modify them. The source code is well documented.
- Choice of links. All Metacomco languages include a linker where appropriate. Metacomco program modules can be linked using the Digital Research linker.
- Friendly environment. All Metacomco languages now include MENU +, an easy-to-use programming environment using pull-down menus and the mouse.
- Screen editor. A powerful screen editor for preparing programs is included with every language.

PHONE TODAY, OR POST THIS COUPON TO: METACOMCO, 26 PORTLAND SQUARE, BRISTOL BS2 8RZ, UK.
PHONE: BRISTOL (0272) 428761
Please send me for the Atari ST:
MCC ASSEMBLER £49.95
MCC PASCAL £89.95
LATICE C £99.95
MENU £10.95
GEM FORTH £69.95
MCCASSEMBLER £49.95
CAMBRIDGE LISP £149.95
MCC PASCAL £89.95
LATICE C £99.95
METACOMCO MAKE £49.95
MENU £10.95
GEM FORTH £69.95

Please make cheques payable to METACOMCO. Allow 7 days for delivery.

METACOMCO
26 PORTLAND SQUARE, BRISTOL BS2 8RZ, UK.
TELEPHONE: BRISTOL (0272) 428761
3536 Scots Valley Drive, California 95066, USA, Tel: 1-909-252-6882

Star just out of this world

COMPUTERS and science fiction have always had more than a little in common, and as often as not you'll find that an interest in one of them will quickly breed an interest in the other. For this reason, if not for no other, Beyond Software is certain to have a winner with its first offering for the ST - a fantastic computer simulation (game is too tame a word) of the classic TV space opera Star Trek.

Late last year I was lucky enough to be beamed aboard the USS Enterprise in the form of a pre-release version of the game, or to give it its full title, Star Trek: The Rebel Universe.

The theme could have come straight from an episode of the series itself, and we find the Enterprise battling against a combined force of the Federation's worst enemies. The Klingons and the Romulans have teamed up with a number of rebel Star Fleet captains to create a force powerful enough to overthrow the forces of good.

Fortunately for the United Federation of Planets, someone has had the good sense - not to mention considerable technical skill - to surround the enemy portion of the galaxy with a force field known as the Klein Sphere. As the Enterprise was the only starship in the vicinity at the time, Captain Kirk and his crew have been ordered into the zone to attempt to quell the rebellion.

Against this background is played a game which falls part way between adventure and arcade in style, with digitised sound and some amazing graphics adding to the atmosphere. The game play centres around a display of the bridge of the Enterprise, around which are panels for each of the main crew members. In order to call on one of them for help - or to issue a command - you click on the relevant character and their full display fills the main working area of the screen. A nice little touch is the way the mouse pointer is represented as a small Star Fleet insignia.

All the regular favourites are there, drawn to perfection by artist Steve Cain. Each character has his or her own area of responsibility, often with more than one control panel at their disposal.

Sulu is in charge of the ship's navigation, Chekov the weaponry systems, Mr Scott the state of the engines, and so on.

Mr Spock, Uhura and Dr McCoy are used mainly to provide information and assistance, and play a much lesser role than their TV counterparts. Captain Kirk, of course, oversees and coordinates the whole mission.

Each of the functions available to you have been modelled closely on the TV series, and the diehard fans will have little to complain about in terms of its faithfulness to the programme. The Enterprise has suddenly gained the power to speed off at warp 10 without blowing itself to pieces, and it seems to have grown a couple of extra phaser banks, but apart from these trivial points little would appear to have been altered.

You can navigate your way around the Klein Sphere by using the ship's main Astrogator - an amazing 3D display unit allowing you to view the galaxy and plot a route through it.

You have a time limit to complete your mission, so speed is of the essence - but don't forget that charging around at warp factor 10 the whole time will drain your dilithium crystals in no time flat. There are hundreds of solar systems to explore, some of which may contain life-supporting planets, so plan your voyages carefully.

When you finally come across such a Class M planet you may use the transporter to beam down up to six of your crew, along with whatever equip-

Reviewed by André Willey
for the fact that the Enterprise is under constant attack from enemy ships. You may fight back with your phasers and photon torpedoes, aiming and firing via two 3D targeting and combat displays.

Digital sound is used to excellent effect in this section of the game as you hear Chekov telling you that the phasers are locked on target, and as you hear the forward phaser bank blast their deadly beams out into space you will less frequently hear his exuberant cry "Got 'em!"

The final version of the game, which will be available shortly after you read this, will include a couple of extra finishing touches and must be a surefire candidate for game-of-the-year for '87.

It is a classy mixture of the old faithful elements from the TV series and the latest advances in computer graphics and sound technology. One gets the feeling it's the sort of game you would find Captain Kirk playing with in a spare off duty moment. A must for all ST owners - I know that I'll certainly be spending a good deal of time with my ST as soon as the final copy comes through.

