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ATARI USER

Vol. 2 No 9 January 1987 £1

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Don't miss this launchpad for all that's new in Atari computing

ATARI COMPUTER SHOW

10am-6pm Friday, April 24
10am-6pm Saturday April 25
10am-4pm Sunday, April 26

Champagne Suite, Novotel, Hammersmith, London



Experts are convinced 1987 will be the Year of Atari – thanks to exciting developments in the ST range, coupled with a renewed commitment by Atari to support and encourage the ever-popular Atari 8-bit range.

New hardware enhancements and hundreds of new software packages testify to how writers and developers throughout Britain and the USA are creating new ways of exploiting the power of Atari computers – and they'll all be on display at the April Atari Computer Show.

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Atari to launch 'Amstrad basher'

ATARI is about to launch its "Amstrad basher" – a new ST aimed at small businesses and serious hobbyists.

To be called the 520STFM, its £399 price tag places it in direct confrontation with the recently launched Amstrad PC1512.

Similar in appearance to the 1040STF, it has a modulator for TV like the 520STM and a built-in 500k disc drive like the 1040STF.

The 520STFM matches the Amstrad IBM clone for memory but is faster and more low cost software is readily available.

And with the soon-to-be launched Robtek IBM Emulator plugged in it becomes PC compatible.

The new machine has an unusual history. It nearly didn't make it to the marketplace because for a long time it wasn't considered a viable product for the UK.

But recently appointed Atari UK general manager Bob Gleadow ordered it dusted off and readied for sale.

'This is definitely a good configuration for the ST and it will be in the shops in quantity by the end of this month', Gleadow told *Atari User*.

Macintosh emulator will go on sale soon

THE controversial "Mac emulator" for the Atari ST – exclusively revealed in November's issue of *Atari User* – has now crossed the Atlantic.

Robert Zysblat, director of Middlesex based distributor Robtek, says a McEmulator will be in the shops in Britain any day now.

'The response has been explosive', he told *Atari User*, 'and at a retail price of £169.95 we are talking about a lot of money.'

The product is a plug in cartridge giving ST users access to some of the most sophisticated software on the market.

When plugged into a 1040ST with monochrome monitor it effectively turns the machine into an Apple Macintosh.

This means the ST can run programs such as Macintosh Plus, MacWrite, MacPaint, MacDraw, PageMaker, LaserWriter, Excel and Lotus Jazz.

As well as providing access to an entire new range of top flight business software the device also opens up the possibility of professional standard desktop publishing on the ST range.

West Coast manufacturer Data Pacific has been selling the device since last autumn.

It was first shown in America early last year, but 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 ST.

Data Pacific later rereleased the device without the roms. Purchasers have to persuade their local Apple dealer to supply them with the roms from the official Apple spares list.

The same situation will apparently apply to the Robtek product to be sold here.

But whereas Apple is said to be close to taking Data Pacific to court in the US for alleged infringement of copyright, Robtek anticipates no such difficulties in the UK.

The firm estimates an initial demand for the McEmulator of 5,000 in Europe and 25,000 in the US.

It has just signed a one million Deutschmark contract with German firm Microhandler covering all its ST products including the McEmulator.

'This agreement will further establish our penetration into all of Europe', said Zysblat.

IBM dealer to sell STs

ATARI has signed an agreement allowing Merseyside IBM PC dealer and business centre Data Exchange to stock Atari products, in particular the ST range.

Both the 520STM and 1040STF 16 bit machines will be offered immediately. They will be followed in due course by the new two and four megabyte ST computers, the hard disc option and the IBM co-processor expected in the UK early this year.

Initially, software packages from Atari such as Fastcom and dBman as well as titles from Psygnosis, Kuma and Antic will be stocked.

Data Exchange plans to widen this range in the near future to include entertainment as well as business applications.

We are looking for a new breed of dealer to stock the systems which will be on sale in 1987, said Atari UK general manager Bob Gleadow.

"The addition of two and four megabyte machines to the ST range is going to attract a different kind of user."

MIDI SEQUENCER

AMERICAN manufacturer Midisoft has released Metatrack a multitrack midi sequencer for the Atari ST.

It features real-time and step time recording, three modes of quantization and cut/paste editing between tracks.

Midi system real-time commands and midi song pointer commands are used to provide full synchronisation with external midi devices such as drum machines and other sequencers. Price $99.



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AT1

Online Santa a hit

THE decision by Father Christmas to go online for the festive season proved a major attraction for the kids – even for some obviously rather big ones

What else could account for the electronic requests for Porsches, pay rises, Swedish au pairs and Page Three girls which flooded into the North Pole?

Yet another first for MicroLink, the UK's leading electronic mail service, SantaLink attracted some 1,000 messages in the first week alone

And of these more than one third are believed to have come from adults

Equipped with an Atari micro, Santa electronically hooked himself up to the giant MicroLink central computer Then all that was needed to contact him was any home or office computer

'The response was quite incredible'', said Derek Meakin head of MicroLink ' It seems that adults enjoy sending messages to Father Christmas just as much as children do

Mind you, what he made of some of the more grown up requests – like the one for a blow up rubber doll – is quite beyond me "

Shares sale raises $50m

EAGER purchasers of Atari Corporation shares have poured more than $50 million into the company s coffers

In doing so they have set the seal on Atari s return to financial stability and respectability after being on the verge of collapse less than three years ago

The public share trading on the American Stock Exchange saw 4 5 million Atari shares sold for $51 8 million – a figure in excess of the company's expectations

Opening at $11 50, the shares traded sluggishly for most of the day before closing at $12 50

Most of the cash raised will go to clear off the outstanding $36 million debt left over from the Tramiel family s purchase of Atari from Warner Brothers in 1984

Warners will retain a 25 per cent shareholding in the company, the largest bundle after Jack Tramiel s 28 2 per cent.

The highly successful share offer marks Atari's remarkable comeback from near collapse to the status of a public company This positive response from private investors and financial institutions bestows the accolade of public acceptance And it is further proof for the previously sceptical computer industry of the able leadership of Jack Tramiel and his sons

The stock offer prospectus reported sales of Atari computers and video games are currently worth $200 million a year

A leading American financial observer told *Atari User* ' Once again Jack Tramiel has achieved exactly what he set out to do

"Although slightly later than he original target date, he has put Atari into profit and restored the company to a position of esteem in the financial community"

Atari aiding British programmers

ATARI is offering British authors and developers a fast route to the lucrative global software market through a new department set up specifically to process original ideas for programs

To be called Software Test, the new group s objective is to set and maintain standards for all software marketed under the Atari label

This means games, utilities and business programs for the entire range of 8 bit, 7800 and ST machines

Software Test will come under the control of Atari technical manager Les Player

He told *Atari User* "We are currently recruiting the four or five people we need to get it running this month

"Their job will be to test and evaluate software and ideas submitted to Atari by firms and individuals who can benefit from our worldwide distribution network.

Jack Tramiel is already on record as saying that much of the best Atari software is coming out of the UK

' You only have to look at 1st Word and Fast Basic to know what he means

' Software Test will allow us to offer even greater opportunities for British programmers to market their wares on a global scale under the Atari imprint

It will co exist with a similar set up in the US and slot neatly in between the present software acquisition and software marketing operations

"The rewards for programmers whose concepts we develop and market could be phenomenal"

TIMBER TIPS

BUDGET program producer Elizabethan Software has released a utility for Atari 8 bit owners who enjoy working with wood

Timbercalc is an aid to costing timber-based projects ranging from simple do-it yourself jobs around the home up to boat building

It can handle dozens of timber-related and other products with varying prices and thicknesses

Atari micros were selected for the initial version of the program because they are low cost well tried machines with disc drives said a spokesman for Elizabethan

Timbercalc costs £9 99 on disc

Warranty: Atari spells it out

ATARI has moved to try and stamp out confusion among users about their rights and options when equipment does not perform satisfactorily

In a statement to *Atari User* the firm points out that it does not handle repairs or adjustments at its Slough head quarters

'A letter published in the June issue of *Atari User* from reader Norman Wilhamson is typical of the sort of confusion which exists ', a spokeswoman said

It urged users to return defective equipment under warranty to retailers within the first 90 days and to Atari itself between 90 days and the end of the 12 month cover

"In fact retailers buy out the complete warranty from Atari as part of the equipment package price In affect, they get a discount on the price of equipment for taking on the warranty

' As a result, consumer warranties on Atari products are provided solely by the retailer or dealer from whom the goods are purchased

"The consumer s rights are, firstly, the retailer s official guarantee, and, secondly, the consumer statutory warranty of 12 months from date of purchase"

Pacific action replay

LEADING American producer of computer wargames Strategic Simulations has released Warship for the Atari 8 bit machines

Practically every ship that fought in the Pacific from 1941-45 is included

Players can choose from 79 types of vessel from the Allied or Japanese fleets – or they can modify data to create their own warships

Four scenarios are included, but players can depart from them to devise original maps and ship-to-ship surface engagements.

During combat the micro keeps track of every shell hit and calculates damage based on such factors as armour strength, location of hit and penetration

Unlike some other naval wargames, damage control in Warship can reduce the effects of fire, flooding, rudder and electrical damage – all recorded – during the course of play Price $59.95

★ ★ ★

BUSINESS software house Sagesoft has produced versions of its Bookkeeper, Accountant and Accountant Plus programs for the Atari ST

Bookkeeper costs £99, Accountant £149 and Accountant Plus £199

★ ★ ★

Which member of the Royal Family had 11 fingers ? To find out you'll have to buy the new Trivia Challenge from Microdeal for the Atari ST.

The quiz program also allows users to create their own question and answer files Price £19.95

★ ★ ★

LATEST batch of releases in the Silver 199 range from Firebird includes outer space shoot em up games Warhawk and Caverns of Enban for the Atari 8 bit micros Price £1.99 each



Brian Clough and CDS Software managing director Giles Hunter referee a game of Football Fortunes

Call for better Atari software

A CALL has gone out to entertainment software houses to improve their standards to cater for the increasingly sophisticated Atari user

It comes from Stewart Bell, managing director of the recently formed UK affiliate company of MicroProse, the leading developer of simulation software in the US

"The problem is that too many software houses are apparently working on the assumption that end users have IQs less than orang utans", he says

However they couldn't be more wrong. For just as micros are becoming ever more sophisticated, so too are the users – and no more so than in the case of Atari people'

The result of all this, according to Stuart Bell, is that Atari machines are not realising their full potential as vehicles for entertainment

As the UK boss of MicroProse – the company known for its award winning entertainment simulation software – Bell is not at all pleased with this situation

For his company claims its product is in the Rolls Royce category Producing only a handful of titles each year, MicroProse spends up to $1 million on the development of each, so guaranteeing they will be blockbusters

'So you can understand why we become a little irritated when our software occasionally turns up on the shelves next to the cheap and nasties', says Bell

MicroProse has a whole range of titles available on tape and disc for the Atari 8 bit machines – Nato Commander, Mig Alley Ace, F 15 Strike Eagle, Kennedy Approach, Crusade in Europe, Decision in the Desert, Silent Service and Solo Flight.

Silent Service is also available for the Atari ST

The appointment of former Atari employee Simon Barnard as software development manager of MicroProse should ensure there will be a continuing flow of new titles for Atari micros in the future

In another move to strengthen its UK team, MicroProse has appointed John Tweedy as national sales manager

Soccer survival – by the expert

AFTER a game of Brian Clough's Football Fortunes, CDS Software reckons you'll realise why managing a football team is often a short-lived appointment

The combined micro and board game for the Atari 8 bit and ST machines was developed along lines suggested by long-term survivor Brian Clough

Two to five players can be team managers, the remainder of the 10 team league being controlled by the computer

Managers have to guide their teams through a season by wheeling and dealing in the transfer market and making sure they don't bankrupt their clubs in pay negotiations

Price £14.95 on cassette, £17.95 on disc for the 8 bit versions, £24.95 ST disc version

ST K-Graph enhanced

BUSINESS graphics package K Graph from Kuma Computers has been enhanced and released for the Atari ST as K Graph 2

The program enables users to produce charts and graphs, making full use of Gem windows and drop down menus and includes such facilities as simultaneous display of up to four graphs each showing different data.

The main new features are maths and trig functions, save graph function, print/rename datasets statistics, area graphs, and variable x and y origins.

K Graph 2 can be used in conjunction with K Spread – also to be upgraded soon – or as a stand alone package Price £49.95, with upgrades to original K-Graph discs available for £10

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NEWSLETTER

Eye on the weather

BELGIAN accountant Daniel Janssens wants fellow MicroLink subscribers to join him in setting up an international network of weather watchers on the system

Before entering university 10 years ago he set up a simple network, corresponding with other amateur meteorologists in Europe, North America and the Middle East.

Now I m a fully qualified accountant my wish is to re-start my network with the help of modern means – computers and MicroLink , said Daniel

He is looking for people in different countries who are prepared to report local weather conditions daily or monthly to his Brussels mailbox, MAG 95369

Daniel is also interested in the effects of particular phenomena, such as storms, on the environment.

BOOST FOR EMPLOYMENT

HELPING local firms help themselves is the role of the business information office at Gateshead public library

And helping Gateshead library to help local firms is the role of MicroLink

The office was set up to provide free information to firms looking for customers and customers looking for suppliers.

The idea is to keep as much of Gateshead s business as possible within Gateshead – and thereby boost employment within the area

In other words whether buying or selling when a local firm is looking for something it should search locally first before going outside the area

Business Information Office spokesman Fraser Meckay said Our aim is to bring local firms together and encourage inter-trading rather than see them go elsewhere for their components and raw materials.

'We joined MicroLink to gain access to its telex and electronic mail services and its overseas databases

As we average 300 enquiries a month – half of them requiring in-depth research – it will help us to have a system that moves information quickly and reliably

Telex service gets a boost

A FASTER telex service has been announced by MicroLink It offers instant despatch of telexes to 150,000 users in Britain and more than two million worldwide

Subscribers can send a telex from home or office in seconds, leaving the powerful MicroLink computer to deal with the drudgery of system bottlenecks

The MicroLink computer has been chosen as the first in Britain to be modified because it handles such a large amount of telex traffic.

Head of MicroLink, Derek Meakin, said 'The improved telex facility is one that will save MicroLink subscribers time and money, certain in the knowledge their telexes are speeding on their way even faster than before '

Watchdog savages postmen

THE Post Office has been hammered yet again by its consumer watchdog organisation for failing to deliver the goods on time

Quality of service still falls below set targets and overall services still fall short of customers reasonable needs and expectations , says the Post Office Users National Council in its Customer Audit and Review for 1986

More than 12 million of the 100 million first class letters posted each week are not reaching their destination the following day – simply not good enough says the report

As much as 25 per cent of first class mail from London to the major cities of Edinburgh Belfast Glasgow Manchester and Liverpool is not arriving on time

And more than 20 per cent of first class items from Manchester, Glasgow and Belfast fails to reach London the following day In the case of Belfast the failure rate is almost 30 per cent.

These statistics – the Post Office s own – are based only on the period between the item being timestamped and before it leaves the delivery office for its destination

This measurement system does not take account of delays in collection or initial handling misdelivery or delays in actual delivery says the report.

Past experience has shown that letters posted at the same time in the same box can sometimes receive different timestamps or even not be cancelled until the day after posting despite a collection being scheduled

In some areas the last collection of the day will be too late to connect with the despatches to remote areas of the country

MicroLink News Editor Mike Cowley commented 'This report is yet another gloomy indictment of the postal system

'Despite its so-called initiatives in the area of mobile sorting offices rail and air links, the Post Office still fails to deliver a significant proportion of mail on time

'Businesses just can t afford not to get into electronic mail if they want to compete effectively in the marketplace

'A company that relies solely on the Post Office to get its message across is like a boxer with one arm tied behind his back

YOUR chance to join MicroLink – turn to Page 8

American $cene

EDWARD SHARK reports

PAIDE of place at the fall Comdex show went to Atari which, as aspected, set up its stand near the entrance to the main hall of the Las Vegas Convention centre

Measuring 30 by 75 feet, the Atari platform was impressive, particularly since arch rivals Commodore and Apple were nowhere to be seen

On the hardware side of things, the best crowd-puller of the show was undoubtedly the new 1200 baud, Hayes compatible modem from Atari – the SH212

This took precedence over the XEP80 – an 80 column card for the XL/XE 8 bit computers

The SH212 modem is another of those amazing price breakthrough items that Atari is renowned for

This fully Hayes compatible beastie offers 300 baud Bell tones, along with V22/1200 baud frequencies for both sides of the Atlantic within its $99.95 price tag

Unlike many other Atari units the SH212 modem features a fully fledged 25 way RS232 port, making it compatible with just about any computer with serial port and appropriate software.

Other features within its budget price tag include touch tone and rotary dialing, auto answer and internal loudspeaker

Expect to see this modem available in the US during March of '86. The UK? Well there are quite a few US dealers who do mail order with credit cards

* * *

Not exactly of the US but causing a stir over there is a Swedish Atari bulletin board! – seems every Atari comms freak is logging on

Yes, you read that correctly. Lennart Olsson, a keen CompuServe fan, has opened what he believes is the first Atari oriented BBS in Sweden and, thanks to some timely intervention on the part of the Swedish telecommunications Authority, access is now at all CCITT speeds up to 2400 baud

Subject to further liason with the telecoms authority, Lennart tells us that the board may soon be accessible via IPSS/Telenet, which'll make life a lot easier (not to mention cheaper) for us longer distance callers

Sorman Information Exhange (SIX) runs on an Apple Macintosh Plus (shear heresy I know) and carries general computer news and software for the Mac and Atari 8 bit and ST ranges

At the time of writing SIX has only been operational for about three weeks, but already Lennart has established a financial link with a local business and hopes to install a multi user version of the board, running a package called Red Ryder Host.

We wish Lennart every success with his new venture

SIX can be found on 01-046-470-22183 at all normal CCITT modem speeds up to 2400 baud – have fun dialling!

* * *

The December issue of Antic is coming in for some stick on the US networks as the Tech Tips section at the back of the mag is credited to the Sysop of Atlantic BBS

Several other sysops in the US are shrieking blue murder since they spotted several of the so-called hot tips appearing way back on their BBSs and in magazines such as Compute! and Analog. the Atari Dos 2.0s manual and even good old Antic's back issues -themselves!

* * *

The ST blitter chip was displayed at Comdex in its final configuration and looks pretty impressive

Latest reports from Atari HQ indicate that this $120 add-on to the ST will be available from February. The chip comes as an easily fitted piggy-back rom unit which fits into existing PCB slots

* * *

Cause of a lot of excitement at the show was Backup!, a hard disc recovery program from MichTron

And it's understandable. When a hard drive crashes there isn't any noise. No smoke, no fire, no broken glass or twisted metal. Physically, everything remains pretty much intact. But datawise 30 megabytes of amnesia?

That's bad news in anyone's book and such events are virtually irrecoverable

The best way to cure such problems is prevention. But how often do you make backups of a quarter billion bytes of computer memory?

And even so, are they accurate and up-to date? Would you stake a month's lost work on it? Or even a week's? Probably not

Now you don't need to. MichTron's new Backup utility is for those of us who like things quick and simple

Backup duplicates the contents of your hard drive to floppy discs minimising the risk of loss

It also lets you restore the floppy backups back to the hard-drive after an accident, reducing any actual loss to an absolute minimum

But much more than that, Backup's specialised routines are very fast and the program orchestrates the entire backup procedure for you, minimising time and effort as well

Intelligent routines give you the option of making full backups of the entire hard-drive, backups of only newly created or modified files, or backups simply by date

You might even decide to make an image backup – transferring logical sectors to counterpart floppies, saving even more time

Backup will be available from MichTron from December 1st onwards for $39.95 and runs on any Atari ST with a hard drive

MichTron, in case you hadn't heard of it, is a growing company in Pontiac, Michigan, and is currently the largest producer of software for the Atari ST in the United States

* * *

Still on the subject of hard discs, the Supra Corporation has notified owners of the Supra 30Mb Hard Drives manufactured by NEC that they may develop encoding problems

In a message sent to users of the Atari Developers' Forum on CompuServe, Supra said that some disc drives manufactured between August 15 and October 15, 1986 have been known to fail after extended use

Encoding problems can lead to scrambling of the disc directory and subsequent loss of data, so it is important to determine if your Supra 30Mb drive was manufactured during the suspected problem period

To do this check the identification plate on the bottom of the drive. The manufacturing date shown is in the format of MDDYY or MMDDYY

Users who suspect a problem with their drive should contact Supra Technical Support on 0101-503 967-9081

Get by with a little help from your friends

By Brillig

THIS month sees the start of our Lifeline corner. If you'd like to help others, send in your name, address and the titles of the adventures you're willing to help out on and we'll publish these details in Lifeline. Telephone numbers will not be printed – it's mail only assistance from experienced adventurers that we're after.

When you write to a reader listed in Lifeline please always remember to enclose a stamped, self addressed envelope for a reply. The Lifeline volunteers have kindly agreed to donate their own time to helping you so please help them by enclosing an sae.

This month's hints and tips are in response to queries from Ken White (Colossal Cave), Linda Naysmith (Zork II) and A. Jones (Hitch-Hiker's Guide To The Galaxy – HHGG).

The clues given should help, though I must admit to having the odd dose or two of elixir while mulling them over.

Mr Jones also mentions a couple of glitches he's found. First, in HHGG, he says that if you enter the sauna several hundred times, the top line of the display becomes corrupted. I'm not surprised! Why anyone would want to visit the steam room that many times unless they have a serious weight problem, beats me.

So I think we can forgive Infocom – even someone with a brain the size of a planet wouldn't have foreseen that one.

His second glitch similarly involves repetition of an action. Persistence is one of the qualities you need as an adventurer and Mr Jones has it in spades. In The Payoff, Drop All then repeatedly Feel Pain, Open Safe and Take Control.

After several turns, you will be told "I'm carrying too much" but asking for an inventory reveals that "I'm not carrying anything".

Michael Plan of Wolverhampton is in the dungeon in Wexworks and wants to know how to secure the trapdoor with the beam. I haven't actually been there myself – does anyone know?

Both he and Ken White mention that if you Bury anything in Red Moon, it disappears forever. I don't think this glitch is quite what Level 9 intended but it sure makes life easier!

That about wraps it up for this month. Keep those letters coming. Exciting adventuring! ■

GLITCH OF THE MONTH

Jon Eradbury of Sheffield has spotted a glitch at the very end of Zork I. The description states that "You are standing before a barrow of Stone. In the east wall is a huge stone door which is open."

However if you EXAMINE STONE DOOR you are told "The stone door is closed". As Jon says, all very illogical, Captain!

Jon must hold some sort of record for finding a glitch at the very end of an adventure – can anyone beat it or find one right at the start?

LIFELINE

The following readers offer their postal help with these adventures

● Linda Naysmith, 57 Ravenswood Rise, Dedridge, Livingston, West Lothian EH5 6PF. Snowball, Return To Eden, Emerald Isle, Red Moon, Earthquake 1906, Curse of Crowley Manor, Escape From Traam, Golden Baton, Wizard of Akyrz, Perseus and Andromeda, Arrow of Death 1 & 2, Time Machine, Feasibility Experiment, Escape From Pulsar 7, Ten Little Indians, Circus, Wexworks, Pirate Island, Dallas Quest, Zork I.

● Eric Nolan, 27 Whitebrook Park, Tallaght, Dublin 24. Transylvania, Stranded, Snowball, Lords of Time, Dallas Quest, Zork I, Enchanter, Colossal Adventure, Seastalker, Asylum, Ghost Town, Hulk.

● Nigel Morse, 11 Greenleafe Avenue, Wheatley Hills, Doncaster, DN2 5RG. Zork I, II & III, Planetfall, Suspended, Starcross, Hitch Hiker's Guide to the Galaxy, Wishbringer, Infidel, Cutthroats, Enchanter, Sorcerer, Snowball, Mordon's Quest.

HINTS 'N' TIPS

COLOSSAL CAVE – *Rainbird*
What was is the huge mirror?
UOYN OKCI RTAY ALPO TTSU J
NOIT CELF ERRU OYSI NOYN ACEH TSSO RCAE RUGI
FYWO DAHS EHT

HITCH HIKER'S GUIDE TO THE GALAXY – *Infocom*
Can't demonstrate your intelligence to the door?
XODA RAPA SIRE WSNA EHT
EMIT EMAS EHTT AAET ONDN AAET EVAH TSUM UOY

ZORK II – *Infocom*
Can't open the rusty box?
TROP ERAE SUOH DLUO CELO HGNO LBOE HT
Trapped with the red sphere?
TFIL LANO ITAS REVN OCAY RT
Sea serpent proving fatal?
MUIR AUOA EHTM ORFY AWAW ORHT S'EN OTSA PEEK
Oddly angled room a mystery?
WS, WN, EN, ESO GTAB EHTM ORFO SHCT IPLL ABES ABAS ITI
Topiary hedges baffling you?
TNAV ELER TONE RAYE HTSA MEHT ERON GI

CLOSE to 18,000 people flocked to the Atari Computer Show during the three day event in London. Mingling with the crowds to cast a critical eye over what was happening was a team from Atari User. Here André Willey reports on what he discovered on the 8 bit front while Andrew Bennett reveals what he found in the world of the ST

Seen at t

Games console has super graphics

THE UK launch of the 7800 games console at the Atari Christmas Show must have been an eye-opener for those who thought that the dedicated games machine market was dead, *reports Andre Willey*.

Atari started the ball rolling 10 years ago – and it looks like the company will be responsible for its resurgence with the new model.

In a calculated marketing move, Atari has designed a machine with fantastic new graphics facilities, but which will still be able to run the enormous number of 2600 games cartridges, thus opening up the first real upgrade market in video game console history.

The unit is based around a 6502 chip running at 1.79 MHz, with 4k each of ram and rom. Its screen display – handled by the Maria chip originally destined for the 8 bit computer range – has a resolution of 320 by 200 pixels, with up to eight colours from a palette of 256 on screen at once.

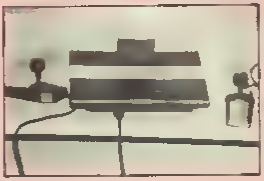
There are no hardware sprites as such but the unit does feature up to 64 software sprites. Development systems to enable users to design the 64k or 128k games cartridges that the 7800 uses are available from Atari, running, of course, on the ST.

Although development 7800s were on display at the Show, the unit will not be available until the middle of 1987, by which time Atari claims a good number of games will be available. The price has yet to be fixed, but educated guesses weigh it in at around the £70 mark.

Titles currently available in the States for the 7800 include Xevious, Pole Position II, Joust, Pac Man and Ms. Pac Man, Galaxians, Food Fight and Dig Dug.

The Show also demonstrated conclusively that the 8 bit range is alive and well in the UK.

New games were very much in evidence from leading software houses



such as Databyte, Tynesoft and Red Rat software.

Red Rat had Laser Hawk and Domain of the Undead, plus its new Screaming Wings game. These each cost £7.95 on tape or £9.95 on disc.

Databyte, which specialises in licenced US products, launched Montezuma's Revenge, Adam Caveman and Polar Pierre, all priced at £9.95 on tape and £14.95 on disc.

Tynesoft demonstrated Jet Set Willy which for the first time is to be released in cassette form at £7.95. Who Dares Wins and Winter Olympics are both due out soon from the company.

By displaying the new XEP 80 module on its stand Atari was letting the world know that 8 bit machines are still a force to be reckoned with in the small business market.

Until now there has been no simple way of obtaining a high quality 80 column display on an Atari 8 bit machine. The XEP-80 unit resolves this problem, and also provides a Centronics parallel printer port for good measure.

The unit is styled to match the XE range but will work with the whole 8 bit range – from the old 400 through to the 130XE.

Release dates and prices have yet to be finalised but usually reliable sources are claiming that it will appear in the shops during the first quarter of 1987 at a price well under £100.

IBM emulator for the ST

A MAJOR breakthrough on the ST front was announced at the show in the form of an IBM emulator.

It comes from Robtek, the same company which recently unveiled the McEmulator. The new IBM device is priced at £99.95 and will allow the ST to run most IBM text programs, so opening up a vast range of additional business titles.

But to date it is not capable of handling the graphics in the PC software packages. This means that it is currently restricted to running only the text of Lotus 1-2-3.

However it is claimed that an enhancement due shortly will remove this limitation on the IBM Emulator. This is almost certain to be offered free of charge to existing users.

Apart from the emulator device itself, ST users need a 5.25in disc drive to make it work.

'This is a most significant development in the market', commented an Atari spokesman.

the Show

Games prices take a tumble

PRICES of games for the ST range are plummeting as high volume software houses throw their support behind the machines, *reports Andrew Bennett*

The show revealed the trend with the event being selected as the launching pad for truly budget priced packages

Tynesoft became the first company to break the £10 price barrier with two ST titles Both Time Blast and Five Star are space ship adventures priced at £9 95

Only marginally more expensive at £12 95 were five new games from Anco Software of Dartford – Bridge, Trivia ST, Peggammon, Willy the Kid and Flip Flop

Bridge includes a tutorial on the classic card game and is aimed at players ranging from beginners to those with 'middle expertise"

Trivia can be played by between two and four players, offering a total of 1500 questions on a diverse range of subjects in both English and French

Peggammon claims to offer a third dimension to the ancient game of backgammon while Willy the Kid is an adventure game with cartoon graphics

The fifth budget offering – Flip Flop – recreates the board game Reversi on the ST

Anco also unveiled three slightly more up market games titles for the ST at £19 95 each

Space Pilot enables the player to roam the skies of alien planets while repelling the attacks of hostile star ships against eight spectacular scrolling backgrounds

Anco s mouse controlled ST Golf offers immediate membership of the fairway to play or practice The program allows complete control of the club There s even a built in construction set to design a golf course

Thai Boxing from Anco is a 3D game which enables the player to compete against one of six backgrounds As injuries are inflicted to the face and body of the opponent these are revealed in graphic detail and colour It's not for the fainthearted said a company spokesman

Meanwhile on the simulation front Microdeal was offering two more conventionally priced games packages at £24 95

Shuttle II as the name implies involves a NASA flight from take off to retrieving a damaged satellite The game features 3D graphics and realistic maps and control displays

Karate Kid II based on the film of the same name, includes tests of agility and features cartoon style graphics

"We are delighted with the way the games software houses have realised the potential of the ST range" said an Atari spokesman at the show

★ ★ ★

ATARI took the unusual step of manning its stand with technical rather than sales staff during the Christmas event

Questioned about this decision, an Atari spokesman said 'We wanted people closely attached to the products

This meant we could easily handle most of the queries raised"

What the exhibitors said . . .

HOW successful was the Atari Christmas Show?

The people who are probably in the best position to assess this were at the sharp end of the three day event – the exhibitors

Here is what they had to say when approached by *Atari User*

'Absolutely fantastic There could be no possible cause for complaint from anybody" – Tony Deane, Silica Shop

★ ★ ★

"We had an excellent show We made a lot of contacts and were very pleased with the outcome" – Jenny Wylie Robtek

★ ★ ★

"An amazing amount of interest generated with people still coming back to us with queries A great success which raised the public's awareness as to who we are We made a lot of new friends" – Bernard Jones, Syndromic Music

★ ★ ★

"A fantastic roaring success The finest show we've ever done An enormous demand for our products, so much so that we had to stop using the till at one point and start using a bucket' – Mike Jones, Software Express

★ ★ ★

"We did a roaring trade as usual and broke all records We're always pleased with Database who do a good show" – Steve Burke Compumart

★ ★ ★

"It went very well for us Our products were very much in demand and we sold out of everything we took down" – Charles Moir, Computer Concepts

★ ★ ★

"The show was a particularly good one for us and we were very pleased with the number of visitors who came to our stand and showed an interest in our products – Catherine Jones, Kirk Automation

★ ★ ★

"Not a very good show at all," Mark Daniels Centec However his company has already booked for the next Atari Show

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Alternate Reality 2	–	18.99
Asylum	8.00	12.00
Aztec	8.00	12.00
Ballblazer	8.00	12.00
Beer Belly Burt	2.50	4.00
BMX Simulator	1.79	–
Bobbymash 2	8.00	12.00
Caverns of Efmorl	1.79	–
Chicken Chase	2.50	–
Glider of Death	2.50	–
Colourgame	6.50	–
Collapse	1.50	–
Colossus Chess	8.00	–
Crusade in Europe	11.00	–
Crystal Karate	1.79	–
Dams	1.50	–
Decision in the Desert	–	15.00
Diamond Mine	1.50	–
Drop Zone	7.50	11.00
Emerald Isle	5.50	–
Excalibur	1.79	–
Fighter Pilot	6.00	10.50
Football Manager	7.00	–
Ghostbusters	8.00	–
Go Forth	–	21.00
Greatest Hits	8.00	12.00
Hard Ball	8.00	–
Hulk	2.50	–
International Karate	5.00	–
Jewels of Darkness	12.50	16.50
Kayleth	–	12.00
Kennedy Approach	11.50	14.00
Kik Start	1.50	–
Kennis Fit	–	12.00
Last V8	2.00	–
Leaderboard	8.00	12.50
Mercenary	7.50	10.50
Mercenary Compendium	12.00	15.00
Movie Maker	–	14.00
Montezuma's Revenge	8.00	12.00
Meteoric Max	1.79	–
Ninja	2.00	–
Ninja Mission	1.00	–
Nuclear Max	2.50	5.00
Oliles Follies	2.00	–
Olympic Skier	8.00	–
Price of Magik	5.00	–
Raising Destruction Bkt	–	12.00
Raid Over Moscow	8.00	12.00
Rear Moon	5.00	–
Rear Max	1.79	–
Renault on Evolution	6.00	12.00
Revivo	2.50	4.00
Second City	8.00	–
Mission	2.00	–
Rictori Hits Vol 4	8.00	12.00
Smash Hits Vol 5	8.00	12.00
Rictori Hits Vol 6	8.00	12.00
Soccer	1.00	–
Spellbound	2.50	–
Spitfire 40	8.00	–
Spy v Spy 2	7.50	12.00
Starquake	7.50	10.00
Steve Davis Snooker	7.50	10.95
Super Huey	–	12.00
Submarine Commander	1.00	–
Surf Sez	7.00	12.00
Swat	1.79	–
Technicolour Dream	6.00	10.00
Thrust	1.50	–
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Uindo 6	–	15.00
Vegas Jackpot	1.00	–
Vietnam	–	12.00
War Copter	8.00	–
Warhawk	1.79	–
Worm in Paradise	2.50	–

TITLE	RRP	Ours
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Arena	29.95	24.00
Ballyhoo	29.95	24.00
Brattacus	34.95	28.00
Cards	19.95	16.00
Chess	24.95	20.00
Colourspace	19.99	16.00
Degas	39.99	32.00
Devpac ST	49.00	40.00
Deadline	29.00	24.00
Deep Space	39.95	28.00
Easy Record	39.95	32.00
Electronic Pool	19.99	16.00
Film Director	59.00	46.00
Flipside	19.95	16.00
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Halbwriter	59.00	49.00
Helixolex	49.95	40.00
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Halstview	74.95	60.00
Halospell	39.95	32.00
Hitch Hikers Guide	29.95	24.00
Introduction to ST Logo	19.95	16.00
Jewels of Darkness	14.95	10.00
K Spell	49.99	40.00
K Plan	29.95	24.00
K Spread	49.95	40.00
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K-Data	49.95	40.00
K Word	49.99	40.00
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K Mimstrat	49.95	40.00
K-Resource	39.95	32.00
K-Switch	29.95	24.00
Karate	24.95	20.00
Lands of Havoc	19.95	16.00

TITLE	RRP	Ours
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Leaderboard Tournament	9.95	8.00
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Little Computer People	34.99	28.00
M Disc	12.95	11.00
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Sofspool	12.95	11.00
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*Music player program (allows you to play tunes from Music composer or AMS via MIDI)

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Back to Atari's roots



BOB Gleadow, Atari UK's new boss, is a blunt-spoken product of the North East who is tough enough to have stood his ground with Jack Tramiel – and survived

In fact there is little of the dodging and weaving about him that seems to be a characteristic of many corporate computer executives these days.

If he doesn't like something, he'll tell you straight. And the problem is that he didn't exactly like what he found when he arrived at Atari.

The truth of the matter – according to Gleadow – was that while not everything was wrong, most of it was.

It wasn't the staff there that put his back up. Nor was it the product that he found lacking. It was the fact that the Atari message was still lying around gathering dust in Slough.

"I found a company that had by and large failed', he says. "And that was because we had not succeeded in letting people know what we had to offer."

Not a man to do things by halves, Bob Gleadow intends to effectively start all over again.

'I want to go back to the basics and tell people that if they are buying a machine which they want to get some entertainment out of, which they want to use for home productivity, which they want to use to teach their children than they may as well go along with mine' says Bob Gleadow.

'That's because we offer better sounds better graphics and programs oriented towards what they really want to do with their machines."

And to Bob Gleadow, Atari UK's new boss, that spells . . . ENTERTAINMENT!

The new Atari supremo is convinced that the company must return to its roots if it hopes to achieve its full potential.

And for Bob Gleadow that means, first and foremost, entertainment.

'We've had our blinkers on too long", he insists. 'Atari had almost started to believe the market wasn't down there any more.

'But all you need to do is wander round a computer show and every second person is under 16 and they are talking about this game or that game.

"These people are computer literate but they get far more out of playing the latest version of Space Invaders than they do out of constructing a program in Basic.

"What has happened is that stuck in our ivory towers we had almost lost touch with what the man on the street really wants.'

And Bob Gleadow isn't the type to remain in an ivory tower for too long. His upbringing in the depressed North East is responsible for that.

Born in County Durham in 1948, his father was the licensee of a club in the grim steelworks town of Consett.

As a youngster, Bob was known as a bright – if somewhat cheeky – kid who was always in trouble.

School days saw him swing towards science subjects and he finally emerged after taking his 'A' levels clutching a book on organic chemistry as a prize for his academic achievements.

"I still haven't got round to reading it", he says.

His first job was as a management trainee with the famous diesel engine firm of Cummins.

It was here that his shrewd head for business became apparent not only to those around him but also to himself.

For he found himself called upon to appraise capital acquisitions before Cummins handed over any money.

"And this gave me an analytical outlook which has stood me in good stead ever since", he says.

The only other thing Bob Gleadow claims to have truly mastered at Cummins was the ability to wander round holding a piece of paper so no one asked him what he was doing.

His next move was to MDS, a company recently established in the North East to manufacture card readers and data recorders.

"It was here that I first learned the

→

Profile

industry buzz words", he recalls

In fact he was to learn much more as a result of the collapse of the market the company was in. For as the tiers of management started to disintegrate in the wake of the financial problems, the high priced executives began to make for the door and young Bob Gleadow started moving up the ladder because – as he puts it – "I was cheap and cheerful"

By 1974, he found himself in charge of material control and warehousing. And that was the year he had his first eyeball to eyeball confrontation with Atari chairman Jack Tramiel

At that time, Tramiel was the driving force behind Commodore and Commodore just happened to be in the market to buy the troubled company which employed Gleadow

"The thing that I noticed about Jack when I first met him was that there was like an energy field around him", recalls Bob Gleadow. "He was very active, very aware, he didn't miss a trick"

The young executive obviously impressed Jack Tramiel as well.

One Sunday afternoon some time later he called through to the North East and handed over the factory to Bob Gleadow

"Suddenly it was all mine", he remembers. "the whole factory that employed 400 people was now reporting to me

Mind you, I was under no real illusions. There had been many casualties (it is often said that Jack doesn't take prisoners) and I was just lucky that I wasn't one of them

'At the same time, Commodore's position in the calculator market was under threat from the Japanese, so we all knew we were in for a time of real retrenchment

For the next nine years, Bob Gleadow was involved in just about everything that Commodore did

But his speciality – the area in which he shone – was in marketing clean-ups

Known as the hard-end of the computer game, this involves getting rid of stock that to put it politely has "aged"

And with Commodore finding considerable difficulty in moving its old calculator stock, he was kept pretty busy

However, he did find the time to become embroiled in the embryo home computer marketplace following the arrival of the Commodore Pet

Originally conceived as an advanced scientific calculator, the Pet caused a sensation at the time of its launch

"It was a very exciting time", says Bob Gleadow. "My first impression of a micro was that its potential was in business, not entertainment.

"As an engineer's tool, as a device controller, as a business system I could see an enormous market even then"

Under Jack Tramiel's leadership, Bob Gleadow worked first in the UK, then Europe and finally was despatched to Hong Kong

Commodore had decided to set up its control and planning centre in the Far East and the Crown Colony had been chosen as the base of operations

'I was picked for this job because I had a disciplined approach to management organisation which went back to my days at Cummins", remembers Bob Gleadow

"Everything out there was in total growth mode – which translates as chaos – but we all pulled together and had a great deal of fun"

However the fun stopped the day the news filtered through that Jack Tramiel had walked out of Commodore

> ***'I believe Atari needs to be more aggressive in its pricing'***

"It was a rumour at first but then we couldn't get in touch with him", says Bob Gleadow. "And that after he'd always been contactable for ten years.

"When it was finally confirmed, I felt disgusted. To me it was Jack's company"

Almost exactly two years after Jack Tramiel left, Bob Gleadow departed Commodore

"In the intervening time, I had become more and more frustrated", he says. "I felt myself to be a dinosaur in that I belonged to a previous age – an age where you made instant decisions and saw them through"

The Gleadow family stayed on for another five months in Hong Kong to see "all the sights we missed" before returning to the UK and a home back in the North East.

It was around this time that the Tramiels made overtures to Gleadow to join Atari, which they now controlled

But it seems that at first he turned them down

And for that reason Jack wasn't very pleased

"Jack would have had me assassinated a year ago if he could", says the new man at the top of Atari UK. "He was very disappointed that I hadn't joined".

However Bob Gleadow eventually changed his mind after being contacted by an old friend Atari president Sam Tramiel

"My first question to him was what does your father think of the idea", says Bob Gleadow

"I honestly never thought I would work for Atari. In fact the best I thought I could hope for was to get into a situation where Jack would talk to me again

'Anyway, here I am"

Within hours of moving into his new offices in Slough, the new number one at Atari UK had formulated his battle plan

He believes the company has serious shortcomings in three major areas – distribution, marketing and sales

"Our product is excellent", he insists. "Now what we've got to do is to present ourselves as the credible alternative I believe we are

"Once we have reached the name distributors, then our advertising becomes that much more effective. And from that sales will come

Under Gleadow, Atari UK will not – for the time being at least – be making a full frontal attack on the corporate market

'Let the clones, let Amstrad, let IBM sort that out for the time being", he says. 'When the dust has settled we'll take another look at it.

In the meantime, the home market, the entertainment market is where Atari is to set its stall"

So what does the future hold for Atari UK with Bob Gleadow at the helm?

"I believe Atari needs to be more aggressive in its pricing – and in 1987 I'm confident that it will be

'We will not become involved in fighting with other companies. What I intend to do is to take a specific look at perceived value points and make sure that we offer something at each level"

Two markets which Atari has targeted are the youngsters and those people who were missed in the first wave of computerisation

"If we can get to the eight year old with his first game to recognise that Atari offers him value for money and quality when he comes to buy his first real computer why should he go to another company?