<table>
<thead>
<tr>
<th>Graphics</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sound</td>
<td>9</td>
</tr>
<tr>
<td>Playability</td>
<td>9</td>
</tr>
<tr>
<td>Value for Money</td>
<td>9</td>
</tr>
<tr>
<td>Overall</td>
<td>10</td>
</tr>
</tbody>
</table>

---

J. T. S. SYSTEMS LIMITED
Atari Hardware and Software

**FREE**
with all ST Computers
10 disks with box and Starglider or Degas
1040 STF with colour monitor £995.00
1040 STF with mono monitor £840.00

**SPECIAL OFFER - ONLY 5 LEFT**
520 ST with one meg drive only £450.00
NEW 520 STFM with built in drive £400.00 NEW
the above 520 ST do not come with free above disks & software

We pride in giving the best after sale service & backup
We promise we ARE the best in the country, phone and find out

Please phone 0753-825529 seven days a week, 24 hours a week
and we will shock you with the service we provide

For a firm quote please phone after 6pm

J. T. S. SYSTEMS LTD
19B Chalvey Road East, Slough, Berkshire.

When you WANT the best then PHONE the best
All above prices include VAT, please phone our 24 hour answer machine

---

ST SOFTWARE DESIGNERS LIMITED
ST BUSINESS DESIGNERS LIMITED

<table>
<thead>
<tr>
<th>GAMES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amiga</td>
<td>25</td>
</tr>
<tr>
<td>Rakka</td>
<td>31</td>
</tr>
<tr>
<td>Colourful</td>
<td>22</td>
</tr>
<tr>
<td>Flight Simulator II</td>
<td>18</td>
</tr>
<tr>
<td>Hacker II</td>
<td>27</td>
</tr>
<tr>
<td>Hitch Hiker's Guide</td>
<td>24</td>
</tr>
<tr>
<td>K-Void</td>
<td>8</td>
</tr>
<tr>
<td>LOGO</td>
<td>0</td>
</tr>
<tr>
<td>Leather Goddess of Phobos</td>
<td>8</td>
</tr>
<tr>
<td>Little Computer People</td>
<td>17</td>
</tr>
<tr>
<td>Major Motion</td>
<td>17</td>
</tr>
<tr>
<td>Matrix</td>
<td>7</td>
</tr>
</tbody>
</table>
| NEW 520 STFM with built in drive £400.00 NEW
the above 520 ST do not come with free above disks & software

**SPECIAL OFFER - MEMORY DISCS**

Phone 0753-825529 or send a S.A.E. for latest price list.
Prices include VAT and delivery. Send cheque or P.O. with order to:

Ardon House, Meadow Grove, Meadow Lane, Nottingham, NG2 3HF
ONE of the few problems with the ST which confront every user is its inability to display all three resolutions on one monitor or TV. This means that you cannot show a picture designed on a high resolution monochrome monitor on a colour monitor in low or medium resolution and vice versa.

The problem stems from two areas. Firstly, Atari designed the ST's high resolution 80 column mode to use a very high quality monitor running at 70kHz. This frequency is unusually high and would almost certainly burn out a normal monitor, making it nearly impossible to use a display other than Atari's for high resolution work.

Secondly, although each of the three resolutions is stored in 32,000 bytes of memory, it is stored very differently from the other two. To understand this we must look at each resolution in turn. The most straightforward of the three is high resolution which is made up of 640 by 400 pixels. There are only two colours in high resolution — black and white. These make it ideal to have a bit representation of a point — one is black and zero is white. This means that a single horizontal row of 640 pixels is represented by 640 bits or 60 bytes. Multiply this by 400 rows and we get 32,000 bytes or nearly 32k of memory.

The colour resolutions are slightly more complicated than this. Medium resolution is made up of 640 by 200 pixels, each of which can be any of 4 colours from the ST's 512 colour range. These colours are determined by the current values of the ST's palette, which can be altered by using the control panel or from within a program. A colour of any pixel on the screen is therefore defined by two bits, which when taken together give the possible 4 colour choices, as shown in Table 1.

Unfortunately the ST uses a system of interweaving which means that the two bits which represent a pixel are not stored next to each other in memory, but at the same position in two adjoining words. Unlike the 8 bit Atari, a word on the ST is made up of 16 bits - hence its name as a 16 bit computer.

To find the colour of the first pixel on the screen we must therefore take the value of the first bit in screen memory and pair it with the first bit of the next 16 bit word, which is 16 bits further on in memory. We then use Table 1 to find out which colour the pixel is being displayed in. For a further explanation, look at Figure 1.

Horizontally, medium resolution is made up of 640 pixels, each of which requires 2 bits of storage. This makes a total of 1280 bits or 160 bytes of memory. Multiply this by 200 rows and we get 32,000 bytes.