'Nor have we forgotten about all those people out there who have never come to grips with a micro

"We are going back to our roots to bring computers to the man in the street once again" ■

Now 8 bit Ataris can take the broad view

ONE of the main criticisms of the Atari 8 bit range when it comes to small business use is that it lacks a display mode allowing a full page width of characters to be shown on the screen

Until now there has been no simple way for it to compete with the BBC Micro and the Amstrad However, all that is set to change when Atari launches its XEP-80 80 column module in the first quarter of 1987 No price has yet been fixed but we are assured that it will retail at well under the £100 mark

The new unit is encased in a light XE grey box about the same size as a thick paperback book, with a red power LED on the front panel On the rear panel are the power connection, the output to a monochrome monitor, a 25 way 'D' Centronics printer port and a joystick cable

The joystick cable is connected to the second joystick port of the host computer – which may be any 8-bit machine from the Atari 400 upwards — and the handler program should then be loaded At present this program is only available on disc

Once loaded the unit will switch off the TV display and enable the 80 column output to the external monitor This then becomes your main display, although you can regain the normal TV output by disabling the 80 column facility

The 80 column screen behaves in a very similar manner to its 40 column counterpart and you can use all the normal screen editor facilities such as the cursor keys insert, delete, clear and tab There are also a couple of extra commands – cursor home, and move cursor to the left, right or bottom of the screen

The normal Atari character set is supported including the graphics and international characters and these may be printed anywhere you like In fact the screen is only a 80 by 25 window on to an area of 256 characters by 25 which can be scrolled horizontally at will

You can use a Centronics type printer via a 25 way socket on the rear panel If you want to use the printer



ANDRÉ WILLEY looks over the XEP-80 module

driver without the 80 column screen you select this option on power up

Atari is asking manufacturers of many of the most popular business programs to modify their software to work with the XEP 80 The first to be completed will be Atari's own Atariwriter Plus which will then become Atariwriter 80

Atari also hopes that Precision Software will shortly follow suit with a new version of the popular SuperScript word processor package

The unit communicates with the host computer via two serial data lines – pins zero and one of the second joystick port This data is shifted at a rate of 15 7kBaud, which should be fast enough to fill the 80 column screen in just over a second However the demonstration model we looked at did not seem to run anywhere near that fast

The data transfer is bi directional so that the XEP 80 can return information about the cursor position, character data and so on to the host computer

This method of communication is the main drawback of the unit The design philosophy of the 8 bit range has always been that peripherals are connected via the peripheral I/O port, and there are a number of reasons why this makes more sense than using the joystick port

Firstly, the special driver software could boot automatically from the I/O port in much the same way as a disc drive or 850 module does This would remove the need to boot up a special disc or cassette at the start of a session

Secondly, the I/O handler is capable of transferring data packets at a much higher rate than the joystick port The normal rate is 19 2 kbaud, but it can go even faster

Because the I/O port has hardware based parallel to-serial and serial to-parallel converters running it at 19 2 kBaud allows both ANTIC and the immediate mode Vertical Blank Interrupt to remain enabled both of which need to be turned off whenever joystick serial data is sent or received

Thus by using the I/O port instead of the joystick you could retain the TV display showing a standard 40 column or multicolour graphics display while the monitor displayed 80 columns

Also the I/O port is already configured to send command instructions and receive data and status back from the device thus removing the need for the software to hang the system while it sorts out the serial data

Other than this there is the simple fact that many people keep both their joysticks permanently plugged in and don't want to be constantly unplugging the second one whenever they want to use the 80 column unit

Overall then, the XEP-80 is a neat little unit which performs adequately, but with a little more foresight in the design department it could have been a lot more useful ■

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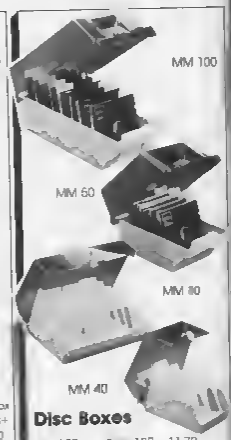
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Gold on course

Program Leader Board
Price £9.99 (cassette) £14.99 (disc)
Supplier US Gold, Unit 2 & 3, Holford Way, Holford, Birmingham B6 7AX
Tel 021 356 3388

AFTER playing a few golf games on the Atari, including one featuring a player whose club action resembled a one sailed windmill in a force six gale, I was despairing of a decent golf simulation

Now Leaderboard already available on the ST, has arrived for the 8 bit

One to four players can take part, each choosing their level of play from 1 to 3. At the novice level you only concentrates on selecting the club and the force of the shot

Amateurs have the additional worry of hooking or slicing and professionals also have the wind to contend with

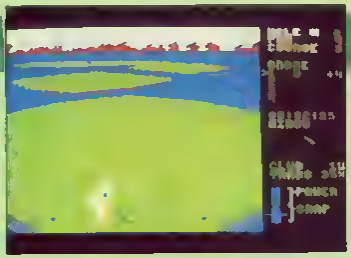
You then select the number of holes and the course. Each of the four courses is of 18 holes consisting of two to four islands on a lake, the tee being on one and the green on another

Having made your selections the first tee is displayed. Three-quarters of the screen is used for the playing area, the rest details your club, yardage to the hole, scores, wind and the power indicator

Screens are drawn reasonably quickly showing your player at the bottom of the screen and the view to the hole

A cursor appears between the golfer and the hole. To aim, the cursor is moved to the direction in which you wish the ball to travel

After choosing one of the 13 clubs available, you start the swing by pressing the fire button then release it to lock the power showing on the indicator



On the two higher levels, pressing the button again determines whether you will hit a straight ball or, more likely, slice or hook.

Animation of the golfer is very good. After gracefully hitting the ball he follows through and watches as the ball lands, bounces and rolls to a stop

Apart from the golfer and the perspective views the graphics are only adequate – the lack of trees and bunkers detracts from the realism

Having said that, the game is great fun to play and I have been hooked (and possibly sliced) on it since I bought it

US Gold is soon to release a disc for £6.50, containing four new 18-hole courses, and this should keep me playing for quite some while to come

Ken Grassham

Sound	5
Graphics	7
Playability	8
Value for money	9
Overall	9

Asteroid assault

Program Warhawk
Price £1.99 (cassette only)
Supplier Firebird, 64-78 New Oxford Street, London WC1A 1PS
Tel 01 379 6755

HERE'S a new play on the asteroids theme but the object here is to destroy enemy bases actually on the asteroids!

The opening screen and music promise a little more than this program actually delivers, although I have to say the game is extremely addictive

The music is absolutely fantastic, another masterpiece from composer, Rob Hubbard. This alone is worth two quid and twelve minutes loading time!

I also like the amount of depth Firebird has managed to get into the title screen

The game itself is a fairly simple idea, and has been used before, in Xevious

You fly over the top of an asteroid your task being to blow up as many installations as possible

At first sight you begin to wonder what it is you are supposed to be shooting at but after a few minutes playing you soon learn

To hinder your progress a few squadrons of enemy fighters are thrown up. Some of these you can shoot down, some you can't

They don't actually shoot at you, but colliding with them or with mines laid by them, will deplete your energy supply

When you reach the end of each level of the game you are assaulted, from all directions by hordes of enemy ships and mines

Dodge these or shoot them as best you can as you could still run out of energy before the end of the session



You can move around the screen, but this doesn't help you much as the enemy ships are very fast – and anyway you have to destroy the ground bases to accumulate a good score

Use a joystick with an automatic firing capability so that you can spend more time dodging enemy ships and mines

If you want to pause the game, the Select key will pause, and the Start key release it. This isn't mentioned in the instructions

This would have been a great game had it been done in 3D, like the cover. Sadly it's in 2D so Warhawk must have some kind of terrain following radar, as you can't crash into buildings, although your missiles can blow up both ground bases and enemy ships

Altogether an extremely addictive arcade game

Rob Anthony

Sound	10
Graphics	8
Playability	9
Value for money	10
Overall	9

Rat's flying high



Program Laser Hawk
Price £7.95 (cassette) £9.95 (disc)
Supplier Red Rat 11 Fennel Street Manchester M4 3DU
Tel 061-835 1055

MY initial reaction to the first screen of Laser Hawk was that here was another horizontally scrolling blast anything that moves type of game

And indeed it is, but with many simple refinements and thoughtful touches that had me coming back for just one more go – and then some

Flying your chopper through five increasingly difficult zones, you avoid or destroy various robo-ships, missile launching silos, parked space ships, buildings and volcanoes – while keeping an eye on your fuel level

Progress through the zone is charted via a small radar screen in the top corner

As the zones become more difficult and the general level of activity intensifies, you will encounter meteors, guided missiles, laser cannons and high flying bombers

If the pace gets too hot (and it certainly gets pretty warm in the higher levels) you could try keeping your finger on the spacebar

If you survive to the end of the zone, you are given an extra life and the opportunity to earn valuable bonus points by destroying a Commodore, BBC, or Sinclair monolith on the ground!

When you have completed the five zones you are treated to a gratifying reward screen before progressing to the next, more difficult level

The graphics, scrolling and sound are good throughout and contribute to the game's appeal and playability

Each zone layout is slightly different and appears to be randomly generated, altering every time a game is started

If your chopper gets chopped, you restart where you left off, not at the beginning

And when you get the hang of things, you can choose to start at any one of the four levels of difficulty available. Just two examples of Red Rat's attention to game-playing detail

I must say after my slightly sceptical start the more I played Laser Hawk the more I liked it

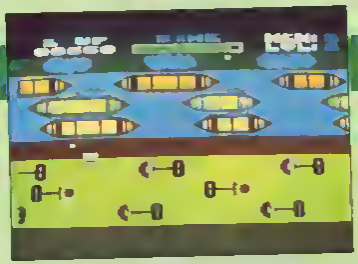
While the game concept is perhaps getting a little long in the tooth, Red Rat has tweaked it nicely, treating it in a thoughtful and refreshing way. What it may lack in originality it makes up for in finesse

A very entertaining game and good value

Niels Reynolds

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

Old magic is there



Program Preppie
Price £2.99
Supplier Americana c/o US Gold, Units 2 & 3 Holford Way, Holford, Birmingham B6 7AX
Tel 021 356 3388

CAST your mind back to games of long ago. Remember an addictive piece of nonsense called Frogger?

You know, the one where a frog had to jump across roads, rivers and such like, desperately trying to avoid getting squished by lorries or croaked by crocodiles

Thought you might. Preppie is a Frogger hybrid and has itself been around for quite a bit. An award winner in its day, Preppie has you retrieving golf balls through 10 levels of difficulty

Preppie is a small, slow gaited chap who starts off in a safe zone at the bottom of the screen

He must cross a fairway and a river to retrieve each golf ball – and must then return it to the safety zone from whence he came

Whizzing along the three-lane fairway are golf-carts, lawn mowers and bulldozers, all of which can bring sudden squelching to Preppie if he gets in their way

When struck by one of these vehicles, Preppie flattens and spreads out just like a piece of dough under a rolling pin

Once safely over Preppie finds himself on a traffic-free river bank. At the higher levels a huge frog comes galumphing along this bank bent on crushing anyone in its path (Frogger's revenge?)

Preppie must now traverse the river, also three laned. He accomplishes this by leaping on passing logs, canoes and alligators, hop scotching his way to the far bank

Just to make life more stimulating, the gators' mouths open at random and a time limit ebbs remorselessly away

The higher the level, the more traffic there is and the faster it moves

The game can be played with one or two players and can be started at any level but the last

The animation and graphics are simple but attractive. Jolly musical effects add to the fun

Preppie is an old game yet it still has that magical pulling power that so many games seem to lack today

A classic Atari program, it's addictive fun and well worth the price

Bob Chapell

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

Ageing dragons



Program Questron
Price £9.95 (cassette) £14.95 (disc)
Supplier Strategic Simulations c/o US Gold Units 2 & 3 Holford Way Holford Birmingham B6 7AX
Tel 021 356 3388

THIS latest release from the US Gold stable is another Dungeons and Dragons type of fantasy simulation in which you trek across foreign lands in search of fame fighting and fortune

Questron is a rather old game, circa 1984, and shows its age

As a lowly serf, it has fallen to you to save the Questron Empire from Mantor a renegade sorcerer Why choose you?

You should know better than to ask 'Perhaps you can succeed and recover the stolen Book of Evil magic where armies before you have failed' They must think you were born yesterday

And they're right! Here you are with nothing more than a suit of rawhide armour to your name, trekking across the countryside

Well, to be precise, it's the countryside that does the moving – and pretty jerky it is too You simply stay put in the middle of the screen

You can rob someone, take an inventory, speak to others and board or leave transportation – horses, ships and so on

You can also hold an item use it, climb (ladders, ropes and the like), examine objects, unlock items and more

In your travels you'll certainly come across many randomly generated monsters

The creatures tend to block your way but you can try to walk around them However, since such passive resistance in this game usually results in your becoming severely damaged, you'll probably decide to fight or use magic on these obstructionists

Towns, cathedrals, castles and dungeons are scattered throughout the realm and are there for the exploring

On entry to one of these the screen will change to display a large scale interior Dungeons are shown as 3D type mazes

The graphics are primitive and the monsters make rather too many appearances for my taste Even so, there's a lot of fun to be had

If you're looking for an enjoyable fantasy game and don't care too much about graphics than Questron should fit the bill

Bob Chappell

Sound	5
Graphics	5
Playability	8
Value for money	7
Overall	7

Useful collection



Program Smash Hits Volume 6
Price £9.95 (cassette) £14.95 (disc)
Supplier English Software 1 North Parade Parsonage Gardens, Manchester M60 1BX
Tel 061-835 1358

COMPILATION mania continues apace and shows no signs of letting up – surely the suppliers are going to run out of old software to plunder before very much longer?

This one, the sixth in this particular series contains four games Elektraglide and Timeslip from English Software and Fort Apocalypse and Drelbs from US Gold

For those who have never played it or read the reviews in *Atari User* suffice it to say that Elektraglide is a Pole Position variant where the objective is to dodge strange objects and race against time A fast, tough game

Timeslip is, unusually, a triple-split-screen game in which you must seek and destroy a number of orbs against the clock Three horizontal screens each hold a game in miniature

The top one is a Scramble hybrid in which you pilot a spaceship over various terrain, shooting enemy craft, missiles and orbs

The middle screen is a Jet Boot Jack look alike You must jet around the caverns, dodging danger and collecting orbs

The lowest screen has you piloting a sub through hostile waters, torpedoing all the orbs you encounter

An unusual game but the narrowness of each section's playing area makes it hard on the eyes

Drelbs is another strange game The basic idea is to whiz around a two dimensional grid of partially completed squares, opening and closing gates as you go

Each gate forms one side of a square As gates are flipped, squares are completed and start to pulsate

Chasing you are the trilaboars who can also flip gates but cannot create squares They can be temporarily trapped inside a square

Finally, Fort Apocalypse the best in the collection in my book – a game of furious action accompanied by thunderous sound effects

You pilot a helicopter through a series of levels and chambers, rescuing prisoners and transporting them to safety

It's sheer pulse pounding action from beginning to end and a must for all who like their games noisy

Overall a good collection which is sure to keep you amused until the next one

Bob Chappell

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

8-

ADD

ANDRÉ WILLEY surve

Computers

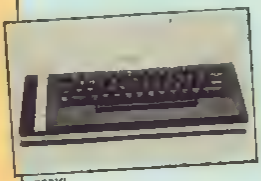
The Atari 8 bit computer range was first seen in the UK in the summer of 1980. It consists of a number of machines – most of which are no longer in production.

The original computers were the expandable 8k Atari 800 (first sold in the UK as a 16k machine) and the 16k Atari 400.

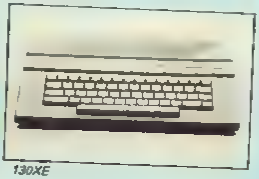
The 800 was designed to be upgradeable to 48k, while the 400 was meant to be unexpandable – though this didn't stop people from soldering in boards to give it 48k of memory.

In 1983 these machines were replaced by the 16k 600XL and the 64k 800XL, and more recently still by the 128k 130XE.

In the States there were also the 1200XL, 1400XL and 1450XLD machines, but these were soon abandoned in favour of the newer 600XL and 800XL.



800XL



130XE

Printers

After a disc drive, the next item you will probably require for your system will be a printer.

There are many types available – thermal printers which make their letters up from tiny dots on special heat sensitive paper, and dot-matrix printers which do the same but which work with any type of paper.

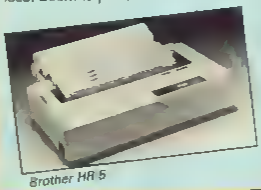
Or there are daisywheel printers which print high quality text in a similar way to a typewriter, and plotters which draw text with a pen and have the added advantage of being able to draw multicoloured graphics.

And there's the newest – and most expensive – type which uses a laser beam to print text at very high speed with such fine dots that the results look rather like a magazine page.

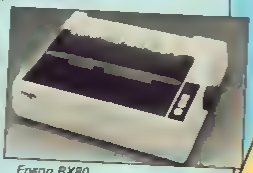
The Atari range includes the old 825 dot matrix unit and the 820 thermal printer, and the more recent 1020 plotter and 1025, 1029 and XMM801 dot matrix units.

You should also consider buying a non Atari printer – such as an Epson or Brother – but you will need a Centronics interface unit to connect it to your computer.

These come in many shapes and sizes, but the most popular is the Atari 850 unit which also features four RS232 ports. Alternatively you could buy one of the many printer-only devices advertised in *Atari User*.



Brother HR-5



Epson RX80

Storage devices

Once you've written or typed in a program from a magazine, you will want to store it for later use.

Most first time users use a tape recorder, in which case you need one specifically designed for the Atari – an ordinary recorder will not plug straight in.

The first recorder available was the 410 unit, which went through a number of design changes during its long lifetime.

Next came the 1010 – whose buttons kept breaking. Then we very briefly saw what was probably the best of the lot, the XC11, which was immediately superseded by the less attractive XC12.

The only other alternative is to use a special device – such as the Cassadaptor – which will allow you to connect your computer to an ordinary tape deck.

If you do decide to do this don't forget to use a stereo recorder, as

-BIT
D-ONS

urveys the peripheral scene

the Atari taps system uses two tracks, one for audio and the other for data

More advanced users may find a disc drive is a better way to store programs. Discs are anything up to 50 times faster than cassette and are far more reliable.

The 8 bit machines use 5.25in discs and the first drive available over here was the 810 unit which could store up to 90k of data and programs per disc.

More recently the 1050 drive has been released with a capacity of 130k – or 180k if you add on one of the many double density modifications such as the US Doubler chip.

Atari now plans to bring out a 3.5in drive but this will cause a lot of problems as you won't be able to run any of your old software unless it has been first converted to the new format.

Communications

Now you've got your own system set up, how about getting in touch with other computers? To do this you will need two things – a modem and an RS232 interface of some sort.

For the latter you are limited at present to a couple of units, the best being the 850 unit. You could also consider getting Miracle Technology's Datatari cable which will do a similar job – assuming you want to use less than perfect software.

As for modems the sky is your limit! There is a huge selection available and you should choose one which best suits your needs.

Most people use a slow 300 baud modem, such as the WS2000, but – if you can afford the extra cash – a 1200 baud unit (V22) will speed up your communications tremendously.

You will also need some software such as the Mini Office II communications program, or one of the many others available.



Prism VTX 5000 modem

Accessories

Other than the main items we have described there are many other things you may want to buy for your computer.

Most people have a joystick or two for playing games, but you can also use paddles for some games or even a trackball, which can be more fun.

For budding artists there are such things as touch tablets and light pens, both of which are far superior to using a joystick to draw with. These mostly come with their own drawing software.

Instead of using a normal television set with your computer you could try using a monitor, which will vastly improve the clarity of your picture – but these can be expensive.

Other peripherals available include the ComputerEyes video digitizer which we looked at a couple of issues ago, a real-time clock cartridge similar to that from ICD, hard disc units such as the Supra 10Mb unit and the new XEP 80 80 column module from Atari.





Above: ComputerEyes video digitiser
Left: Quickshot 2 Turbo joystick

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MÖLEHÜNTER

By
KELVIN LUSH



GET out your spade and head for the garden in this fast and furious one player game which places you in the role of an angry gardener on the trail of an elusive mole who is destroying his garden.

Played on a 5 by 5 multi-coloured grid, the object is to catch the mole. The trouble is, being a mole, he's rather difficult to locate. All you have to go on is the colour of the last few squares he visited.

Using the joystick, you move a small cursor across the play grid and press the button when you think that you are in the same square as the mole.

And to make things more difficult, you've only a limited time to find the beastie in. An ever shrinking bar at the base of the screen shows the time remaining.

Then, if you manage to find the mole in time, you move up to a level where the action is faster and you have less time to complete your task. At the end of the game the level that you reached is displayed and you can start again by pressing the joystick button.

The program contains many comments in the form of REM statements, so that you can follow the flow easily. The screen display and variables are set up in lines 50 to 180.

Line 190 branches to subroutines which make up the main loop of the program. Lines 200 and 210 contain data for the colours used in the grid.

Difficulty is set in line 270 and can be altered by changing the constant at the end of the FOR statement.

Once you have typed in the listing don't forget to save a copy to disc or cassette before you run it.

If you have any problems typing it in, don't forget to try using our checksum program Get It Right! Alternatively you can download Mole hunter from MicroLink, where all our monthly games and other programs are to be found. ■

```
10 REM MOLE HUNTER
20 REM BY KELVIN LUSH
30 REM (C) AUGU USER JANUARY 1987
40 GOSUB 700:REM INITIALISE
50 CLR :LEVEL=10:DIM CO(44
60 GRAPHICS 10
70 RESTORE 200 FOR A=796 TO 812
80 READ B:POKE A,B NEXT A
90 FOR A=10 TO 60 STEP 5
100 FOR B=10 TO 110 STEP 20
110 READ CO:COLOR CO
120 FOR C=0 TO 044
130 PLOT C,0 DRAWTO C,0+19
140 NEXT C
150 NEXT B
160 NEXT A
170 COLOR 6:FOR T=0E 10 TO 50 SOUND 0,
100 T=0E+2 10,10 PLOT T=0E-100 DRAWTO
T=0E,191 NEXT T=0E SOUND 0,0,0,0
180 X=27 Y=50 X1 5*(T0T(RND(0)*61)+17)
Y1=20*(T0T(RND(0)*8))+7:FOR A=1 TO 4:
CO(A) 0 NEXT A GOSUB 400
190 GOSUB 250:GOSUB 400 POKE 77,0 GOTO
 190
200 DATA 68,138 190,51,39,20,126,66
210 DATA 7,8,1,6,5,2,1,4,3,0,7,0,3,2
,7,0,2,1,4,6,0,0,3,7 7,0,1,2,5,5,2,3,4
,1,6
220 REM REDUCE TIME
230 COLOR 0:PLOT T=0E,L=0 DRAWTO T=0E,
191:T=0E=T=0E 1
240 IF T=0E>7 THEN RETURN
250 POP  GOTO 640:REM TOO LOW
260 REM MOVE MEN
270 FOR A=0 TO LEVEL-5
280 ST STICK(0) LOCATE X,Z 1,CA COLOR
CO.PLOT X,Y:DRAWTO X,Y+4
290 B=X+4*(ST=6)+5*(ST=7)+5*(ST 5) 5*(
ST=10)-5*(ST 11)-5*(ST=9)
300 Y Y+20*(ST=9)+20*(ST 13)+20*(ST 6)
-20*(ST=10)-20*(ST=14) 20*(ST 5)
310 IF X<17 THEN X 17
320 IF X>42 THEN X=42
330 IF Y<10 THEN Y=10
340 IF Y>156 THEN Y=170
350 COLOR 0:PLOT X,Y DRAWTO X,Y+4
360 FOR A=1 TO LEVEL*0 15:NEXT A
370 IF STRIG(0) 1 THEN NEXT A RETURN
380 IF X1=X AND Y1=Y THEN POP  FOR
GOTO 610:REM CORRECT
390 SOUND 0,200-I2,0 FOR A 1 TO 5:NEXT
A 220 NEXT B:SOUND 0,0,0,0 NEXT A RETU
RN
400 REM MOVE MOLE
410 A=RND(0):SOUND 0,A,6,6
420 IF A<0.25 THEN X1=X1-8:GOTO 460
430 IF A<0.5 THEN X1=X1+8:GOTO 460
440 IF A<0.75 THEN Y1=Y1-20:GOTO 480
450 Y1=Y1+20
460 IF X1<17 THEN X1=42
470 IF X1>42 THEN X1=17
480 IF Y1<17 THEN Y1=17
490 IF Y1>117 THEN Y1=97
500 LOCATE X1,Y1,A:FOR A=0 TO 3:CO(A)=
CO(A+1) NEXT A CO(4)=A:SOUND 0 0,0 0
510 A=50:FOR B=A TO 0 STEP -1:COLOR CO
(0) PLOT 0,80 DRAWTO 0,72
520 PLOT 641,80 DRAWTO 641,72 PLOT 642
,80 DRAWTO 642,72
530 A=A+3 NEXT A:GOTO 220 REM REDUCE T
```

```
REM
540 OPN #1,4,0,"K:"
550 GRAPHICS 2+16 POKE 752,1:POKE 82,0
560 ? #6;"                    Atari ST Crew"
   ON LEVEL ";LL;" POSITION 4,6
580 PRINT #6;"PRESS fire TO          TO
 READY"
590 FOR A=1 TO 200 STEP 2:SOUND 0,A,8,
8 SOUND 1,254-A,8,4:NEXT A
600 SOUND 0,0,0,0 SOUND 1,0,0,0
610 IF STRIG(0) THEN GOTO 610
620 POKE 559,0 POKE 752,1
630 SETCOLOR 2,2,2 SETCOLOR 4,2,2
640 POKE 752,1:PRINT "                    "
650 POKE 559,34
660 PRINT "                    "
670 PRINT #6;"PRESS fire TO
 BEGIN"
680 FOR A=1 TO 7 STEP 2 SETCOLOR A,A,A
 NEXT A
690 GOTO 670
700 REM INSTRUCTIONS
710 PRINT "K" SETCOLOR 2,2,2 SETCOLOR
 1,0,0 SETCOLOR 4,2,2
720 POKE 752,1:PRINT "                    
 INSTRUCTIONS"
730 PRINT
740 PRINT
750 PRINT
760 PRINT " THE OBJECT IS TO GUIDE YOU
 'MOLE'";PRINT " WHICH IS ABOUTTO DRIVE
 WITH THE TROP "
770 PRINT " TWO MOLE CAN'T MOVE DIAGONA
 LLY BUT"
780 PRINT " YOU CAN'S SEE IT, ONLY THE
 COLOUR";PRINT " OF THE LOST PIPE SOUN
 DES IT HAS"
790 POINT " NUMBER, WHEN THE PRESENT IS
 POKE NM";PRINT " IS LEFT "
800 PRINT
810 PRINT " GOOD YOU THINK YOU ARE ON
 THE SCHEME";PRINT " THE MOLE IS UNDER,
  PRESS FIRE "
820 PRINT
830 PRINT " IF YOU ARE RIGHT YOU MOVE
 INTO THE" PRINT " NEXT LEVEL, BUT IF Y
 OU ARE WRONG"
840 PRINT " YOU LOSE VALUABLE TIME ":P
 RINT
850 PRINT "PRINT "          PRESS FIRE T
 O START"
860 IF STRIG(0) THEN 860
870 RETURN
```




```
 LINE CHSUM  LINE CHSUM  LINE CHSUM
   10  7007    20  1570    30  5901
   40  9642    50  8702    60  2116
   70  5106    80  4178    90  1651
  100  3051   110  3154   120  2599
  130  4165   140  1311   150  1311
  160  1179   170 [5700]  180 [7215]
  190  7100   200  4907   210 [1755]
  220  7069   230  9778   240  4485
  250  8094   260  4529   270  3423
  280 [1429]  290  7947   300 [0896]
  310  3165   320  1847   330  3179
  340  3193   350  5998   360  5247
  370  6168   380 [3384]  390 [1420]
  400  5719   410  3917   420  5628
  430  5246   440  5700   450  1523
  460  1579   470  1400   480  2013
  490  3725   500 [2170]  510 [1023]
  520  9193   530 [1160]  540  6795
  550 [2458]  560 [5065]  570 [1011]
  580  4213   590  4726   600  1424
  610  8187   620 [1361]  630 [1845]
  640 [5989]  650 [1925]  660 [5171]
  670 [2437]  680  8174   690  1424
  700  7721   710 [1081]  720 [1006]
  730  1868   740  1288   750  1268
  760 [1286]  770  8121   780 [1622]
  790 [1204]  800  1268   810 [1648]
  820  1268   830 [1691]  840  7973
  850  9120   860  1766   870  1498
```


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Journey into space with CRL!

Sunstar is CRL's first release for the Atari and the company is celebrating the fact with a competition for 8 bit Atari owners

In this fast and furious game you control a powerful spacecraft destined for the Xxanon Star Corporation's solar energy grid. Your job is to collect as much energy as possible avoiding the grid walls and disruptive energy pulses

FIFTY lucky readers can win a copy of the game...and there's a superb first prize too

The Star Sphere is an impressive desk-top planetarium which helps you to visualise the night sky far better than any flat star map

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To win all you have to do is answer the five questions below to test your knowledge of astronomy



QUESTIONS

1. How many miles is the Earth from the sun?
2. What are the names of the satellites which orbit Mars?
3. Which planet is furthest away from the sun?
4. How many planets are there in the solar system?
5. Who was the first man to walk on the moon?

Cut out or photocopy the entry form and send it to the address below to arrive no later than January 31, 1987.

Answers

1 _____

2 _____

3 _____

4 _____

5 _____

Name _____

Address _____

_____

Postcode _____ Age _____

Send to

Sunstar Competition, Atari User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.



How to squeeze a quart into a pint glass

STEPHEN WILLIAMSON presents a simple way to compress date — and so improve your micro's use of memory

I AM a great fan of computer text adventure games. A good adventure gives you a sense of being involved in a real life situation. However some of them lack atmosphere, often because of short location descriptions.

Compare the following two sentances:

"You are in an underground cave"

"You are in a large underground cavern. Stalactites cling to the ceiling and you hear the far-off sounds of a fast moving river"

The first statement gives only a brief factual description. The second adds descriptive detail to stimulate the imagination – but of course it would take up much more memory space if stored in a computer.

And that is the reason why many adventures stick to short location descriptions – simply to save memory.

Conventional storage methods allocate one byte of computer memory to each character of text. In a Basic program each character in quotation marks after a PRINT statement takes up 1 byte of ram.

If an adventure has 200 locations and each location is 120 letters or 3 screen lines long on average, then the amount of ram space needed, using normal storage methods, is 24,000 bytes (200 ×120).

Add more detail by increasing the descriptions to an average of 200 letters or 5 screen lines and this jumps to 40,000 bytes which means that in a 64k computer there is no room left in ram for the program that actually runs the adventure!

So if you are set on writing a long and detailed text adventure how can you get around this problem?

You could run off and buy the one megabyte 1040STF with its 1024k ram which should be more than enough memory for the ambitious adventure games writer. This solution works – but is expensive.

Another solution is Infocom's technique. Their text adventures store location descriptions on disc and access an individual location when needed. In this way only one location description need be in ram at any one time.

This works fine for disc drive owners but is impractical for cassette users handicapped as they are by sequential filing and long delays in loading data.

Another method of creating long adventures is to write the program in sections. On my old limited memory VIC-20 computer I played an adventure by puzzling my way through part 1 then turning the tape over to enter part 2, hoping that I had not left a much-needed object behind in Part 1.

There is another way though. I am currently playing Level 9's Worm In Paradise adventure which has over 200 locations, graphics and a large amount of text but uses none of the techniques discussed. So how does it manage to store so much information?

In common with most good adventure writers, Level 9 uses a technique known as data compression. Text is coded in less memory bytes than the number of letters in the original text.

Level 9 boasts that Worm in Paradise achieves over 50 per cent text compression – which is like storing a quart in a pint glass!

In other words, data compression is a method of squeezing data so that it can be economically stored in memory to be later stretched again to its original form.

How is this done? There are several standard methods and the program that accompanies this article demonstrates one of the simpler ways.

Level 9 obviously uses a much more sophisticated way of reaching the 50 per cent figure, but probably includes techniques similar to those shown in the program.

In most sections of text you will find combinations of letters that occur more frequently than others – and this is the secret of data compression.

Take the sentence:

"You see a greedy green dragon."

The letters ee appear three times – in see, greedy and in green. If we assign a one character code to represent the letter combination ee, say @, then the sentence can be encoded to read:

"You s@ a gr@dy gr@n dragon"

Alternatively we could take the four letter combination gree and in a similar fashion encode the text to read:

"You see a @dy @n dragon"

The full version of the sentence is, including spaces, 29 letters long, the second 26 and the third 23 – or about 20 per cent shorter than the original sentence.

If we know what letter combination the @ symbol stands for then decoding the short sentence to arrive back at the original meaning is simple.

This process of analysing text to find frequently occurring letter combinations, encoding the text with single symbols then translating the coded version back to its original form is

essentially what the Text Compressor program does

The program first gives you the option of entering text or loading previously stored text from cassette or disc It expects any text loaded to have been originally compressed and saved using the program

Lines 250 to 360 take care of inputting text – either by adding on to previously created text or by entering entirely new text Because the encoding system uses the inverse characters these must not be used as part of the text.

The only editing key that can be used is Delete Backspace The program cannot accept the cursor direction keys

As each character is input, the program builds up the string *TEXT$* The maximum length of the string/text is 2000 which is set in line 10

If you want to analyse a larger string then line 10 must be changed and the maximum length of the string *PRESS$* altered in line 20 If you are using a 16k Atari then you may need to reduce these figures

If you press the Escape key then control of the program passes to the text analysis section – lines 380 to 540 The program starts at the beginning of *TEXT$* and assigns the variable *L1* to the first letter, *L2* to the second and *L3* to the third then, using a machine code routine (line 510) it finds out if the combination of *L1* (the first letter), *L2* and *L3* occurs anywhere else in the text string

If this occurs more than three times then the program passes to lines 1110 to 1170 which builds up a string variable *(CODE$)* that contains all the three letter combinations

Line 1140 uses the machine code routine that was used in line 510 to check that the same three letter combination has not already been included in *CODE$*

The program can handle a maximum of 92 such combinations If you want to include combinations that only occur more than three times then the variable *FREQ* can be changed in line 170

The program continues checking through the text string *TEXT$* taking the second, third and fourth letters as *L1 L2* and *L3* then the third, fourth and fifth letters and so on until the text has been fully analysed

Once all the combinations have been found then lines 560 to 600 assign replacement inverse characters (Atascii characters 150 to 251) to each

Not all these codes will necessarily be used in the encoding process You may for example find the letter combinations th (space+t+h) as well as the which are both found when the word **the** occurs in the middle of a sentence The program will choose one of the combinations and ignore the other

The three letter combinations and their inverse character counterparts are displayed on the screen A line indicates a space Note that for the purposes of this program a space is treated as a character when counting or analysing text.

The next stage is to code the text into its compressed form – lines 630 to 780 Each combination is checked for a match in the text string *TEXT$* and, if made, the inverse character code is inserted at the appropriate place in *TEXT$*

Then a compressed version *(PRESS$)* is compiled which copies the string *TEXT$*, but closes up the gaps left by replacing the three letters with single characters (lines 730 to 760)

After the text has been encoded the compressed version *(PRESS$)* is then printed to the screen and an analysis made to show how much memory, in bytes, has been saved using this technique

The compressed text can then be saved to tape or disc (lines 1250 to 1460) using the PUT command to record each character

As well as the compressed string being saved, the string *CODE1$* a list of all the 3 letter codes used to encode the string, is saved to cassette or disc so it can be used as a translation table to convert the compressed data to its original form

When calculating the percentage of memory saved, the program has not taken the length of *CODE1$* into account This means that for short sections of text the program is not efficient – but it still serves as a useful demonstration of compression techniques

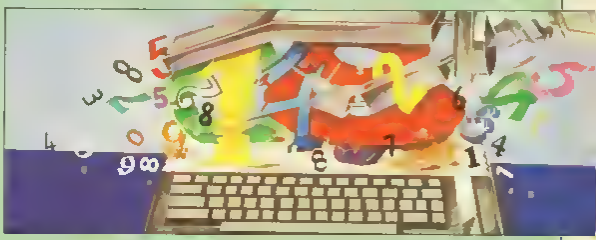
Lines 900 to 1100 contain the routine for reassembling the saved data and displaying the full text to the screen This routine could be adapted for inclusion in your own programs to load compressed text

When using discs make sure that you have a formatted disc ready before pressing D for the disc save option The file will be saved under the name TEXT This can be altered by changing line 1300 and line 960 when loading text

If using cassette make sure that Play and Record are pressed and that there is a data cassette in the recorder before pressing C for the cassette save option Press play before initiating the cassette load section

The program is not particularly fast due to the large amount of processing used – text containing hundreds of characters can take several minutes to analyse The decoding process is much quicker

To speed things up I have included a machine code analysis routine to search the text string for frequently occurring letter combinations As a help to machine code programmers Program II is a disassembled version of this routine



The program represents a simplified form of data compression To achieve a better memory saving than a program that not only searches for three letter combinations but four, five or more letter combinations is needed

The program does not sort the three letter codes into order of frequency. To do so would make further savings

For example you may find that as in our previous example, the text analysis finds both **the** and **th** (space+t+h) and that some parts of the text could be encoded with either code It is more efficient to check for the code that appears more often first

Once you have found the most frequently occurring combinations further savings can be made by carefully editing the text to include more of these combinations No doubt you'll have your own ideas on improving compressions Why not write in and let us know? ■

Program 1

```
10 REM TEXT$(2000),CODE$(200),ERR
OR$(3
00)
20 DIM DOS$(20001,CHAR$(3),A$(3),B$
(3)
30 POKE 822,958:REM SOMEWHERE ON PA
GE 6
40 GRAPHICS 0:SETCOLOR 2,12,0:POKE 82,
0:?
50 ? "    TEXT COMPRESSOR    "
60 ? "  by STEPHEN HILLCOCKS  "
70 ? "    for Atari User    "
80 ? :? "Data loading    "
90 OPEN #1,4,0,"K:"
100 FOR N=1536 TO 1622
110 READ A:POKE N,A:NEXT N
120 FOR N=1660 TO 1660
130 READ A:POKE N,A:NEXT N
140 NEW :A=USR(1536)
150 FOR N=1 TO 300:CODE$(N,N)=" ":NEXT
 N
200 FOR N=0 TO 2050:POKE 600+N,0:NEXT
 N
270 FOR C=3 TO CODES:CODE$(C,C)=CHR$(
C):NEXT C
280 TEXT$="":DOS$="":CHAR$=""
290 ? CHR$(125)
300 ? "PRESS 'L' TO ENTER TEXT"
310 ? "PRESS 'SELECT' TO LOAD TEXT"
320 IF PEEK(53279)=6 THEN GOTO 350
330 IF PEEK(53279)=5 THEN GOSUB 500:GO
TO 270
340 GOTO 320
350 POKE 82,0:? CHR$(125)
360 ? "ENTER TEXT - PRESS 'ESC' TO EXI
T WHEN
FINISHED"
370 COUNT=LEN(TEXT$)
380 OPEN #1,4,0,"K"
390 GET #1,N
400 GOSUB 1530
410 CHAR=CHAR+T
```


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```
420 IF N=27 THEN CLOSE #1:GOTO 470
430 IF N<126 THEN ? #3;N;:CHAR=CHAR
+T:GOTO 240
440 CHAR$=CHR$(N):? #3;CHAR$;
450 TEXT$(COUNT,COUNT)=CHAR$
460 GOTO 920
470 ? :? "OK - OF WHAT LEXT ";LEN(TE
XT$);"B"
480 ? "COMPRESSING FILE    "
490 CONSOL=PEEK(84):IF CONSOL=22 THEN
 CONSOL=22
500 LENGTH=LEN(TEXT$)
510 FOR N=1 TO LENGTH:IF TEXT$(N,N)="
" THEN TEXT$(N,N)=CHR$(96)
520 NEXT N
530 FOR N=1 TO LEN(TEXT$)-1
540 POSITION 8,CONSOL:? "B";N+1;"B",
550 A$=TEXT$(N,N+1)
560 L1=ASC(TEXT$(N,N))
570 L2=ASC(TEXT$(N+1,N+1))
580 LX=ASC(TEXT$(N+2,N+2))
590 LENGTH=LEN(TEXT$)
595 POKE 209,8
596 Z=USR(1536,ADR(TEXT$),L1,L2,LX,LE
NGTH)
610 DEC=PEEK(209)
620 IF DEC=FIXED THEN GOSUB 1110
640 NEXT N
660 ? "IF LEN(CODE$)(3 THEN ? "NO TH
AT FOUND ":GOTO 1470
665 FOR N=1 TO LEN(CODE$) STEP 3
670 ? CHR$(ERROR(ASC(A$),ASC(B$),N
+2));" ";
680 ? USING(LEN(A$),2);? "=",:REM PUES
S ESC THEN TOO
690 NEXT N
695 ? ,"NO OF TEXT ";LEN(CODE$)/3
710 ? "PRESS START TO ENTER TEXT"
720 IF PEEK(53279)<>6 THEN 720
730 ? "ENTERING TEXT"
740 ? :CURSOR=PEEK(84):IF CURSOR=22 TH
EN CURSOR=22
750 LENGTH=1:CSORT$=""
760 FOR T=1 TO LEN(CODE$) STEP 3
770 POSITION 8,CURSOR:? "CODE NO ";I
NT(I*I/3)
780 IF T=LEN(CODE$)-2 THEN ? "No Mor
e Codes":GOTO 1000
790 ? "ENTER CODE NO ";INT(I*I/3);"
(0-255)"
800 INPUT #3;A$:A=VAL(A$)
810 ? "ENTER CHARACTER FOR CODE ";A
820 IF A<0 OR A>255 THEN ? "Error":GO
TO 810
830 ? #3;A:? #3;CHR$(A);
840 CSORT$(LENGTH,LENGTH)=CHR$(A)
850 LENGTH=LENGTH+1
860 NEXT T
870 ? "ENTERING TEXT"
880 ? :CURSOR=PEEK(84):IF CURSOR=22 TH
EN CURSOR=22
890 LENGTH=1:CSORT$=""
900 FOR T=1 TO LEN(CODE$) STEP 3
910 POSITION 8,CURSOR:? "CODE NO ";I
NT(I*I/3)
920 IF PEEK(53279)=6 THEN 920
930 INPUT #3;A$:A=VAL(A$)
940 IF A<0 OR A>255 THEN ? "Error":GO
TO 930
950 CSORT$(LENGTH,LENGTH)=CHR$(A)
960 LENGTH=LENGTH+1
970 NEXT T
980 ? "ENTERING TEXT"
990 ? :CURSOR=PEEK(84):IF CURSOR=22 TH
EN CURSOR=22
1000 LENGTH=LEN(CSORT$)
1010 FOR N=1 TO LENGTH STEP 2
1020 IF CSORT$(N,N)=CSORT$(N+2,N+2) T
HEN
TEXT$(N,N)=CHR$(ERROR(ASC(CSORT$(N,N)),
ASC(CSORT$(N+1,N+1)),ASC(CSORT$(N+2,N+2
))))
1030 NEXT N
1040 ? "SAVE TEXT TO DISK"
1050 ? "PRESS 'S' FOR SAVE TEXT TO DI
SK"
1060 POKE 764,255
1070 IF PEEK(764)=50 THEN 1090
1080 GOTO 1060
1090 ? "SAVING TEXT TO DISK"
1100 OPEN #1,8,0,"D:TEXT"
1110 PUT #1,LEN(TEXT$)-256*INT(LEN(TE
XT$)/256)
1120 PUT #1,INT(LEN(TEXT$)/256)
1130 FOR N=1 TO LEN(TEXT$):PUT #1,ASC(
TEXT$(N,N)):NEXT N
1140 CLOSE #1
1150 ? "SAVING CODES"
1160 OPEN #1,8,0,"D:CODES"
1170 PUT #1,LEN(CODE$)-256*INT(LEN(COD
E$)/256)
1180 PUT #1,INT(LEN(CODE$)/256)
1190 FOR N=1 TO LEN(CODE$):PUT #1,ASC(
CODE$(N,N)):NEXT N
1200 CLOSE #1
1210 ? "SAVING DOS FILE"
1220 ? "ENTER DOS FILE NAME ";LEN(DOS
$)
1230 ? "D:";DOS$:OPEN #1,8,0,"D:"&DOS$
1240 PUT #1,LEN(DOS$)-256*INT(LEN(DOS$
)/256)
1250 PUT #1,INT(LEN(DOS$)/256)
1260 FOR N=1 TO LEN(DOS$):PUT #1,ASC(D
OS$(N,N)):NEXT N
1270 CLOSE #1
1280 ? "SAVING CHARACTER SET"
1290 ? "ENTER CHARACTER SET NAME ";LE
N(CHAR$)
1300 ? "D:";CHAR$:OPEN #1,8,0,"D:"&CHA
R$
1310 PUT #1,LEN(CHAR$)-256*INT(LEN(CHA
R$)/256)
1320 PUT #1,INT(LEN(CHAR$)/256)
1330 FOR N=1 TO LEN(CHAR$):PUT #1,ASC(
CHAR$(N,N)):NEXT N
1340 CLOSE #1
1350 ? "SAVING MACHINE CODE"
1360 ? "ENTER MACHINE CODE NAME ";LEN
(MC$)
1370 ? "D:";MC$:OPEN #1,8,0,"D:"&MC$
1380 PUT #1,LEN(MC$)-256*INT(LEN(MC$)/
256)
1390 PUT #1,INT(LEN(MC$)/256)
1400 FOR N=1 TO LEN(MC$):PUT #1,ASC(MC
$(N,N)):NEXT N
1410 CLOSE #1
1420 ? "SAVING DISPLAY LIST"
1430 ? "ENTER DISPLAY LIST NAME ";LEN
(DL$)
1440 ? "D:";DL$:OPEN #1,8,0,"D:"&DL$
1450 PUT #1,LEN(DL$)-256*INT(LEN(DL$)/
256)
1460 PUT #1,INT(LEN(DL$)/256)
1470 FOR N=1 TO LEN(DL$):PUT #1,ASC(DL
$(N,N)):NEXT N
1480 CLOSE #1
1490 ? "SAVING DATA"
1500 ? "ENTER DATA NAME ";LEN(DATA$)
1510 ? "D:";DATA$:OPEN #1,8,0,"D:"&DAT
A$
1520 PUT #1,LEN(DATA$)-256*INT(LEN(DAT
A$)/256)
1530 PUT #1,INT(LEN(DATA$)/256)
1540 FOR N=1 TO LEN(DATA$):PUT #1,ASC(
DATA$(N,N)):NEXT N
1550 CLOSE #1
1560 ? "SAVING COMPLETED"
1570 ? "PRESS 'L' TO ENTER TEXT"
1580 ? "PRESS 'SELECT' TO LOAD TEXT"
1590 GOTO 320
```