The ST's low resolution is even more complicated, but charted along the same lines as medium resolution. It is made up of 320 by 200 pixels, each of which can be any of 16 colours. Instead of 2 bits to represent a pixel, low resolution needs 4 bits, which taken together represent the possible range of 16 colours in a similar manner to Table 1.

Four 16 bit words are taken together to represent each set of 16 pixels. Each digit of the binary number which represents the colour is taken from the next word along in the chain. Figure 11 explains this in more detail.

A low resolution pixel therefore takes 4 bits of screen memory and a complete horizontal row takes 1280 bits or 160 bytes which means that the complete screen of 200 rows once again takes 32,000 bytes of memory.

Since the colour of each of the pixels in low and medium modes is defined in terms of the value of

<table>
<thead>
<tr>
<th>Colour</th>
<th>Bit Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>01</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 1

By Andrew Bennett
Figure II: Low resolution

the ST's palette, it is possible simply to change the palette value – and all the corresponding pixels on the screen will also change automatically. This effect is called colour cycling and leads to such effects as the famous bonk bouncing ball and the Neochrome waterfall demonstrations.

When the ST reserves memory for its screen, it leaves aside 32k (32,768 bytes) of memory, but as we have seen a screen of any mode only requires 32,000 bytes. The extra 768 bytes of memory are normally wasted or can be used by the clever programmer for a small machine code routine, such as the screen dump program which we published in the November 1986 issue of Atari ST User.

---

**ATARI ST PROGRAMMERS & ARTISTS**

In November 1987 our six top earning programmers or artists will be going on an all expenses paid trip to the U.S.A. for 10 days, visiting the offices and programmers of Michtron in Detroit and then flying on to Las Vegas for the Comdex Show. We will also be taking in trips to an American football game and the Grand Canyon.

If you're an experienced Programmer then you should seriously consider using Microdeal as your publisher, we pay high royalties regularly and ensure your program is marketed to give maximum sales worldwide. If you're an accomplished ST Artist then we can place you with a programmer to produce a joint effort of high quality. Send us a disk of your ST pictures for evaluation.

If you don't own an ST but you are an accomplished Programmer or Artist with a proven track record then please write to us with your C.V. as you may qualify for loan equipment.

Contact:
JOHN SYMES, Managing Director
MICRODEAL LTD,
ELECTRONIC PUBLISHING
Box 68, St Austell, Cornwall PL25 4YB

---

**APPOINTMENTS 68000 PROGRAMMERS**

A small number of top-flight programmers are sought by Britain's Number 1 independent Entertainment Software Publisher for exciting projects on the "Atari ST" and "Commodore Amiga".

Initially conversions of high-profile coin-op titles are offered, with exceptional sales potential.

An exceptional financial package is available to the right individual.

For further details contact Steve Wilcox
Elite Systems Ltd.
Anchor House, Anchor Road,
Aldridge, Walsall, West Midlands WS9 8PW
Telephone: (0922) 58652

---

**elite.**
TECHNOLOGY SO ADVANCED...

MEMORY
- 128K RAM
- Fast 2MHz processor

ARCHITECTURE
- Single chip Z8000 processor
- 8-bit microprocessor

GRAPHICS
- Monochrome and color display
- HD-DOT (High Density Dots) technology

STANDARD SOFTWARE
- TOS BASIC
- ST BASIC
- ST Pascal

INPUT/OUTPUT
- STD in/out
- joystick sockets

COMMUNICATIONS
- RS-232C serial ports

OPERATING SYSTEM
- TOS (Thomson Operating System)

KEYBOARD
- Dedicated ST keyboard

MOUSE
- 2-button control

STANDARDS Compatible
- ST-UK
- ST-STAR
- ST-PC

ONLY FROM SILICA

520ST-M
- Price: £259
- Features: ST compatible keyboard, monitor and accessories

520ST-FM
- Price: £399
- Features: FM stereo, faster processor

1040ST-F
- Price: £599
- Features: Faster processor, additional memory

DEDICATED SERVICING - Only From Silica
- All Silica products are backed by dedicated customer support services.

THE FULL STOCK RANGE - Only From Silica
- We stock a full range of Silica products, including accessories and peripherals.

FREE LITERATURE
- Contact Silica for free literature and information on the Atari ST range.

To: Silica Shop Ltd, Dept ATUSH G29, 14 The Mews, Hitherley Road, Sidcup, Kent, DA14 0XY
Please send me free literature on the Atari ST

Address: [Enter your address here]
Postcode: [Enter your postcode here]

Do you already own a computer? Yes/No, if so, which one do you own?
Now's the time to link your Atari to the big wide world!

Join the communications revolution and use your Atari (plus the telephone) to roam the world... logging on to Microlink, Telecom Gold, Prestel, Micronet and the over-growing number of bulletin boards, both in the UK and USA. Help yourself to hundreds of free software programs - and much, much more!

You'll be able to read all about it in Britain's No. 1 communications magazine Telelink. The latest (Nov/Dec) issue has a free supplement on how PSS can cut your phone costs. Plus a guide to all the moderns and comms software now available for the Atari range.

Here's a special offer for readers of Telelink:
For every subscription ordered using the form below, we will give you free registration to Microlink, worth £5.

If you would like to take advantage of this offer, don't forget to tick box!

ORDER FORM

Valid to January 31, 1986

One copy of the Nov/Dec issue of Telelink...
Subscription to the next 12 issues of Telelink...
Tick here if you would like free registration to Microlink...
Tick here if you subscribe to Telelink...

Telelink binder...

Payment: please indicate method (V)
    Access/Visa/Amex/Eurocard/Barclaycard/Visa
    Card No., Expiry date

Name...
Address...
Tel....

Send to: Telelink, FREEPOST, Europa House, 88 Chester Road, Hazel Grove, Stockport SK7 5NY.
Order at any time of the day or night.

Telephone charge: 051-625 9791

Don't forget to give your name, address and credit card number.

BYTEBACK
THE ATARI ST SPECIALIST

GAMES

<table>
<thead>
<tr>
<th>Game</th>
<th>Company</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gate</td>
<td>Spectrum</td>
<td>34</td>
</tr>
<tr>
<td>Harrier Strike</td>
<td>Microsoft</td>
<td>42</td>
</tr>
<tr>
<td>Donkey Duck</td>
<td>Sierra</td>
<td>25</td>
</tr>
<tr>
<td>Space Quest</td>
<td>Activision</td>
<td>21</td>
</tr>
<tr>
<td>SuperCyclone</td>
<td>Epyx</td>
<td>34</td>
</tr>
<tr>
<td>Right Stuff</td>
<td>Sub Logic</td>
<td>42</td>
</tr>
<tr>
<td>Karate Kid II</td>
<td>Micropro</td>
<td>25</td>
</tr>
<tr>
<td>Street Fighter</td>
<td>Micropro</td>
<td>21</td>
</tr>
<tr>
<td>Q-Ball</td>
<td>English</td>
<td>17</td>
</tr>
<tr>
<td>Gems</td>
<td>MindWare</td>
<td>17</td>
</tr>
<tr>
<td>Trucker</td>
<td>Atari</td>
<td>17</td>
</tr>
<tr>
<td>Volcano</td>
<td>Pyramyd</td>
<td>21</td>
</tr>
<tr>
<td>Basketball (2 on 2)</td>
<td>Galaxia</td>
<td>21</td>
</tr>
<tr>
<td>Strangler</td>
<td>Rainbow</td>
<td>17</td>
</tr>
<tr>
<td>Stargazer</td>
<td>Activision</td>
<td>21</td>
</tr>
<tr>
<td>Starship</td>
<td>VBS</td>
<td>17</td>
</tr>
<tr>
<td>Spaceball</td>
<td>Cypress</td>
<td>9</td>
</tr>
<tr>
<td>Timecop</td>
<td>Tycoon</td>
<td>9</td>
</tr>
<tr>
<td>Rogues</td>
<td>Epyx</td>
<td>9</td>
</tr>
<tr>
<td>Police Station</td>
<td>Activision</td>
<td>21</td>
</tr>
<tr>
<td>Super Hero</td>
<td>Epyx</td>
<td>34</td>
</tr>
<tr>
<td>Strip Poker</td>
<td>Anon</td>
<td>17</td>
</tr>
<tr>
<td>ST Oil</td>
<td>Anon</td>
<td>17</td>
</tr>
<tr>
<td>Space Pilot</td>
<td>Anon</td>
<td>17</td>
</tr>
<tr>
<td>Star Raiders</td>
<td>Atari</td>
<td>17</td>
</tr>
<tr>
<td>G-Force</td>
<td>Atari</td>
<td>17</td>
</tr>
<tr>
<td>Leader Board</td>
<td>Activision</td>
<td>21</td>
</tr>
<tr>
<td>Deep Space</td>
<td>Psygnosis</td>
<td>23</td>
</tr>
<tr>
<td>Arena</td>
<td>Psygnosis</td>
<td>23</td>
</tr>
<tr>
<td>Zone</td>
<td>Psygnosis</td>
<td>23</td>
</tr>
<tr>
<td>Winter Games</td>
<td>Epyx</td>
<td>34</td>
</tr>
<tr>
<td>Breakout</td>
<td>Psygnosis</td>
<td>23</td>
</tr>
<tr>
<td>Hopper</td>
<td>ST Karate</td>
<td>21</td>
</tr>
<tr>
<td>ST Protector</td>
<td>Psygnosis</td>
<td>21</td>
</tr>
<tr>
<td>Space Station</td>
<td>Psygnosis</td>
<td>34</td>
</tr>
<tr>
<td>War Zone</td>
<td>Psygnosis</td>
<td>23</td>
</tr>
<tr>
<td>Fire Blaster</td>
<td>Psygnosis</td>
<td>17</td>
</tr>
<tr>
<td>Sunday</td>
<td>Psygnosis</td>
<td>23</td>
</tr>
<tr>
<td>Mean 18</td>
<td>Psygnosis</td>
<td>23</td>
</tr>
<tr>
<td>Popcorn</td>
<td>Psygnosis</td>
<td>23</td>
</tr>
<tr>
<td>Wipeout</td>
<td>Psygnosis</td>
<td>23</td>
</tr>
<tr>
<td>Word for Word</td>
<td>Bulter</td>
<td>21</td>
</tr>
<tr>
<td>Companions</td>
<td>Psygnosis</td>
<td>23</td>
</tr>
<tr>
<td>Universe 2 ST</td>
<td>Psygnosis</td>
<td>23</td>
</tr>
</tbody>
</table>