```
1060 IF C)199 THEN C=C-100:B$=CHR$(1+
C/63,3+(C AND 3)*2 OR 8):RETURN(B$,M+2
1:GOTO 1050
1070 B$=CHR$(C):? B$;
1080 RETURN(B$,M+1)
1090 OPEN #3,8,0,"D:"
1100 CLOSE #3:POKE 764,256:DEFOPEN
1110 IF LEN(CODE$)>270 TOPEN RETURN
1120 LENGTH=LEN(CODE$)
1130 POKE 203,0
1140 Z=USR(1536,ADR(CODE$),11,13,13,LE
NGTH)
1150 IF PEEK(209)=0 TOPEN CHKSUM(FILEWI
DTH$):RETURN
1160 GOSUB 1230
1170 RETURN
1180 OPEN #3,8,0,"D:"
1190 ? "{CLEAR}":POKE 752,1
1200 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
1210 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
1220 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
1230 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
1240 POKE 764,255
1250 KEY=PEEK(764)
1260 IF PEEK(764)=44 THEN OPEN #1,8,0,
"C:":GOTO 1280
1270 IF PEEK(764)=45 THEN OPEN #1,8,0,
"D:"
1280 IF KEY<>44 AND KEY<>45 THEN 1230
1290 LENGTH=LEN(CODE$):FILELENGTH=INT(L
ENGTH/256)
1300 POKE 842,13:STOP
1310 ? #1;CHR$(104);CHR$(FILELENGTH);CH
R$(LENGTH-(FILELENGTH*256));
1320 FOR N=1 TO LENGTH
1330 ? #1;CHR$(ASC(CODE$(N,N)));
1340 NEXT N
1350 CLOSE #1
1360 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
1370 IF PEEK(53279)=6 THEN 290
1380 GOTO 1380
1390 REM {3 DOUBLE QUOTES}
1400 FOR N=PEEK(106)-12 TO PEEK(106)
1410 POKE N,0:NEXT N
1420 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
1430 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
1440 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
1450 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
1460 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
1470 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 1470
1480 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 1500
1490 OPEN #1,8,0,"D:"
1500 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
1510 FOR N=1 TO LENGTH
1520 ? #1;CHR$(ASC(CODE$(N,N)));
1530 NEXT N
1540 CLOSE #1:POKE 842,13:STOP
1550 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
1560 IF PEEK(53279)=6 THEN 290
1570 GOTO 1570
1580 REM {3 DOUBLE QUOTES}
1590 FOR N=PEEK(106)-12 TO PEEK(106)
1600 POKE N,0:NEXT N
1610 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
1620 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
1630 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
1640 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
1650 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
1660 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 1660
1670 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 1690
1680 OPEN #1,8,0,"D:"
1690 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
1700 FOR N=1 TO LENGTH
1710 ? #1;CHR$(ASC(CODE$(N,N)));
1720 NEXT N
1730 CLOSE #1
1740 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
1750 IF PEEK(53279)=6 THEN 290
1760 GOTO 1760
1770 REM {3 DOUBLE QUOTES}
1780 FOR N=PEEK(106)-12 TO PEEK(106)
1790 POKE N,0:NEXT N
1800 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
1810 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
1820 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
1830 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
1840 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
1850 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 1850
1860 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 1880
1870 OPEN #1,8,0,"D:"
1880 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
1890 FOR N=1 TO LENGTH
1900 ? #1;CHR$(ASC(CODE$(N,N)));
1910 NEXT N
1920 CLOSE #1:POKE 842,13:STOP
1930 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
1940 IF PEEK(53279)=6 THEN 290
1950 GOTO 1950
1960 REM {3 DOUBLE QUOTES}
1970 FOR N=PEEK(106)-12 TO PEEK(106)
1980 POKE N,0:NEXT N
1990 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
2000 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
2010 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
2020 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
2030 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
2040 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 2040
2050 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 2070
2060 OPEN #1,8,0,"D:"
2070 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
2080 FOR N=1 TO LENGTH
2090 ? #1;CHR$(ASC(CODE$(N,N)));
2100 NEXT N
2110 CLOSE #1
2120 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
2130 IF PEEK(53279)=6 THEN 290
2140 GOTO 2140
2150 REM {3 DOUBLE QUOTES}
2160 FOR N=PEEK(106)-12 TO PEEK(106)
2170 POKE N,0:NEXT N
2180 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
2190 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
2200 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
2210 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
2220 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
2230 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 2230
2240 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 2260
2250 OPEN #1,8,0,"D:"
2260 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
2270 FOR N=1 TO LENGTH
2280 ? #1;CHR$(ASC(CODE$(N,N)));
2290 NEXT N
2300 CLOSE #1
2310 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
2320 IF PEEK(53279)=6 THEN 290
2330 GOTO 2330
2340 REM {3 DOUBLE QUOTES}
2350 FOR N=PEEK(106)-12 TO PEEK(106)
2360 POKE N,0:NEXT N
2370 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
2380 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
2390 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
2400 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
2410 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
2420 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 2420
2430 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 2450
2440 OPEN #1,8,0,"D:"
2450 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
2460 FOR N=1 TO LENGTH
2470 ? #1;CHR$(ASC(CODE$(N,N)));
2480 NEXT N
2490 CLOSE #1
2500 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
2510 IF PEEK(53279)=6 THEN 290
2520 GOTO 2520
2530 REM {3 DOUBLE QUOTES}
2540 FOR N=PEEK(106)-12 TO PEEK(106)
2550 POKE N,0:NEXT N
2560 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
2570 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
2580 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
2590 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
2600 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
2610 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 2610
2620 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 2640
2630 OPEN #1,8,0,"D:"
2640 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
2650 FOR N=1 TO LENGTH
2660 ? #1;CHR$(ASC(CODE$(N,N)));
2670 NEXT N
2680 CLOSE #1
2690 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
2700 IF PEEK(53279)=6 THEN 290
2710 GOTO 2710
2720 REM {3 DOUBLE QUOTES}
2730 FOR N=PEEK(106)-12 TO PEEK(106)
2740 POKE N,0:NEXT N
2750 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
2760 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
2770 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
2780 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
2790 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
2800 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 2800
2810 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 2830
2820 OPEN #1,8,0,"D:"
2830 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
2840 FOR N=1 TO LENGTH
2850 ? #1;CHR$(ASC(CODE$(N,N)));
2860 NEXT N
2870 CLOSE #1
2880 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
2890 IF PEEK(53279)=6 THEN 290
2900 GOTO 2900
2910 REM {3 DOUBLE QUOTES}
2920 FOR N=PEEK(106)-12 TO PEEK(106)
2930 POKE N,0:NEXT N
2940 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
2950 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
2960 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
2970 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
2980 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
2990 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 2990
3000 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 3020
3010 OPEN #1,8,0,"D:"
3020 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
3030 FOR N=1 TO LENGTH
3040 ? #1;CHR$(ASC(CODE$(N,N)));
3050 NEXT N
3060 CLOSE #1
3070 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
3080 IF PEEK(53279)=6 THEN 290
3090 GOTO 3090
3100 REM {3 DOUBLE QUOTES}
3110 FOR N=PEEK(106)-12 TO PEEK(106)
3120 POKE N,0:NEXT N
3130 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
3140 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
3150 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
3160 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
3170 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
3180 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 3180
3190 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 3210
3200 OPEN #1,8,0,"D:"
3210 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
3220 FOR N=1 TO LENGTH
3230 ? #1;CHR$(ASC(CODE$(N,N)));
3240 NEXT N
3250 CLOSE #1
3260 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
3270 IF PEEK(53279)=6 THEN 290
3280 GOTO 3280
3290 REM {3 DOUBLE QUOTES}
3300 FOR N=PEEK(106)-12 TO PEEK(106)
3310 POKE N,0:NEXT N
3320 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
3330 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
3340 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
3350 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
3360 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
3370 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 3370
3380 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 3400
3390 OPEN #1,8,0,"D:"
3400 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
3410 FOR N=1 TO LENGTH
3420 ? #1;CHR$(ASC(CODE$(N,N)));
3430 NEXT N
3440 CLOSE #1
3450 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
3460 IF PEEK(53279)=6 THEN 290
3470 GOTO 3470
3480 REM {3 DOUBLE QUOTES}
3490 FOR N=PEEK(106)-12 TO PEEK(106)
3500 POKE N,0:NEXT N
3510 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
3520 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
3530 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
3540 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
3550 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
3560 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 3560
3570 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 3590
3580 OPEN #1,8,0,"D:"
3590 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
3600 FOR N=1 TO LENGTH
3610 ? #1;CHR$(ASC(CODE$(N,N)));
3620 NEXT N
3630 CLOSE #1
3640 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
3650 IF PEEK(53279)=6 THEN 290
3660 GOTO 3660
3670 REM {3 DOUBLE QUOTES}
3680 FOR N=PEEK(106)-12 TO PEEK(106)
3690 POKE N,0:NEXT N
3700 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
3710 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
3720 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
3730 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
3740 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
3750 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 3750
3760 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 3780
3770 OPEN #1,8,0,"D:"
3780 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
3790 FOR N=1 TO LENGTH
3800 ? #1;CHR$(ASC(CODE$(N,N)));
3810 NEXT N
3820 CLOSE #1
3830 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
3840 IF PEEK(53279)=6 THEN 290
3850 GOTO 3850
3860 REM {3 DOUBLE QUOTES}
3870 FOR N=PEEK(106)-12 TO PEEK(106)
3880 POKE N,0:NEXT N
3890 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
3900 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
3910 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
3920 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
3930 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
3940 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 3940
3950 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 3970
3960 OPEN #1,8,0,"D:"
3970 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
3980 FOR N=1 TO LENGTH
3990 ? #1;CHR$(ASC(CODE$(N,N)));
4000 NEXT N
4010 CLOSE #1
4020 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
4030 IF PEEK(53279)=6 THEN 290
4040 GOTO 4040
4050 REM {3 DOUBLE QUOTES}
4060 FOR N=PEEK(106)-12 TO PEEK(106)
4070 POKE N,0:NEXT N
4080 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
4090 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
4100 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
4110 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
4120 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
4130 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 4130
4140 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 4160
4150 OPEN #1,8,0,"D:"
4160 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
4170 FOR N=1 TO LENGTH
4180 ? #1;CHR$(ASC(CODE$(N,N)));
4190 NEXT N
4200 CLOSE #1
4210 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
4220 IF PEEK(53279)=6 THEN 290
4230 GOTO 4230
4240 REM {3 DOUBLE QUOTES}
4250 FOR N=PEEK(106)-12 TO PEEK(106)
4260 POKE N,0:NEXT N
4270 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
4280 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
4290 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
4300 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
4310 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
4320 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 4320
4330 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 4350
4340 OPEN #1,8,0,"D:"
4350 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
4360 FOR N=1 TO LENGTH
4370 ? #1;CHR$(ASC(CODE$(N,N)));
4380 NEXT N
4390 CLOSE #1
4400 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
4410 IF PEEK(53279)=6 THEN 290
4420 GOTO 4420
4430 REM {3 DOUBLE QUOTES}
4440 FOR N=PEEK(106)-12 TO PEEK(106)
4450 POKE N,0:NEXT N
4460 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
4470 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
4480 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
4490 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
4500 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
4510 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 4510
4520 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 4540
4530 OPEN #1,8,0,"D:"
4540 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
4550 FOR N=1 TO LENGTH
4560 ? #1;CHR$(ASC(CODE$(N,N)));
4570 NEXT N
4580 CLOSE #1
4590 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
4600 IF PEEK(53279)=6 THEN 290
4610 GOTO 4610
4620 REM {3 DOUBLE QUOTES}
4630 FOR N=PEEK(106)-12 TO PEEK(106)
4640 POKE N,0:NEXT N
4650 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
4660 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
4670 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
4680 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
4690 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
4700 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 4700
4710 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 4730
4720 OPEN #1,8,0,"D:"
4730 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
4740 FOR N=1 TO LENGTH
4750 ? #1;CHR$(ASC(CODE$(N,N)));
4760 NEXT N
4770 CLOSE #1
4780 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
4790 IF PEEK(53279)=6 THEN 290
4800 GOTO 4800
4810 REM {3 DOUBLE QUOTES}
4820 FOR N=PEEK(106)-12 TO PEEK(106)
4830 POKE N,0:NEXT N
4840 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
4850 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
4860 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
4870 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
4880 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
4890 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 4890
4900 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 4920
4910 OPEN #1,8,0,"D:"
4920 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
4930 FOR N=1 TO LENGTH
4940 ? #1;CHR$(ASC(CODE$(N,N)));
4950 NEXT N
4960 CLOSE #1
4970 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
4980 IF PEEK(53279)=6 THEN 290
4990 GOTO 4990
5000 REM {3 DOUBLE QUOTES}
5010 FOR N=PEEK(106)-12 TO PEEK(106)
5020 POKE N,0:NEXT N
5030 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
5040 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
5050 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
5060 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
5070 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
5080 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 5080
5090 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 5110
5100 OPEN #1,8,0,"D:"
5110 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
5120 FOR N=1 TO LENGTH
5130 ? #1;CHR$(ASC(CODE$(N,N)));
5140 NEXT N
5150 CLOSE #1
5160 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
5170 IF PEEK(53279)=6 THEN 290
5180 GOTO 5180
5190 REM {3 DOUBLE QUOTES}
5200 FOR N=PEEK(106)-12 TO PEEK(106)
5210 POKE N,0:NEXT N
5220 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
5230 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
5240 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
5250 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
5260 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
5270 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 5270
5280 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 5300
5290 OPEN #1,8,0,"D:"
5300 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
5310 FOR N=1 TO LENGTH
5320 ? #1;CHR$(ASC(CODE$(N,N)));
5330 NEXT N
5340 CLOSE #1
5350 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
5360 IF PEEK(53279)=6 THEN 290
5370 GOTO 5370
5380 REM {3 DOUBLE QUOTES}
5390 FOR N=PEEK(106)-12 TO PEEK(106)
5400 POKE N,0:NEXT N
5410 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
5420 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
5430 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
5440 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
5450 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
5460 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 5460
5470 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 5490
5480 OPEN #1,8,0,"D:"
5490 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
5500 FOR N=1 TO LENGTH
5510 ? #1;CHR$(ASC(CODE$(N,N)));
5520 NEXT N
5530 CLOSE #1
5540 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
5550 IF PEEK(53279)=6 THEN 290
5560 GOTO 5560
5570 REM {3 DOUBLE QUOTES}
5580 FOR N=PEEK(106)-12 TO PEEK(106)
5590 POKE N,0:NEXT N
5600 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
5610 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
5620 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
5630 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
5640 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
5650 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 5650
5660 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 5680
5670 OPEN #1,8,0,"D:"
5680 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
5690 FOR N=1 TO LENGTH
5700 ? #1;CHR$(ASC(CODE$(N,N)));
5710 NEXT N
5720 CLOSE #1
5730 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
5740 IF PEEK(53279)=6 THEN 290
5750 GOTO 5750
5760 REM {3 DOUBLE QUOTES}
5770 FOR N=PEEK(106)-12 TO PEEK(106)
5780 POKE N,0:NEXT N
5790 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
5800 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
5810 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
5820 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
5830 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
5840 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 5840
5850 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 5870
5860 OPEN #1,8,0,"D:"
5870 ? #1;CHR$(104);CHR$(INT(LENGTH/256
));CHR$(LENGTH-(INT(LENGTH/256)*256));
5880 FOR N=1 TO LENGTH
5890 ? #1;CHR$(ASC(CODE$(N,N)));
5900 NEXT N
5910 CLOSE #1
5920 ? "{DOWN 2}{RVS ON}  PRESS {RVS OF
F}{LEFT ARROW}{RVS ON} START {RVS OFF}
TO RUN PROGRAM  "
5930 IF PEEK(53279)=6 THEN 290
5940 GOTO 5940
5950 REM {3 DOUBLE QUOTES}
5960 FOR N=PEEK(106)-12 TO PEEK(106)
5970 POKE N,0:NEXT N
5980 POKE 106,PEEK(106)-12:GRAPHICS 0:
POKE 752,1
5990 ? "{DOWN 2}{RVS ON}  PEEK COMPRESS
OR  {RVS OFF}"
6000 ? "{DOWN}{RVS ON}  FOR CASSETTE SA
VE  {RVS OFF}"
6010 ? "{DOWN}{RVS ON}  FOR DISK SAVE
{RVS OFF}"
6020 ? "{DOWN 2}  ENTER CHOICE (1 OR 2)
"
6030 KEY=PEEK(764):IF KEY<>44 AND KEY<>
45 THEN 6030
6040 POKE 764,255:IF KEY=44 THEN OPEN #
1,8,0,"C:":GOTO 6060
6050 OPEN #1,8,0,"D:"
6060 ? #1;CHR$(104);
```

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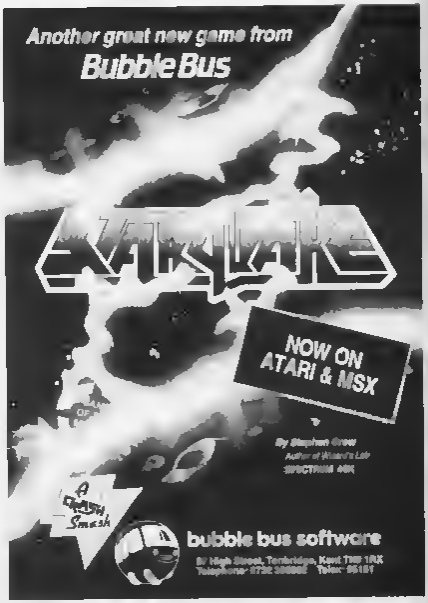
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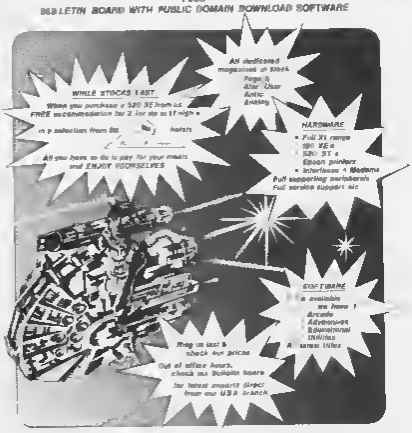
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Operation OS

How your Atari handles the input and output of data

WE receive a number of letters every month asking for more information on the Atari's powerful input and output facilities. It would be impossible to answer such questions in the space allowed by the Mailbag pages, so this issue sees the first part of a major new tutorial series on I/O with the Atari.

For a start let's take a look at how the Operating System (OS) is set up for the input and output of data. We will cover using the IO system from Basic and machine code in a later issue.

The first thing you must realise is that the structure of the Atari 8 bit OS bears more resemblance to a mini computer than to its direct rivals such as the Commodore 64 and the Spectrum.

The operation of most home micros revolves around Basic, which in turn calls up a set of small machine code routines when other functions – such as I/O, sound or graphics – are required.

The Atari, on the other hand, has a constantly running operating system which in turn runs the Basic language for you. This operating system may be called up via the Central Input/Output system – known as CIO.

CIO is a very powerful integral part of the Atari – all standard text, graphics and load/save data go through it. From Basic you normally access this system via its eight 'channels' – numbered 0 to 7.

For example, OPEN #1,8,0,"C:" tells CIO that you wish to use channel number one for output to the cassette recorder, and CLOSE #2 tells it that you have now finished using channel two.

Each time you use a filespec such as 'C:', 'O:MYPROG.BAS' or 'P:' you are telling the CIO system which device is to be used with that channel.

The first part specifies the device to be used while the rest is an optional

By ANDRÉ WILLEY

filename portion, mainly used by the disc system.

The normal devices available to CIO are:

P	Printer
C	Cassette recorder
E	The screen text editor
S	Screen display
K	Keyboard
D	Disc (if DOS is loaded)
R	RS232 (if loaded)

It is worth noting at this stage that the last two devices are optional. Both the disc operating system and the RS232 handler are only set up by the operating system if those devices are present in your system.

In designing the OS, Atari decided – quite rightly – that cassette users would be a little unwilling to lose about 9k of program space to allow for a possible future disc drive.

It would be far better if the memory eating machine code needed to support a disc system could be loaded into memory only if there was a drive attached. This is in fact what happens when you turn on your computer and disc drive. The CIO disc handler is probably better known to most of you as Dos.

All the device names are held in a table – called the Handler Address Table, or HATABS. Each three byte entry consists of the device identifier character – C, D, E, K and so on – followed by the two byte memory address of the handler itself.

Other devices can be added to the Handler Address Table very easily and we'll be looking at this in more detail in a future issue.

So just how does CIO work? When you type your CSAVE or PRINT command, how does Basic pass the information to CIO? Perhaps the easiest way to understand what is happening is to look at one command and see how it functions.

Let's examine the very simple command LPRINT "HELLO". For those of you without a printer, all this does is print out the word HELLO. This command could also be written in a different way:

```
OPEN #7,8,0,"P:"
PRINT #7, "HELLO"
CLOSE #7
```

This is in fact the way that Basic handles the problem. First it opens a channel to the printer, then sends "HELLO" to that channel (and thus to the printer) and finally it closes the channel again.

To tell CIO which channel you wish to use there are eight blocks of memory – one for each channel – called Input/Output Control Blocks

Address	Label	Bytes	Description
IOCB + 0	ICHID	1	Index into HATABS
IOCB + 1	ICDNO	1	Device number (D1: D2:)
IOCB + 2	ICCOM	1	Command type (OPEN, CLOSE ...)
IOCB + 3	ICSTA	1	Current status of device
IOCB + 4,5	ICBAL/H	2	Buffer or filespec address
IOCB + 6,7	ICPTL/H	2	Address of put byte routine (-1)
IOCB + 8,9	ICBLL/H	2	Buffer data length sent/returned
IOCB + 10	ICAX1	1	Auxiliary byte 1
IOCB + 11	ICAX2	1	Auxiliary byte 2
IOCB + 12	ICAX3	1	Auxiliary byte 3
IOCB + 13	ICAX4	1	Auxiliary byte 4
IOCB + 14	ICAX5	1	Auxiliary byte 5
IOCB + 15	ICAX6	1	Auxiliary byte 6

Figure 1
IOCB structure

(IOCB)

Whenever you wish to send a command to CIO you use one of these blocks – except block zero which is normally used by the operating system to handle the keyboard and display

Each IOCB is sixteen bytes long and next issue we'll look at exactly how they work For now though, you may be interested in taking a look at their contents (See Figure I)

IOCB zero is at address $340 (832 decimal), IOCB one is at $350 (848) and so on Use PEEK to see what values are stored in each IOCB, but make sure you don't POKE them just yet

You may also want to take a look at HATABS which is located just before the IOCBs at $31A (794) and takes up 38 bytes (See Figure II)

To open channel seven, Basic sets up various bytes within IOCB seven — at $380 (944) One byte (ICCOM) will tell CIO that you want to do an open command rather than a close get characters or any other command

Another byte (ICAX1) tells CIO whether to use input or output and another two (ICBAL/H) tell it where to find the filespec – in this case a simple 'P'

Once the IOCB has been set up, Basic simply does a machine code call to the CIO entry point – known as the Central Input/Output Vector or CIOV This is located at $E456 (58454)

Upon being called CIO looks up the name P in the Handler Table Once it has found the address, CIO can re route any data going into channel seven to the printer handler machine code

Thus when the command to put characters – the operating system version of PRINT – is sent the characters will all be sent to the printer

The final command is close, which needs just one command byte to be set In the case of the P device, close will also add a Carriage Return character if one has not already been sent. Most devices don t do this but rely on you sending a Return character with your data

That s all for this month. If you have a printer try out the following one line routine and see if you can work out what is happening

```
OPEN #7,8,0,"P": POKE 838,
PEEK(950) POKE 839,PEEK(951)
```

● *Next issue we'll be taking a more detailed look at how the IOCBs work and how you can program them for yourself*

HATABS	+ 0	P	$E430
HATABS	+ 3	C	$E440
HATABS	+ 6	E	$E400
HATABS	+ 9	S	$E410
HATABS	+ 12	K	$E420
HATABS	+ 15	D	$07CB
HATABS	+ 18	R	$226D
HATABS	+ 21	–	$0000
HATABS	+ 24	–	$0000
HATABS	+ 27	–	$0000
HATABS	+ 30	–	$0000
HATABS	+ 33	–	$0000

Figure II The handler address table ($31A) This assumes Dos 2 5 and 850 RS232 handler present Unused entries are filled with zeroes

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CIRCLES from O HUNT

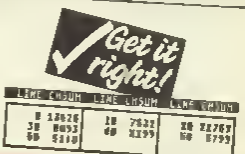
USING different methods to plot circles has held a fascination for man since the beginning of mathematics. This five liner demonstrates the Bressnham's circle algorithm.

It works in modes 3 to 8, but will produce ellipses if used in modes 8 to 11.

Line Breakdown

- **10** Sets up the variables
- **20** Plots some points on the circumference
- **30** Calculates special value for variable *PI* and then branches to line 50
- **40** Calculates value for *PI*
- **50** Increments *X1* and checks to see if the circle is complete

```
0 GRAPHICS 8:Z=160:Y=80:R=60:COLOR 1:F
OR W=0 TO 1:PLOT Z,Y+R:DRAWTO Z,Y-R:NE
XT W:X1=0:PI=3-2*R:IF X1<Y THEN 40:REM
 SET UP ONE 90 DEG ARC
20 PLOT Z+X1,Y-R:PLOT Z-X1,Y-R:PLOT Z+
X1,Y+R:PLOT Z-X1,Y+R:PLOT Z+R,Y-X1:PLO
T Z-R,Y-X1:PLOT Z+R,Y+X1:PLOT Z-R,Y+X1
30 IF PI>=0 THEN PI=PI+4*(X1-R)+10:X1=
X1+1:GOTO 50
40 PI=PI+4*X1+6
50 X1=X1+1:IF X1<=Y THEN GOTO 40
60 RETURN :REM ONE END OF G-LINER
```



COLOUR CHANGER from J ELLIS

MANY of you will have found that the Atari's default colours – blue on blue – do not provide enough contrast for long periods of programming.

This program uses a vertical blank interrupt routine to change the colour values in locations 709 to 710 fifty times a second, thus appearing continuous.

The colour values can be set to individual tastes by substituting the 0 and 10 in line 50 with the required values.

In addition this program displays the disc menu and then gives the option to enter Basic or Dos.

Line Breakdown

- **10** POKEs in the routine
- **20** Displays the disc menu
- **30** Asks the user whether he wishes to enter Basic or Dos
- **40** Waits for a key press
- **50** The data for the routine

```
10 S CHR$(123):REM :DIM A$(20),V$(12):
RESTORE 20:FOR J=1536 TO 1791:READ Q:PO
KE J,Q:NEXT J:X=USR(1536)
20 ? CHR$(125):DIM A$(20),V$(12):OPEN
#1,6,0,"D:A.M";?#6;" IO=FNO I=1 TO 8:I
NPUT #1,A$:? A$;"  ";:NEXT I
30 POKE 764,255:? #6;"  Press
 B for Basic or D for DOS"
40 IF PEEK(764)=50 THEN ?#6;CHR$(125):
CLOSE #1:POKE 764,255:? CHR$(125):END
50 DATA 104,169,7,160,245,157,6,32,92,
228,96,169,0,141,199,2,169,10,141,198,
2,76,98,228
```



LINES

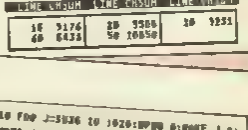
HAVE you ever looked longingly at the lines between each line of text on the BBC Micro? Well, with this handy five liner you can achieve the same result on your Atari, helping you to read listings and large amounts of text easily.

The program modifies the display list using a machine code routine to achieve its results.

Line Breakdown

- **10** Read in the data
- **20-40** The data for the program
- **50** Reroutes the display list

```
10 REM 0:IF 0<999 THEN POKE 1536+0,0:
0=0+1:GOTO 10
20 DATA 18,18,66,66,255,255,0,2,0,2,0,
2,0,2,0,2,0,2,0,2,0,2
30 DATA 0,2,0,2,0,2,0,2,0,2,0,2,0,2,0,
2,0,2,0,2,0,2,0,2,65,0,6
40 DATA 169,0,141,46,2,169,0,141,47,2,
96,999
50 TRAP 1536:A=PEEK(560):POKE 1539,A:P
EKE(89):POKE 560,0:POKE 561,6:POKE 9,25
5:POKE 2,85:POKE 3,0
```



LINE DELETER from G A Wright

IF you load and run this five liner before a program editing session, it will add an extra command which you will find very useful.

When called by using

G=USR(1536,FROM,TO)

where FROM is the start of the block of lines to be deleted and TO is the end, the range of lines will be deleted from your program.

If either the start or end line number does not exist, a bell will be sounded.

Line Deleter calls several of Basic's rom routines including – Contract ($A8FD), Warmstart and Bell.

Line Breakdown

- **10** POKEs in the data for the routine
- **20-50** The data for the routine