ADVENTURES

<table>
<thead>
<tr>
<th>Adventure</th>
<th>Company</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moonraker</td>
<td>Infocom</td>
<td>25</td>
</tr>
<tr>
<td>Space-Time</td>
<td>Activision</td>
<td>21</td>
</tr>
<tr>
<td>Jewels of Darkove</td>
<td>Sierra</td>
<td>17</td>
</tr>
<tr>
<td>Rainbird</td>
<td>Rainbird</td>
<td>17</td>
</tr>
<tr>
<td>Rainbird</td>
<td>Rainbird</td>
<td>17</td>
</tr>
<tr>
<td>Leafer Goddess</td>
<td>Micropro</td>
<td>25</td>
</tr>
<tr>
<td>Tails of Thracus</td>
<td>Activision</td>
<td>21</td>
</tr>
<tr>
<td>Zork (1, 2 or 3)</td>
<td>Infocom</td>
<td>21</td>
</tr>
<tr>
<td>Tom's Time Travel</td>
<td>Activision</td>
<td>21</td>
</tr>
<tr>
<td>Mindblower</td>
<td>Activision</td>
<td>21</td>
</tr>
<tr>
<td>King's Quest II</td>
<td>Activision</td>
<td>25</td>
</tr>
<tr>
<td>Temple of Apothiri</td>
<td>Infocom</td>
<td>21</td>
</tr>
<tr>
<td>Broken Time</td>
<td>Activision</td>
<td>21</td>
</tr>
<tr>
<td>Mindbender</td>
<td>Activision</td>
<td>21</td>
</tr>
<tr>
<td>Black Cauldron</td>
<td>Activision</td>
<td>21</td>
</tr>
<tr>
<td>Wins the Pooh</td>
<td>Activision</td>
<td>21</td>
</tr>
</tbody>
</table>

LANGUAGES

<table>
<thead>
<tr>
<th>Language</th>
<th>Company</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast Basile</td>
<td>Infocom</td>
<td>21</td>
</tr>
<tr>
<td>C Concept</td>
<td>Infocom</td>
<td>21</td>
</tr>
<tr>
<td>K-Gramm</td>
<td>Infocom</td>
<td>21</td>
</tr>
<tr>
<td>Cambridge Lisp</td>
<td>Microcom</td>
<td>126</td>
</tr>
<tr>
<td>BCLL</td>
<td>Microcom</td>
<td>85</td>
</tr>
<tr>
<td>NCG Pascal</td>
<td>Infocom</td>
<td>76</td>
</tr>
<tr>
<td>Lasha 21PB</td>
<td>Infocom</td>
<td>76</td>
</tr>
<tr>
<td>NCG Assembler</td>
<td>Microcom</td>
<td>43</td>
</tr>
<tr>
<td>K-Sega</td>
<td>K-Sega</td>
<td>43</td>
</tr>
<tr>
<td>Modell 2 ST</td>
<td>Infocom</td>
<td>65</td>
</tr>
<tr>
<td>Modell 2</td>
<td>Infocom</td>
<td>65</td>
</tr>
<tr>
<td>Pro Pascal</td>
<td>Infocom</td>
<td>125</td>
</tr>
<tr>
<td>Pro Pascal</td>
<td>Infocom</td>
<td>80</td>
</tr>
</tbody>
</table>

UTILITIES & BUSINESS

<table>
<thead>
<tr>
<th>Utility</th>
<th>Company</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Megalink ST</td>
<td>XLink</td>
<td>25</td>
</tr>
<tr>
<td>Fast Mgraph</td>
<td>Mgraph</td>
<td>42</td>
</tr>
<tr>
<td>Wordwriter</td>
<td>Microcom</td>
<td>69</td>
</tr>
<tr>
<td>Felt S Publisher</td>
<td>Microcom</td>
<td>99</td>
</tr>
<tr>
<td>Mighty Mail</td>
<td>Microcom</td>
<td>25</td>
</tr>
<tr>
<td>Back Pack</td>
<td>Microcom</td>
<td>97</td>
</tr>
<tr>
<td>Metamorph Make</td>
<td>Microcom</td>
<td>43</td>
</tr>
<tr>
<td>Menu-</td>
<td>Microcom</td>
<td>17</td>
</tr>
<tr>
<td>First Word Plus</td>
<td>Atari Corp</td>
<td>85</td>
</tr>
<tr>
<td>Alpaca</td>
<td>Infocom</td>
<td>34</td>
</tr>
<tr>
<td>Zoom Quick</td>
<td>Infocom</td>
<td>50</td>
</tr>
<tr>
<td>Thunder</td>
<td>Infocom</td>
<td>60</td>
</tr>
<tr>
<td>The Alternative</td>
<td>Infocom</td>
<td>26</td>
</tr>
<tr>
<td>Corinna</td>
<td>Infocom</td>
<td>28</td>
</tr>
<tr>
<td>MicroTalk</td>
<td>Infocom</td>
<td>34</td>
</tr>
<tr>
<td>Mini-Help</td>
<td>Microcom</td>
<td>25</td>
</tr>
<tr>
<td>Dial-In</td>
<td>Infocom</td>
<td>69</td>
</tr>
<tr>
<td>Dial-Up</td>
<td>Infocom</td>
<td>69</td>
</tr>
<tr>
<td>Certpro</td>
<td>Infocom</td>
<td>146</td>
</tr>
<tr>
<td>Chiptrack</td>
<td>Infocom</td>
<td>146</td>
</tr>
</tbody>
</table>

ART

<table>
<thead>
<tr>
<th>Artist</th>
<th>Company</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art Gorgo</td>
<td>Magister</td>
<td>21</td>
</tr>
<tr>
<td>Easy Draw</td>
<td>Micropro</td>
<td>126</td>
</tr>
<tr>
<td>Art Director</td>
<td>Micropro</td>
<td>42</td>
</tr>
<tr>
<td>Film Director</td>
<td>Micropro</td>
<td>51</td>
</tr>
<tr>
<td>Dodger</td>
<td>Batteries</td>
<td>34</td>
</tr>
<tr>
<td>Dogger</td>
<td>Batteries</td>
<td>34</td>
</tr>
<tr>
<td>Dogger Elite</td>
<td>Batteries</td>
<td>8</td>
</tr>
<tr>
<td>Fantaworks</td>
<td>Activision</td>
<td>29</td>
</tr>
<tr>
<td>CAD 3D</td>
<td>Activision</td>
<td>29</td>
</tr>
<tr>
<td>Animetor</td>
<td>Activision</td>
<td>29</td>
</tr>
<tr>
<td>The Music Studio</td>
<td>Activision</td>
<td>29</td>
</tr>
<tr>
<td>The Tubes</td>
<td>Activision</td>
<td>29</td>
</tr>
</tbody>
</table>

SOFTWARE

<table>
<thead>
<tr>
<th>Software</th>
<th>Company</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 3.5 * Disk SSDOS 500K [10]</td>
<td>Activision</td>
<td>19</td>
</tr>
<tr>
<td>Flip Fip Flick Box 10 x 9.9</td>
<td>Activision</td>
<td>5</td>
</tr>
<tr>
<td>Mini/Multi Fake Disk [40 x 2.5]</td>
<td>Activision</td>
<td>19</td>
</tr>
<tr>
<td>Chucknor II Joystick</td>
<td>Activision</td>
<td>8</td>
</tr>
<tr>
<td>Atari 520 ST/R Keyboard + Free Software</td>
<td>Activision</td>
<td>435</td>
</tr>
</tbody>
</table>

Don't forget to give your name, address and credit card number.

BYTEBACK
29th SPRING GARDENS, NEWARK, NOTTS NG16 4UW
ON my trips down the phone lines to the various bulletin boards on this side of the Atlantic this month I have noticed a growing awareness of the problems of downloading ST programs.

With connection charges ranging from a couple of dollars to more than $20 an hour it is annoying to find that the program that looked most interesting when it was described takes over 20 minutes to download via the modem to your ST.

This problem doesn’t affect 8 bit owners, because programs for their computers tend to be smaller than 40k of Basic or machine code, but programs for the ST have been known to be as long as 200k.

Even at 1200 baud this represents a large cost in connection time while the program is downloading and you don’t even know whether the program will be as good as it sounds until you go off line and run it.