```
10 FOR J=1536 TO 1620:READ Q:POKE J,Q:
NEXT J
20 DATA 104,104,133,204,104,104,133,203
,162,187,172,67,228,138,133,205,160,12
9,233,204,168,133
30 DATA 161,203,133,169,12,170,169,170
,47,12,225,169,12,200,169,133,204,205,
178,133,205,60
40 DATA 229,203,176,8,238,204,133,203,
96,169,129,239,208,233,204,144,18,200,
6,205,201,208
50 DATA 12,162,128,134,203,165,204,32,
253,168,76,77,189,32,10,241,76,77,250
```



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Save yourself a lot of hassle

COULD you tell me where I can obtain the original Atari Joysticks (Model CX40), or failing that, if I can buy the connecting leads on their own?

My reason for asking is that both of my trusty Atari sticks have developed faults in their leads. One has lost upward movement and the other movement to the left.

When I dismantled them I found that the nylon inserts were both damaged so I bought two repair kits from Silica Shop. Unfortunately even after replacing both the inserts and the PCB's both sticks still had the same faults.

I eventually found that the White wire on one, and the Green wire on the other, appear to have failed.

The push-on connectors are OK, but as the leads are sealed units I am unable to open them to check the connections at the plug end without doing irreparable damage.

If you are unable to help on that front, could you recommend any alternative joysticks? I did buy a Quickshot stick from the Microdeal stand at the Atari computer show in March for £4.95, but after being accustomed to the sensitivity of the Atari sticks it felt like using a shovel with a loose handle. I also missed the base mounted fire button.

I have been considering the Mach 1 joystick from Cheetah Marketing, but £14.95 is rather a lot of money to spend only to find that I have bought another shovel.

I do feel that as the Mach 1 uses micro switches and had a fire button mounted in the base that it is probably my best bet, but I would be interested in any observations from any of your staff that may have tried one.

Finally, I wish to thank A.K. Bishop from Cheshunt, Herts for the invaluable tip about the small hole in the bottom of the 130XE (June 1985 Atari User).

A short time ago I bought one from Silica shop. When I set it up the colours were so poor as to be almost non-existent.

Then I remembered the letter and was able to adjust the colour output successfully and save myself an awful lot of hassle. — **J.A. Olding, Frome, Somerset.**

● As you say the micro switch based joysticks are generally the most reliable but if you wish to repair your old Atari sticks then you should be able to get the leads separately from any Atari Service Centre or from Atari themselves.

Problems with editing

APPROACHING retirement age I am finding operating my 800XL with other than games a little confusing.

My problems are with editing. During entering a program from Atari User some lines from a previous program were entered.

I have tried deleting them according to the Atari manual — Watsons First Steps in Basic book — but when typing LIST, the extra lines are still there.

When typing LIST "C" after loading a program should a list of that program appear on the screen or no list as it does with me?

With no list on the screen I have loaded Get It Right! and then ran it but all that happened was the program ran but no checksum was produced.

What am I doing wrong or can it be the computer?

I have typed PEEK(43234) the answer was 234 so I take it I have a Basic C. — **George A. Smith, Mold, Clwyd.**

● To delete a line from a program all you need to do is enter the relevant line number and press the Return key. This can be done as often as you like to delete a number of lines.

When you type LIST "C" the program will be listed to the cassette rather than to the screen. This is so that when you run Get It Right! it can read the information back from the tape.

Don't forget to rewind the LISTed tape and press the Play key before you run Get It Right!

Auto Run for cassettes

REGARDING Ian James' query on auto run for cassettes, if he types SAVE "C" with the inverted commas as opposed to the normal CSAVE and then when he wants to run program types RUN "C" instead of CLOAD as we normally do he will find the program will, as he puts it, autorun.

Of course as we all know this method of loading uses more tape. — **D.J. Leach, Cheltenham, Glos.**

● This method does indeed work but in a future issue we'll being showing you how to make your Basic programs into Start key loads, which is much faster.

Beyond the manual

HOW can I draw pictures on my screen and then record them on tape for future reference?

Are there any leaflets over and above those supplied with the 800XL that explain more clearly its various functions? — **Kelvin Andrews, Ipswich.**

* * *

COULD you please explain in-depth how to use the Input and Output commands XIO, OPEN and CLOSE on my 800XL?

Also could you tell me if there are any other commands in the 800XL's vocabulary which have not (besides the XIO command) been mentioned in the Atari manual? — **David Reid, Rugby.**

● This issue sees the start of our new series on Input/Output. We're covering the whole subject from a theoretical level and also from a practical level in future issues.

These articles should help you with some of your queries, but why not get a copy of a book called Your Atari Computer from Osborne/McGraw-Hill. This should help you out with any other commands which the manual does not cover fully.

Re-inking ribbons

I READ with great interest the article in the July issue of Atari User regarding the offer by Aladdink to re-ink printer ribbons.

It was such a pity that their address was not included in the article. — **D.A. Downie, Kemney, Inverurie.**

● Aladdink's address is: 9 Brinton Ave, Manchester M9.

To buy or not to buy

I OWN an 800XL. I have tried PEEK(43234), the result was 96, so I have the Rev. B Basic.

I have recently contacted Silica Shop, who advised me that I don't need the Rev. C Basic unless I am pro

→

gramming in advanced machine code

Also they said that I could have a Rev C, but the PEEK could give me a Rev B answer (96) This could apply to many other Atari users

I have also read in previous answers to other users letters that you have advised them to buy a Rev C

What should I do? Should I buy a Rev C or not? – **Simon Hayes, Lymm, Cheshire**

● And we thought we'd heard the last of the Rev B/Rev C problems! If Silica told you that you'd only need Revision C Basic if you were working in machine code then they were sadly mistaken

It doesn't make any difference at all which version you have if you work purely in machine code – only if you work a lot in Basic

Also, once you plug in a known Revision C cartridge then you *will* get the correct PEEK value

As we have said before, if you're doing a lot of programming you should definitely consider getting Revision C Basic

ATARI USER Mailbag

WE welcome letters from readers – about your experiences using the Atari micros about tips you would like to pass on to other users and about what you would like to see in future issues

The address to write to is:

Mailbag Editor
Atari User
Europa House
68 Chester Road
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No response to Ninja

I OWN a 130XE, which I haven't used for about a month

The other day I bought Ninja from Mastertronic and now I can't get any response from these keys C, E, D, P, 3, 0, , left SHIFT, and the Help key

The machine still loads computer code games and uses the letters in the self test on all test modes

Could you please tell me if the game has done this and if there is anything I could do to get the keys working again – **Shaun Collerick, Gloucester**

● This is a strange one – it sounds like a hardware fault in your computer, probably unrelated to the Ninja game, but that wouldn't explain how the self test keyboard check still works correctly The best thing to do is drop your machine into your local dealer or service centre and see what they can do for you

Getting it right!

I HAVE just bought your magazine for the first time My first impressions are pretty good

With the listings there is a checksum list Being a first timer I do not have the program for the checksum Could you please supply it? – **H Broadhead, Doncaster**

● Our checksum program, Get It Right!, last appeared in the August issue of *Atari User* You can order this as a back issue using the form on Page 49

Modem compatibility

I HAVE recently become interested in linking my 800XL to bulletin boards and databases via the telephone line

A friend has offered me the loan of a Modular Technology Minimodem 3001 giving half or full duplex at a baud rate of 300/300

Could you please tell me if this unit would be suitable for my use and if so what software would you recommend to complete the system, and how do I wire up the modem's V24 socket to my Atari? – **Ray Marsh, Stoke-on-Trent.**

● V24 is basically another term for the RS-232 300 Baud standard, and therefore the modem should be compatible with your Atari – assuming you have an RS232 interface unit The best one to use is the Atari 850 which also provides a printer port, but you might find Miracle Technology's Datatari cable will work But that does depend on whether the modem will accept the TTL level signals provided by the Datatari cable rather than the more normal 12V signals of RS232

As to software, many programs will work with the 850

But if you want to use the Datatari you will also have to use Miracle's Multi Viewterm software, which will also work with the 850

Pound printing

REGARDING Phil Rae's letter in the September 1986 Atari User, I am getting a little tired of people trying to tell me that there is a way of putting the £ sign on to paper via Atariwriter Yes, I think we now are all aware of the possibility, but there are still problems

Usually when I use the £ sign I want to put a figure directly after it, say £10 Sorry, but it can't be done

When Atari wrote the Atariwriter program they forgot that in some circumstances you may want to put a figure right after a control code

The result is that in the example above Atariwriter sees either Esc 21 or Esc 210 The second example would force an error, the first send the wrong control code, neither of which would have the desired effect

The best that can be done is £10 – note the space This same fault applies if you want to put a figure directly after any escape code, no matter which printer you configure for

Hopefully, one day we will be able to get a software patch to cure this My way around it is to use a different, equally cheap, word processor altogether

And I think that closes the debate Or does it? – **Rob Anthony, Richmond, Surrey**

● There is, of course, a way around this problem Unfortunately it can be a little long-winded As you say, each time you use the Control+O sequence to generate a pound sign you would normally expect to follow it with a number In order to do this you can always specify the number as a set of Ascii codes too – for example Control+O 48 would be a zero, Control+O 49 would be a one, and so on The problem is, of course, that this is all very time consuming and rather defeats the object of a word processor

Print Shop problems

I OWN an Atari 130XE computer system with an XMM801 printer I am extremely pleased with the system as well as with the

information and support I get from Atari User

However, like all Atari users I have had a few problems

Why can't I get Print Shop to work on my printer? I am told the XMM801 is Epson compatible and all the other graphics programs I have used work very well

When I use my Atariwriter Plus although I enter the control code for double strike print it will only double strike on the first page

I have tried using page ejects and entering the codes for each page but this is awkward and not always reliable How can I get around this? – **Cherise T Miller, RAF Alconbury, Huntingden**

● The XMM801 is not fully Epson compatible, and this might be causing your problems Some codes may not work quite as they should, and Print Shop obviously uses some of them

It would be worth checking with both Atari and the dealer you got Print Shop from

As for double strike, have you thought of putting the start double strike command as the first part of a page header line? This might well cure your problem

Golden oldies

EVERYONE knows that software houses show little feeling for the Atari 8 bit machines, so the software that's written at the moment isn't matching up to the quality on other machines

Please would you review some of the older but brilliant games, like Crystal Castles, Flight Sim II, Choplifter, Jumpman, Rainbow Walker, Necromancer, Tennis, B C's quest for tyres

I am sure that a few pages reviewing older games would go down very well with many other readers and would help to better a very good magazine – **Gary Cauling**

● Anyone interested in the wealth of older games for their 8 bit Ataris should read the Games Old and New article in last month's *Atari User*

Cartridge loading

I HAVE just got a new game, Pharoahs Curse, for my 800XL, but every time I try to load it a message comes on the screen telling me to remove cartridge

There is nothing in the cartridge slot and I have tried loading it in several different ways Can you please suggest what may be wrong, – **M A Welsford**

● The problem may be that you have not actually got a new game, but a rather old one

Pharoah's Curse was released long before the XL or XE machines came on to the market and as such may respond incorrectly to the newer cartridge select system

Don't forget to use the Start and Option keys rather than just Start when you switch on, but if you still get the problem you might consider investing in a translator/fix disc which will allow you to run games that were originally written for the old 400 and 800 machines

Saving programs

CAN you please tell me how to save a program to disc on my 800XL. – **Willem Swan, Glasgow**

● Firstly you must remember to have your disc drive turned on and your DOS disc inserted before you boot up the system

Then, once you have typed in your program all you need to do is to put in a newly formatted disc (see your DOS manual for information on how to do this) and type SAVE "D NAME.BAS"

You may call your program by any name up to eight characters rather than NAME, of course

To load it back again later you use LOAD "D NAME.BAS"

Digitising signals

IS there a way of digitising a signal from a video camera or video player? – **A Hillem, Marshapel, Lincs**

● For more information on this subject you should read the ComputerEyes review in the November issue of *Atari User*

Reverse video

HAVING successfully used my Atari User Get It Right! tapes a few times, I decided to make a tape of the modified program listed in the August issue of Atari User, and ran into trouble with lines 4360, 4470 and 4280

I was able to print ↰ in Normal Video by use of the Escape, Shift and Clear keys of my 800XL immediately before use of the Reverse Video key, but no way was I able to print ↰ in reverse video It appeared in normal video

Is my 800XL at fault or is there a special procedure to do this? I note that this is in reverse video on the tape I bought – **H F Martin, Halstead, Essex**

● The character you want is not actually generated by the Clear key, but can be obtained by using Control+2 To obtain the symbol, press the Escape key, then type Control and 2 at the same time

Arcade smashes

I HAVE just bought an Atari 800XL and when I got home I went to the paper shop and bought my first Atari User

On reading your review on Atari Smash Hits 5, I promptly went out and bought it.

Well what can I say Elektraglide is fantastic After owning a Spectrum and a Vic20 I didn't know a computer game could be exactly like an arcade game Thanks – **Jim Leesen, Leeds**

Recorders and TrakBalls

COULD you tell me if versions of the arcade games Crystal Castles and Choplifter are available for the Atari range of computers on cassette and who are they made by?

What is the difference between the XC11 and the XC12 data recorders?

One final thing, are there any fire buttons on the Atari TrakBall, as for most games one is needed and it is

→

European connection

I WISH to correspond with an Atari friend to exchange ideas and to learn English – **L'hermite Olivier, 2 rue de la Liberté, 51370 St Brice-Caucells, France**

★ ★ ★

WE own an Atari 130XE with a 1050 disc drive and an Atari 1040 STF with both monochrome and colour monitor and would like to correspond with Atari users anywhere in Europe – **Vasilis Psemadakis, Aris Karamitsos, Achropirtou 9, GR-54635, Thessaloniki, Greece**

★ ★ ★

I AM looking for other Atari users anywhere in the world to swap hints and ideas – **Sleuwaegen Johan, 40, 2870 Puurs, Belgium**

supposed to be compatible with any joystick controlled game or function – **Paul Myers, Runcorn, Cheshire.**

● Crystal Castles is not out for the Atari as yet, but we think there might be some plans to market one.

As for Choplifter, the game seems to have come full circle. It was originally out on home computers – the Atari and the Apple – from Broderbund and has since been transferred to the arcades!

Thus your best bet would be to check with Anolasoft and US Gold, both of whom have certain rights to Broderbund software, and find out what the current availability is.

You could also try ringing round the larger mail order dealers to see if they have any old stock left.

The XC12 supersedes the XC11 recorder but doesn't seem to be quite as good. The XC12 is based on the Phonemark recorder and if you can get hold of the older XC11 you will probably be better off. That said, the XC12 shouldn't give you any real problems.

As to your final question – yes, the trackball does indeed have a fire button – in fact it has two for greater convenience.

You can use a TrakBall in place of a joystick just so long as you remember to set it in its special joystick mode.

Baud speeds

IN your reply to Richard Martin's letter which appeared in September's Atari User you stated that there was no way to increase the baud rate used by Atari tapes without hardware modifications.

Theoretically though, the cassette handler in the Atari operating system can automatically adjust the baud rate when reading data from the tape deck to speeds of up to 1400 baud.

It reads two speed bytes in the header at the start of each 128 byte block, and by timing how long it takes to do this, knows the baud rate to use. It will also read tapes as low as 300 baud.

Data can be written at such speeds by using software which directly controls the serial port.

Although this is a complex business, it can be done and I have seen in past issues of this and other magazines advertisements for such programs, some claiming to be able to use up to 1200 baud.

I do not know why this is not used widely by software manufacturers, although it is most likely because using higher speeds will be less reliable, especially when tapes are being read by recorders other than that which recorded the data.

The only software that I can remember ever having seen that used different baud rates was Dimension X from Synapse.

With one of the original copies – I don't know if they have changed this now – the program loaded in two parts. The first short one loading at a slightly faster rate, and the longer one at a slower speed, while music played continuously – **Brian D McIndoe, Cheltenham, Gloucestershire.**

● What you say is quite correct, as far as it goes. However you will find that as soon as you exceed

YOUR HINTS AND TIPS

HERE are some tips for various Atari games.

Beer Belly Burt's Brew Biz. When you arrive at the swimming pool in the production area, swim at the bottom as the fish cannot get you there.

Dropzone. To stop the androids killing your men while they are in the base, only put seven men in and carry the last around with you.

Ghost Chaser. To obtain extra lives type Frank. The password is Fenda. (Typical of Frank Cohen!)

Rescue on Fractelus. Only open the airlock when the pilot bangs on the door, otherwise you may find an alien could get into the ship. If a pilot has a green helmet it means that he is an alien, so you must turn the systems on to eliminate it.

War Hawk. Occasionally a spaceship will appear on the opposite side to your craft. Do not go near it, hit it or fly over it as if you leave it alone nothing will attack you throughout that level. Pressing Start and Option change the direction of the stars on the title page.

Zorro. To get to Garcia's evil jail you must go down the steps in the graveyard and then collect the bags of money going out of the nearest exit from each bag.

When you come to a door with the horseshoe, boot and glass of water flashing on it go through and up the ladder and there you are. If one or more are not flashing then you must collect that item – **R.A Lane, Derby.**

PASSWORDS

HERE are some passwords for Atari games.

Whirlinurds
IAMTHEHUNGRYDUDE
Miner 2049er
2137826861
Phoenoths Curse
SYNISTOPS
Diamond Mine
HID/BIG/DIA

– **Paul Simpson, Swansea.**

SYNTHESISER

A QUICK tip for anyone wishing to use the synthesier program (Atari User April, 1986) more seriously.

There are music books out for the Roll Harris Stylophone and, as the stylophone has the same number of keys, these are ideal for the program – **Lee Newsum, Derby.**

USEFUL POKE

WITH reference to the letter from Ian Noble in the September 1985 Atari User, I have a POKE that may be of interest to him.

If you POKE 54018 with 52 you will be able to play Dire Straits or whatever through the tape unit while typing in listings.

Poking the same address with 60 disables this facility.

One hint. If Ian or anyone else is going to try the Two Track Trick, don't stop in mid tape when recording the music track if you've already saved your program as this is liable to corrupt the data blocks.

We are also able to stop all the whistling noises during loading without having to turn the TV volume down. Poke 65,0 for silence or 3 to resume normality.

Finally, can anyone tell me the secret of getting through the third level of Super Zexxon?

Keep up the good work on the magazine, but let's have some more on advanced (machine code?) sound techniques please – **Clive Alexander, Cardiff.**

CHEAT MODE

AFTER reading James Lloyd's tips on Bounty Bob in the October Atari User I was surprised to find that he had omitted the cheat mode.

To enter this mode, at special code to 61800, then hold down the F key and press option.

Although it appears that nothing has happened, on starting the game you will be able to use the following keys:

F – float mode on/off
Q – advance one level
A – decrease one level.

The code for ultimate feasts on Whirlinurds is IAMTHEHUNGRYDUDE.

Can anybody help me to solve the final obstacle in Hacker, when you run out of time just before you are

about 900 baud the load reliability drops off alarmingly

This is not so noticeable when playing a tape recorded on your own machine, but if commercial software were to be recorded at 900 baud it would only load on about 75 per cent of recorders

Some companies do use this form of loader, but as it offers no more than a 50 per cent increase in speed it can hardly be called a turbo loader

These typically offer increases of between 5 and 10 times the normal cassette speed

What we said before still stands – the Atari tape system is simply not capable of working at turbo speeds without hardware modifications to the FSK decoder circuitry

HELP!

HAS anyone else out there got Crusade in Europe? I really enjoy this game but have had the most amazing problem saving the longer scenarios so that I can come back to them later

I assign the program a 1 to 8 character name, and the Atari saves the current situation to disc However I cannot get the disc to reload the saved game, all I can get is error 21

Twice I've written to Micro Prose at Albany House, but they've not replied and so, though I enjoy the simulation, I can't tackle the larger scenario as I haven't 10 hours to spare to do it all in one go – **Patrick Smyth, Portsmouth**

* * *

I RECENTLY bought smash hits Vol 5 for my Atari 800XL and I am having problems with the game Mediator

I can land my spacecraft and collect all six bones After collecting bone No 6 my horse appears but now what do I do? Can anyone help? **C P Salter, Barry, South Glamorgan**

* * *

I HAVE a problem with Mastertronics superb Ninja Where do I go after Akuma's chamber? – **John Baxter, Dundonald, Ayrshire**

* * *

I AM seeking help on The Last V8 by Mastertronic Please could anyone tell me how to get back to base on the first sheet as I am finding it impossible in the time given – **R Jones, Margate, Kent.**

* * *

I FIND that when you crash Kikstart you don't start off again where you crashed but carry on for a while on the grass or water

Could you or anyone give me some help in making the game more interesting? – **D Bevan, Cwmbran, Gwent.**

---

about to complete the game? – **Steven Hurst Bolton, Lancs**

SPELLBOUND

COULD you tell me how to get past the tower and where the javelin is in Spellbound

Enough of my problems Here are hints for a couple of games

Kikstart While the bike is revving up hold the joystick to the left and you will start off at top speed

Spy vs Spy II When fighting keep on the right hand side and you'll always win – **Philip Snape, Runcorn, Cheshire**

ACTION BIKER

I FIND my Atari 800XL computer very rewarding due to the excellent games now available

My friends and I have spent many hours trying to complete Mastertronic's Action Biker We have finally completed it and have made notes on the objects and where they are found

Incidentally we were quite disappointed to find after all our hard efforts that the shots of the game shown on the inlay card were not from the Atari but from the CBM64 We had hoped there was a city after the race

Action Biker objects and places
The tree near the lake – crash helmet
Back of petrol station – riding leathers
At the back of the fairground – highway code
Building yard – gears
In fences by fairground – gloves
Next to drag track – headlamp
Next to drag track in fences – petrol gauge
By lake at the end of the drag track – fuel tank.
Next to drag track – tool box
Back of fairground – mudguards
In fences next to drag track – sunglasses
Inside fairground – fairing
Next to drag track – can of pop
Building yard – visor
In fences near drag track – exhaust pipe
In the ramps – power brakes
Back of petrol station – speedometer
Building yard – brake lamp
Back of fairground – oil can
Building yard ramps – turbo charger
The ramps – cooling fins.
Back of petrol station – indicators.
Top of fairground – mirror
Next to drag track – two tone horn
Building yard ramps – reflectors
Next to drag track – road maps
Back of petrol station – electric starter
On top of the fairground – lunch box
Next to drag track – CB radio
Building site – go faster stripes
Next to petrol station – water skis
Next to ramps – fire extinguisher
In lake – fog lamps
Building yard ramps – stop watch
Back of fairground – motocross tyres
Building yard ramps – personal hi fi
Lake – electronic ignition Pond – rev counter
The ramps – windshield
Lake – ticket to ride the race
You only have one minute to get to the drag track for the start of the race – **Michael Smith, Oxford**

HACKER

Are you having trouble hacking your way through Hacker? Here are some tips

First, the logon is AUSTRALIA

The security checks are
1 MAGMA,LTD
2 AX-0310479
3 HYDRAULIC
4 AUSTRALIA

Here is the route I took and what I offered Francemoney, Egypt-chronograph, Greece statue of Tut China-emerald scarab, New York-deeds to Swiss chalet, Hong-Kong stocks and bonds, Russia cultured pearls England-Jade carving or 35mm camera Brazil jade carving or 35mm camera, San Francisco-Beatles album

Also password for Ollies Follies are Frank, fanda norbi and zoom – **Mark Ashton, Hagley, West Midlands**



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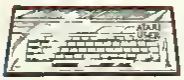
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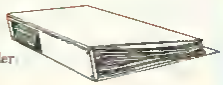
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Vol. 1 No. 11 January 1987

Atari ST User



Reviewed: K-Switch, Strip Poker, Winter Games
Revealed: The hidden secrets of ST discs and drives
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ST on track of a killer



A 1040ST may hold the key to the long term effects of extreme cold on the human body It is being used to assess data from a unique experiment which medical men hope may lead to a better understanding of how to combat hypothermia in the elderly

The machine – a gift from Atari UK – is even now still sifting the information from a year-long foray to the Antarctic.

In December 1983 the fifth Joint Services Expedition headed for Brabant Island, a place so wild and inhospitable that it has been visited by humans only three times since its discovery in 1830

Led by Commander Chris Furse of the Royal Navy, the aim of the 12-strong party was to pass a complete year in the Antarctic with only tents for cover

Although some 60 studies in all were carried out, it is the one involving hypothermia which may eventually prove to have the greatest significance

The man in charge of this part of the expedition was Surgeon Lt. Commander Howard Oakley who, among other things, has an appreciation of the capabilities of computers in research

"We didn't in fact take the ST along with us" he says, but the role that it has played since then has been as vital as anything that went on before"

The naval surgeon, who served with the Marines during the Falklands, was responsible for observing the physiological changes which took place in the members of the party "We were the first people ever to over winter in Antarctica in tents , he says ' Before that it had been considered too dangerous

"Anyway it certainly meant we had people living in the most extreme conditions, so they were perfect subjects for our studies'.

The researchers realised they would be breaking new ground For while a mass of data has been accumulated concerning acclimatisation to heat very little has been recorded about endurance to cold

And cold it was For though the actual temperature rarely fell to more than 20 degrees below zero coupled with the wind chill factor this brought it down to a staggering 60 degrees below Perfect conditions for frostbite

The first noticeable effect of the cold was stomach upsets and increased urination In fact, the latter sympton may in fact eventually help solve the problem of hypothermia

For the memory of the ST now contains conclusive evidence that people dehydrate even more quickly at low temperatures than they do at high ones This was mainly caused on Brabant Island by passing excessive amounts of urine – in most cases more than three litres in 24 hours

So dehydrated did the men become during the height of the Antarctic winter that taking blood samples was compared to ' trying to get raw liver into a syringe"

Such were the conditions that the men kept the same thermal underwear on for the whole year

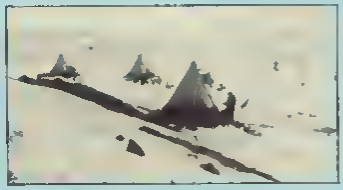
I must admit we all smelled a little ripe by the time we finally left' admitted Lt Commander Oakley Yet because they wore suitable clothing, the members of the party generally remained healthy during the time

One exception was one of the 12 who disappeared down a crevasse only to miraculously escape with just a broken leg Major incidents like this were faithfully recorded alongside the minutiae which was regularly logged around the clock

In fact the research threw up some 250,000 individual items of data And this is where the 1040ST has taken over

"It's so very easy to put all the information on a shelf when you get back and forget about it", says Howard Oakley, "and to be quite honest no one is that keen to help after the event"

But the Lt Commander was determined that the information they had gained would be put to the maximum use – particularly in the field of



The expedition site on Brabant Island

hypothermia So he began to search for a suitable computer to assist him with his huge task

At first he used an IBM PC XT, but eventually decided that this was tasked to its limits because of its architecture

"With my work on skin temperatures I needed to manipulate very large matrices ', he says, "and that means lots of memory, fast processing and graphics The last quality was most important, as I needed to take photographs from the screen

"To bring the XT up to that would have cost between £2,000 and £3 000

So he began to look around at 68000 based machines He almost immediately ruled out the Commodore Amiga on the grounds it has "lovely graphics but nothing else

Next he ruled out the Macintosh because its strengths were not across the board In the end there was no other choice apart from the ST" he insists

Among the software packages Howard Oakley has bought for his ST are Degas "for all my drawings and Animator the best program in the world with the worst manual"

But is the medical researcher expecting to make any major breakthroughs with the help of the ST?

"We never really look at it in those terms ", he says "All I believe we can hope for is a better understanding of hypothermia and how it affects people

"But I can say that the ST is such a superb vehicle for research that if it was up to the machine alone, I'm sure we would find a way of controlling the killer"

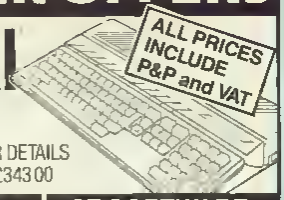
Mike Cowley reporting

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After a couple of seconds a normal Gem desktop will appear. You can then load a spreadsheet such as VIP Professional to look up some figures. A quick press of Alternate and the two Shift keys and you're back in your 1st Word document at exactly the position that you left it, ready to type in the figures that you just looked up.

K-Switch also includes a built-in ram disc to make up for the fact that ordinary ram disc programs will not be compatible with it. Both halves of the K-Switched ST can use the ram disc which makes it especially useful for swapping files between programs. For example you could pass an Ascii text file from a word processor to a desktop publishing program.

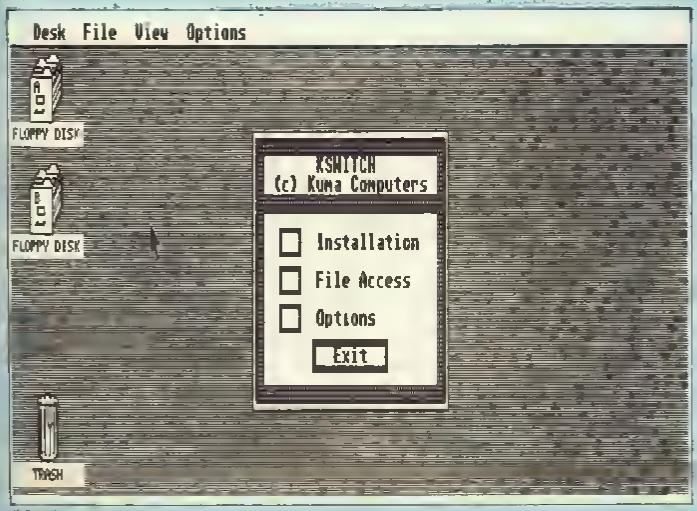
If your ST has only 512k of memory, then K Switch may not work with some combinations of programs, since most programs require the full 512k of memory to run in and K-Switch will only give them 256k each. Mind you, this is more an argument for upgrading your memory than against K Switch.

Software which auto-boots – for example some games – will not work with K Switch. Programs must be able to be run from the desktop to be K Switch compatible.

However, a lot of games work with K-Switch and it is possible to have a game in one half of the ST and a serious program in the other. When the boss leaves the room, a quick press of three keys and you can start zapping mega toads again!

To summarise, K Switch does exactly what it is advertised as doing. You can have two programs memory resident and swap from one to the other with ease. What we, the ST community, will get out of it depends on our inventiveness.

That said, it's so versatile that I am sure we can all find unique applications for it. Recommended for all ST users. ■

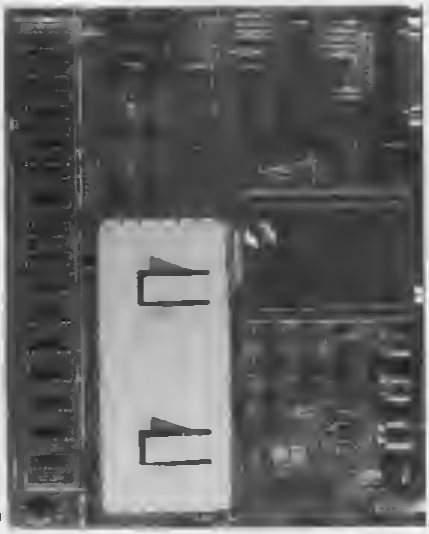


K Switch in action

By Andrew Bennett

MEGAMAX C: Best for the ATARI ST

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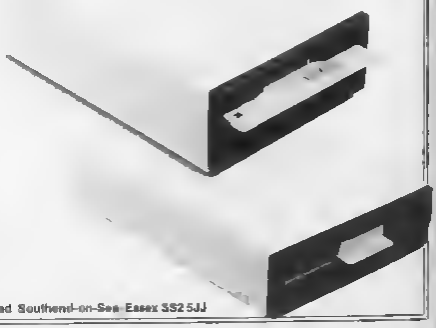
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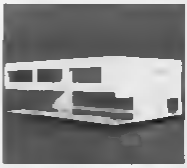


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Printers: Workhorse or thoroughbred?

ONE of the first major purchases that the new ST owner considers is a printer When Atari designed the ST, it thoughtfully included a standard centronics parallel interface which caters for hundreds of readily available models.

The centronics standard interface defines how the signals are sent from the ST to the printer, both physically and electronically

Of course, once the signals have arrived at the printer they need to be interpreted or decoded Atari designed the ST s screen dump routines to work properly only with an Epson printer or any that decodes signals in the same way Such printers are called Epson compatible and it's important that you buy one

Here we look at two very different printers which, while at both ends of the price scale as far as printers go are suitable for the ST, having a centronics interface and Epson compatibility

Firstly there is Atari's own Epson compatible printer – the SMM804 It s the same colour and shape as the ST itself but is about 3 inches high It costs £199 95 and comes supplied with a centronics lead to connect it to the parallel interface of the ST

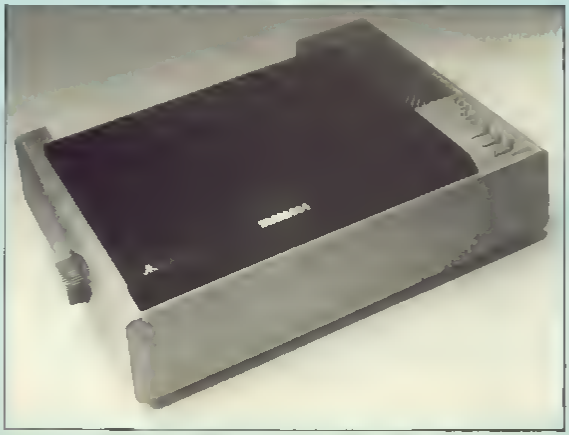
The SMM804's dot matrix print head is made up of nine pins which move horizontally across the paper to form characters at speeds up to an average 80 characters per second It achieves this speed by being bi-directional – it can print as it travels right to left as well as the normal left to right thus making the most of the return journey

It is also logic seeking which means that the printer doesn't waste time printing spaces It offers seven text styles – bold, italic, underline, super and subscript, pica and elite plus 13 international character sets ranging from UK to Japanese Katakana

The output is very dark due to the use of a carbon ribbon Although these give initial good results, they fade more quickly than ordinary ribbons and are slightly more expensive to replace

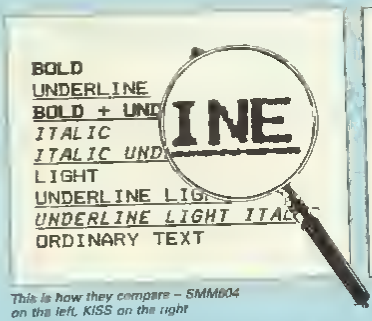
Product Atari SMM804 Printer
Supplier Atari Railway Terrace Slough Berkshire
Tel 0753 33344
Price £199 95

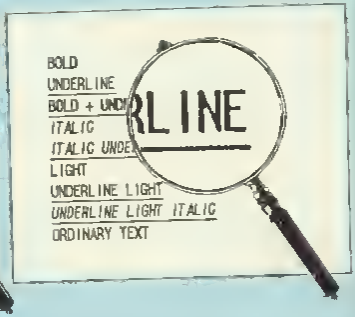
Product KISS Laser Printer
Supplier Pragma, 93 New Street, Aylesbury Bucks HP20 2NY
Tel 0296 434751
Price £2200



The Atari SMM804

Reviewed by Andrew Ralston





This is how they compare – SMM804 on the left, KISS on the right

AT the other end of the price and output quality scale is the KISS laser printer. About the size of two Atari monitors placed side by side, the KISS laser printer offers superb quality output for around £2200.

In operation, the KISS is very much like a small photo copying machine with the part where you place the original removed. The ST passes text or graphics to the printer as normal and then a few seconds later the KISS feeds out a completed (warm) piece of paper. Replacement ink cartridges cost an expensive £80, but are good for up to 3000 copies.

A4 single sheets can be fed in either through a special hole at the back of the KISS or from a container at the front which can hold up to 100 sheets. This makes it difficult if not impossible to use normal computer printout paper.

If it wasn't for the KISS's built-in fan's purr, you would never know that it was switched on or printing – definitely the printer to have around at 3am when everyone else is asleep and you urgently need some hardcopy.

The KISS can emulate Diablo or Qume daisy wheels and the Epson FX 80. There is a selection of some eight fonts to choose from and these can be changed using special switches on the front of the printer or by sending control codes from the ST. The KISS also offers all the styles of the SMM804.

Because the KISS does not have the graphics commands of Apple's laser writer for the Macintosh it cannot produce the superb graphics associated with that device. It can only output graphics of the type that can be produced on an Epson printer.

However, the KISS uses some special in built programs that scale any graphics up to its 300 dots per inch resolution, which has a markedly better appearance than the SMM804's 120 dots per inch output.

The KISS prints at the rate of 8 pages per minute, taking around the same amount of time to print a graphics dump as a dot matrix printer, but handling text at a far faster rate.

Certainly laser printers are the future as far as hardcopy goes and the price of the KISS is an indication of how cheap they will ultimately become. Laser printers are fast replacing daisy wheel printers as the best way to achieve letter quality output with all computers – including the ST. Atari has long been rumoured to be working on a laser printer, but it is still a long way in the future.

If you can't afford a laser printer and can only sit and dream or you're just printing address labels, say, and don't need the quality, a good workhorse printer such as the SMM804 will go far and provide many a yard of printout without any fuss. ■



The KISS laser printer

Program Winter Games
Price £24.95
Supplier US Gold Units 2/3 Holford Way, Holford, Birmingham B6 7AX
Tel 021 356 3388

Work up a winter sweat

IT'S too cold to go out for exercise at this time of year, which is all the excuse you'll need to play this latest sports simulation.

Winter Games has seven events for you to work up a joystick-waggling sweat on: hot dog speed skating, ski jump, figure skating, freestyle skating, bobsled and the biathlon.

The games kick off with an impressive opening ceremony. Music plays as a torch-bearing runner mounts a majestic podium to light the flame. White doves are released and they fly convincingly across the scene.

From 1 to 8 players can participate, each choosing to represent any of 18 different countries (the flags are shown and the anthems played).

Options allow you to compete in all, some or just one of the events, to practice a single event, to see the world records or to replay the opening ceremony. You can use the keyboard or, thankfully, one or two joysticks.

Strange name but *hot dog* is actually aerial acrobatics on skis. You zip down and off the end of a short ski run and try to pack in as many daring moves as possible before gravity wins and you smack down on compacted snow. Try to land feet first – meeting the ground lips first looks clever but will not impress the judges.

Speed skating has you belting along, in horizontal split screen fashion, against the computer or a fellow competitor. Fast and rhythmic joystick waggling is vital - brute force alone will move you about as fast as a snail on sedatives.

The *ski jump* is just that. A matchstick figure zooms down a massive slope and becomes airborne. Keeping an eye on the overlaid close-up in the right hand corner, you endeavour to adjust the jumper's balance to stop him going base over apex on landing.

Figure and *free skating* are very similar. Both show you as a lithe female skater gliding across a shimmering rink. By deft manipulation you can skate forwards, backwards, spin (sitting or on tiptoe) and execute such wonderful sounding movements as the double and triple lutz and axel jumps. Coming out of a triple axel facing the wrong way is not a pretty sight.

The *bobsled* event shows an overhead map of the track coupled with a small right-behind-the-sled view. You have to guide and bank the sled around the turns using the fastest line possible to succeed.

Finally the *biathlon*, the most strenuous of all the events. Wearing skis you run no less than four times around a multi-screen cross-country course. On each lap you must also stop, load, fire and hit five targets with a rifle. Those with weak wrists should give this one a miss.

Winter Games is a stunning visual feast. The fine-detailed mountain scenery is all beautifully depicted and the animation is slick and realistic. The events are great fun to play and there's plenty in the game to keep you entertained until summer comes around. ■

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

Reviewed by Bob Chappell



Riding the bobsled


Running cross country in the biathlon



Program Strip Poker
Price £19.95
Supplier Artworx c/o Anco Software 4 West Gate House Spital Street, Dartford Kent
Tel 0322 92513

STRIPPED OF SKILL

STRIP Poker has been around a little while and has now been converted to run on the ST. Apart from the sharper graphics and use of the mouse it looks and plays very much the same as the earlier Atari 8 bit version.

This is a one player game you versus the computer. The top two thirds of the display are taken up with a picture of one of two scantily attired opponents Melissa and Suzy. At the bottom of the screen is a command and comment line, below which is your hand of five cards.

You and your opponent start with $100. Betting is in $5 increments up to a maximum of $25. Once the first round of betting is over both players can elect to exchange any of the cards in their hand in the second round.

Using the mouse, an appropriate command – stay, drop, bet, raise or call – is selected from the command line. Cards to be exchanged at the end of the first round are simply pointed at and clicked with the mouse.

You are allowed a maximum of two bets in each of the two rounds. The normal rules of poker apply. Once betting is complete, your opponent's hand is shown to you. Once either party has run out of money they must borrow another $100 against an item of clothing.

You can please yourself whether or not you start stripping off in front of your computer but in the case of Melissa or Suzy, the picture changes to show them in a new state of undress. Once all clothes have been lost the game is over.

Leaving aside the questionable morals of strip poker, the game does provide some enjoyable hands of poker even though the opponents are rather too easy to beat. If anything, Melissa plays slightly better than Suzy.

The only sound effect is the riffle of cards as they are dealt. As for the graphics, more effort has been lavished on the ladies than the cards, which are rather too simply depicted given the ST's capability.

Future data discs are promised. These are supposed to include tougher opponents, male as well as female.

Strip Poker is fun to play but would have been better if the opponents were as skilled at playing as they were at disrobing.

Sound	5
Graphics	7
Playability	8
Value for money	7
Overall	7

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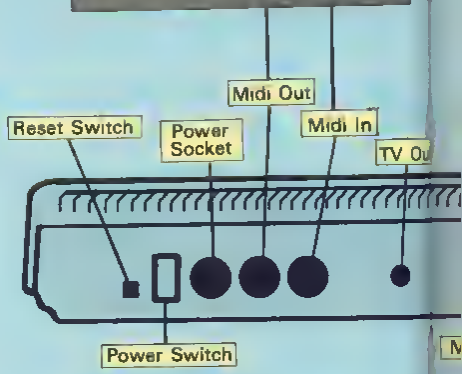
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ST peripherals

HAVING more connections and peripheral ports than any other home or business computer, the Atari ST has been designed with connection to the outside world in mind. ANDREW BENNETT takes a detailed look at how it works.

The MIDI in and MIDI out ports allow you to connect your ST to standard music industry devices which range from synthesisers to drum boxes. There are several programs available which allow control of MIDI instruments through these ports, including Soundwave SW1 from Shannar International and Music Studio from Activision.



The monitor socket on the back of your ST carries the video signal. Atari makes two monitors – the SM124 black and white and the SC1224 colour monitor. On a colour monitor you can display only the ST's low (320 by 200 points in 16 colours) and medium (640 by 200 points in 4 colours) resolutions while on a black and white monitor you are restricted to high resolution mode (640 by 400 points in black and white).

Hopefully in the near future, we will see several multi-purpose monitors on the market which will be able to display all three resolutions for less than the price of buying both Atari monitors separately – which you're forced to at present.

The 520STM model has an output which none of its fellow STs share – a connection which allows the 520STM to display its colour modes on an ordinary television. While it is possible to display both low and medium resolutions on a television, medium resolution is unreadable on most televisions.

The serial port, which conforms to the RS232 industry standard, outputs data down a single line and is therefore slower than the ST's parallel port which outputs data down eight lines at once. It allows connection of slower serial printers or a modem. Printers which connect to the serial port are usually daisywheels or converted typewriters.

A daisywheel printer uses small petal-like wheels which hold a letter at the end of each stem. When a letter needs to be printed, a hammer presses the letter against the ribbon and thereby prints on the paper.

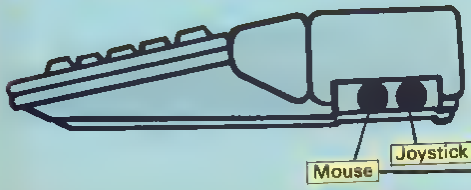
A modem fitted to this port allows you to connect your ST to the outside world through such services as MicroLink, Telecom Gold and dozens of smaller home based bulletin boards.

Once connected to these services, you can converse and swap messages with your fellow ST owners and also download public domain programs and utilities.

The two joystick ports at the side of the 520STs and at the front of the other models allow you to plug a standard Atari joystick into your ST to control games and some graphic utilities.

Joystick port zero is also set up to accept the ST's mouse which is used to control Gem, with its drop-down menus and windows.

Atari is currently designing a graphics tablet for use with the ST, which will allow control of painting and drawing programs with a stylus rather than the mouse or keyboard.



By choosing the Centronics standard for the ST's parallel printer port, Atari has made sure that it is possible to plug in a wide variety of readily available printers from manufacturers such as Epson, Juki, Star and many others. Atari also manufactures the SMM804 printer which connects with the parallel printer port – reviewed in this issue.

Unlike most older home computers, the ST has a built-in floppy disc controller, which means that either 3.5 or 5.25in floppy disc drives can simply be plugged in and used. Atari manufactures two 3.5in drives — the single sided 360k SF354 and the double sided 720k SF314.

Third party drives come from Cumana and Applied Systems and Techniques (AST), both of whom make double sided drives – see the Cumana review in this issue.

One bonus with 3.25in drives is that you will be able to read and write data created on an IBM PC (or compatible). This means that you can continue work started on the IBM PC at the office on your ST at home, as long as the programs you are using save their data in compatible formats. For example VIP Professional from Stilos (shop soon) can read and write data created on an IBM by Lotus 1-2-3.

V Out

Parallel Printer

Floppy Disc

Monitor

Serial Printer/Modem

Hard Disc

This ST's hard disc port allows you to connect a hard disc drive or CD rom player. The port is modelled upon, but is unfortunately incompatible with the very popular Small Computer Systems Interface (SCSI – pronounced scuzzy) standard port.

The magnetic disc inside a hard drive is permanently sealed and cannot be removed like ordinary floppy discs. This means that the disc can spin much faster and the data stored upon it can be packed much tighter, because there is no chance of dust interfering.

Hard disc drives are available from various manufacturers ranging in capacity from 10Mb to 80Mb and in price from £850 to £2000.

CD rom players are based on the Hi-Fi compact discs that are available from most high street electrical shops, but instead of musical information, computer data and programs are stored on the surface of the disc. The disc is read very accurately at very high speeds by a small laser whose beam tracks across the disc like a stylus across a record. As with a musical compact disc, a CD rom cannot be changed by the user but must be created in the duplication factory.

A single compact disc can hold several dozen megabytes of computer data – entire encyclopedias can be stored on only a small portion of a disc. CD rom players currently start at £1200, but Atari hopes to produce one in late 1987 for around £600.

ROM Cartridge

FAST

FAST BASIC

Atari ST cartridge

A new and very fast BASIC interpreter in ROM cartridge for the Atari ST computers. The 16MB program has been written specifically for the Atari ST computers and we reckon that on most jobs this new version will execute up to 10 times faster than the original BASIC supplied with the machine.

Based around MBC 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 BASIC assembler etc.



SPEED

With an average PCW benchmark speed of 1.8 seconds (this is the slowest BASIC available) Atari FAST BASIC executes about four times faster than the fastest ST BASIC and over ten times faster than the slowest. Take a look at the PCW benchmark comparisons on the right and see for yourself how fast FAST BASIC is on the Atari ST.

EDITOR

A full GEM based screen editor is included. It supports most of the usual features including cut and paste, search and replace, block move and copy, auto indent, and a full undo facility. Also included is a unique 'single line' mode which allows you to enter and edit one line of program at a time. This is particularly useful for the novice programmer.

PROGRAM SIZE

Each FAST BASIC program is stored in a compact tokenised form. This means that you can get more of your program in memory at once. Typically, a program will occupy about half the space it would in ST BASIC. Programs can be saved in ASCII format for compatibility with other BASICs.

ARRAYS

Numbers are stored in FAST BASIC in one of four formats. Integers (whole numbers) are stored in two bytes, floating point numbers in four bytes, double precision floating point numbers in eight bytes and strings in one byte. This can make a considerable difference to the amount of memory available for large arrays.

VAR LENGTH

FAST BASIC supports variable length strings of up to 32,767 characters. This means you don't have to waste memory by DIMensioning strings to their maximum possible length.

FAST ARRAYS incl. ST and strings

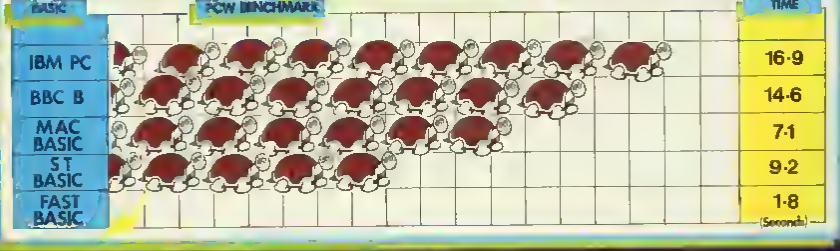
A unique feature of FAST BASIC is that it supports fast access to arrays of integers, floating point numbers and strings.

FAST BASIC INCLUDES:

- ROM Cartridge - It runs in RAM, leaving the entire memory 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 applications.
- Manual. Comprehensive 400 page spiral bound manual including all commands.
- Quick reference card.



COMPARISONS



BASIC