Another difficulty is that ST owners face is that their programs are often made up of several files, including the program’s data and resource file. This makes downloading difficult and it can be very annoying to go off line only to find that you haven’t downloaded a crucial data file.

There have been a number of attempts to overcome these difficulties and the most successful so far appears to be a program called ST-Arc, a direct descendant of an IBM archiver program rewritten to use Gem. It not only compreses programs and their data, but also joins them together into one file.

If you like the look of a particular program you simply download the singular file associated with it and then separate and decompress it using your copy of ST-Arc.

Cutting cost of downloading ST programs

ST-Arc is available for downloading on most of the bulletin boards in the States and is a must if you intend to download ST software.

There has been a definite shortage of good word processors for the ST so far, which has allowed the public domain program ST-Writer to become popular. It doesn’t use the mouse or windows, but it is very fast and it supports dozens of printers.

Version 1.70 of ST-Writer has recently been rumoured and I’ll be telling you about its features in a future Atari User.

A new extension to Gem has been released by Atari. Available only to software houses for insertion into their programs, Gdos allows programs to use many different fonts of the kind usually associated with Apple’s Macintosh.

Gdos was originally omitted from the ST version of Gem because the programmers at Atari and Digital Research were having trouble squeezing it into the ST’s 152k of rom memory.

Atari charges a royalty to the company on each product using Gdos, which means that you should only expect to see it used in programs from the larger software houses.

If you’re interested in 3D graphics and how you can include them in your programs, look no further than a new book from Abacus. It teaches 3D computer aided design in C and discusses techniques such as rotation, shading and hidden line elimination.
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 nearest £2,892 (the Cheeta). 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 as more and more micro users are doing - use your Atari to double as a Telex machine. And just use your ordinary telephone!

How do I turn my Atari 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 micro users on MicroLink. With it you can also read the news as it happens, go tele-shopping, create your own closed user group, send telemessages and electronic mail right round the world, download free telesoftware programs directly into your micro... and much more.

But why use Telex?

Because it's a standard means of instant communication between businesses. Today there are 150,000 Telex machines in use in Britain - and more than 2 million worldwide. They need it to dramatically speed up business communications - just as quick as using the phone but far more efficient. Because you have a hard copy of every conversation for your records.

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?
Degas takes big stride forward

Program: Degas Elite
Price: £59.95
Supplier: Software Express, 514-516 Alum Rock Road, Alum Rock, Birmingham. Tel: 021-326 3585

If you are interested in art and graphics on your ST the chances are that you will already have a copy of Tom Hudson's Degas graphic drawing package. This followed on from Atari's freebie NeoChrome and quickly established itself to such an extent that many other commercial packages offer the facility to load and save Degas picture files.

In the meantime Tom has not been sitting on his laurels. Since completing his excellent CAD 3D program he has been working on the long awaited update to Degas.

Anyone familiar with Degas will immediately feel at home with the controls of Degas Elite. There are still the two main screens - the work screen and the menu - selected between by using the right mouse button. The left button selects menu items and is also used to draw with.

The main menu is still in the same format as the original version, but a whole host of additions have been made. Many of the awkward selections of such things as palette, fill pattern, line pattern and on have been made much simpler.

You may now click through the choices or double click to open up a full selection menu box. You may double click on many other function buttons to open control windows, making usage of some of the more complex functions a very straightforward matter.

All of these options are also available from a set of comprehensive pull-down menus, and many may also be selected by using the keyboard while on the drawing screen - a great advantage over many of its competitors.

All the normal drawing commands are here - point, line, k-line, polygon, circle, box, fill and so on. New features include stipple and outline. Outline is a very useful tool which will create a single pixel wide border around any object in any colour. Fill has now been expanded to allow the use of some rather spectacular multi-coloured fill patterns.

Additionally, many functions may now be "smearred", which is a very easy way to blend two colours together. You simply select the smear option and then draw in the normal manner. Instead of a solid line, any colours under the brush will be mixed up and blended.

A new feature for Degas is the animation section, which features four separate animation controls which will cycle through the colour values in various given registers. This is an enhancement of the Neo animates feature and can be very powerful indeed, especially when used with cycle-drawing which will allow you to draw lines and patterns in the various colour cycle registers. This makes creating such pictures as the now famous waterfall a doddle.

The zoom facility of Degas has been expanded and you may now use any of the 10 function keys to give a magnification of between three and 12 times. This magnified view may be scrolled over the whole picture, modified and zoomed in and out at will.

Reviewed by André Willey

The main menu of Degas Elite
A complete new section of extremely powerful functions has been included which allows you to select a block of any size from your picture and store it in the block buffer. You then paste it into another picture or use it as a brush and paint it back in again somewhere else on the same picture.

One of the most amazing things you can do with the block is to scale it up or down to any size, bend it, distort it, rotate it, and generally do anything else you can think of to it. These options have to be seen to be believed, and I spent hours finding out what each one was capable of.

Loading and saving are now so versatile that you should never need to use another program again. You can load or save files from Neo, Degas, Amiga or 8 bit Atari Touch Tablet - in whatever resolution they happen to be - and Degas Elite will do its best to convert them into a suitable picture for the resolution you are currently working with.

It will even try to match up your palette values with the ones in the original file. This seems to work very well indeed, and I have converted a number of medium and high resolution pictures into low resolution with fantastic results.

The load and save routines also allow you to work with saved blocks, brushes, tiles, fill patterns, full Gem fonts and even load in new palettes without losing the current picture and vice versa.

If you are using a one megabyte machine you may have up to eight pictures in memory at once, and flip between them with a click of the mouse button. Even the humble 520 will allow you to work with two pictures at once, which itself is an improvement over the old Degas.

Overall then, Degas Elite improves in almost every area on the original. Everything has been made easier to use, and hundreds of new facilities have been added. The package is now probably the most sophisticated of the drawing/art programs available today - but who knows what tomorrow will bring?

Its only serious drawback is its price. At £99.95 it is perhaps a touch more expensive than many people would like, but you certainly get your money's worth.

---

**BUSY BEE**

At Galen 12 £2.95 each

Electric Pool £13.99

Pig Simulator II £28.95

Pistol Factory £28.95

Start Service £21.85

Superb Style £32.95

The Chipping £29.95

Basketball £29.95

Jewels of Darkness £29.95

QBall £29.95

*Many More, Phone for details*

Send S.A.E. for price list.

**TELETEX**

The West Yorkshire Atari Centre

ATARI only specialists

HQ of West Yorkshire ATARI Computer Owners Club - WVACO - Join Today!

Call in (open 6 days) or send for membership details. Meetings - newsletter - expert advice - free hardware & software discounts.

Members Benefit this month include:

- STFM £430.00
- 100X2 £99.50
- Disks: £7.50, £10.50, £15.00
- Blank Tapes 10 for £2.50
- "Great value, good quality ATARI books and magazines"

Members of WVACO are entitled to a 10% discount on all items.

**ST BARGAINS**

January bargains on software and hardware.

**ST SOFTWARE**

<table>
<thead>
<tr>
<th>Software</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starglider</td>
<td>21.95</td>
</tr>
<tr>
<td>Flight Simulator II</td>
<td>41.75</td>
</tr>
<tr>
<td>Silent Service</td>
<td>25.95</td>
</tr>
<tr>
<td>Music Studio</td>
<td>17.95</td>
</tr>
<tr>
<td>Super-Kopy</td>
<td>25.95</td>
</tr>
<tr>
<td>Black Cauldon</td>
<td>25.95</td>
</tr>
<tr>
<td>Bridge 4.0</td>
<td>26.95</td>
</tr>
<tr>
<td>Kings Quest 2</td>
<td>25.95</td>
</tr>
<tr>
<td>Hacker for II</td>
<td>22.95</td>
</tr>
<tr>
<td>Major Motion</td>
<td>17.95</td>
</tr>
<tr>
<td>Mean 18</td>
<td>37.95</td>
</tr>
<tr>
<td>Mercenary ST</td>
<td>22.95</td>
</tr>
<tr>
<td>Sunday Fix Legacy</td>
<td>26.95</td>
</tr>
<tr>
<td>The Pawn</td>
<td>21.95</td>
</tr>
<tr>
<td>Bratticus</td>
<td>28.95</td>
</tr>
<tr>
<td>Zork I or II</td>
<td>26.95</td>
</tr>
</tbody>
</table>

**ST SOFTWARE**

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>520STFM/NT 0.5MB DDD</td>
<td>597.00</td>
</tr>
<tr>
<td>520ST FM Keyboard</td>
<td>249.00</td>
</tr>
<tr>
<td>1040ST Keyboard</td>
<td>639.00</td>
</tr>
<tr>
<td>Cuma 1n D/D Int Power Supply</td>
<td>339.55</td>
</tr>
<tr>
<td>SAMM40 Printer</td>
<td>182.00</td>
</tr>
<tr>
<td>SM128 High Res Mono Monitor</td>
<td>19.55</td>
</tr>
<tr>
<td>3.5 Disks 5D/DD/10tcr</td>
<td>6.09</td>
</tr>
</tbody>
</table>

**BUSINESS & UTILITIES**

- Degas Elite
- Art Director
- First Word
- Typewriter Elite

**ALL PRICES ARE FULLY INCLUSIVE**

FREE UK POST & PACKING

FULL RANGE OF ST HARDWARE/SOFTWARE

S.A.E. FOR LIST

MICRO MAIL

MICRO MAIL

STUART HOUSE, ARNOLD ST

NANTWICH, CHESHIRE CW5 5GB

February 1987 Atari ST User