```
Desk  File  Edit  Text  Run  Goodies
FRACTAL.BSC                    Output
REM  Fractal graphics
REM  from Scientific American,
REM  Adapted by Phil Martin

REM  Runs in any mode

xo/=GRAFWIDTH/2:yo/=GRAFHEIGHT/
HIDEMOUSE
X=0
Y=0
REM  (Try 3,2,1 for starters)
INPUT"Type in any three numbers
REM  Plot dots, try with other
MARKTYPE 1
HOME:CLO 0:PRINT"Press ESCAPE t
```

ST CARTRIDGE

EXAMPLE SCREEN

Review

...a positive step... Students of structured programming will be well pleased.

Perhaps the most staggering advantage of Fast BASIC over the official ones comes in using the various facilities offered by GEM.

...It's a vast improvement on Atari BASIC

Review

"Fast Basic package provides a complete system for the home programmer. The language is beautifully structured."

"The cartridge eases the gap between high level 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 disadvantages."

"Time to mind the fact that the cheapest assembler for the ST costs £99.95, 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."

GEM

Direct and full access is given to the ST graphics such as circle, arc, pie, area filling etc. In addition there is a range of keywords for controlling the menus, icons and windows. It is possible to write programs that present the user with a perfectly standard GEM type interface. An example of a complete GEM program is supplied on the example disc.

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Review

...not about every consumer product I'd ever ask for to upgrade to be a good utility software disc.

...The presentation aspect has to be rather hardened.

If you own an ST ... really if you are a C or machine code programmer ... you should have a copy of FAST ST BASIC. I don't know of a BASIC on any other machine which is as feature packed and yet still easy to use.

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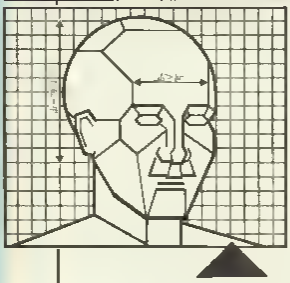
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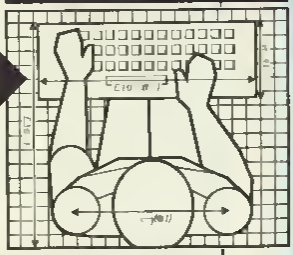
Integrated interpreter and compiler ► 16 Megabyte address space ► Rational Arithmetic ► Trig functions ► Integers of any size ► Floating point arithmetic ► Vectors ► Full Tracing ► Large numbers of built-in functions ► Will run on a 520 ST but we recommend the use of 1 Mbyte of RAM.

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Everything you wanted to know about discs . . .



. . . but were afraid to ask

By Andrew Bennett

IN these days of disc-driven computers such as the ST, it is surprising how many people cannot explain what happens inside the box which lives next to or inside of their computers. Yet it's not too hard to discover what's going on. Here we will try to explain some of the hidden secrets of your ST discs and their drives.

It is probably easiest to compare your disc and its drive to an LP and its player. The player, or drive, is made up of several mechanical parts including a motor to spin the disc at very high speeds inside its protective plastic case.

When you insert a disc into the drive, a simple mechanism opens the sliding door on the disc and reveals the magnetic portion inside. The stylus or head sits on top of this exposed area reading and writing to the disc by changing the magnetic state of the particles that make up its surface.

For this reason, you must never place your discs close to a magnet (including the top or side of your TV or monitor which contains powerful magnets) – this can change the magnetism of the particles thus destroying valuable data on the disc.

The information on the disc is mapped out into tracks. The head can read or write to one track of the disc at a time in much the same way as a stylus sits in the groove of a record. The head is moved from track to track by the precise movement of the tracking motor.

On an ST disc there are some 80 tracks numbered from zero at the outside to 79 in the centre. Each is further divided into nine sectors numbered from one to nine, each of which can hold 512 bytes of data. Multiplied together, this makes a total of some 368640 bytes or 360k of data on each single sided disc.

When you format a disc from the desktop – which places the tracks and sectors on the disc ready for the ST to use – you will notice that you have only 357376 bytes of data on the disc. What happens to the extra 11264 bytes?

When you save a file on a disc, it can spread across dozens of sectors. The ST needs to remember where the file starts, how long it is, what you have called it and other such information.

Your ST could remember each disc in its memory, but this would be extremely wasteful of memory, so instead some of the 360k of disc space is taken to remember the necessary information about your files.

Some of this information is stored in the directory of the disc, which occupies 7 sectors on the disc, and the rest is stored in the File Allocation Table (FAT) which takes up another 10 sectors.

One more sector – the Boot sector – is read by the ST when you switch it on or press reset. This contains information about the disc and which program, if any, to autorun.

This still leaves a discrepancy of four sectors, which can be explained by introducing the idea of clusters. A cluster is made up of two disc sectors and is the smallest unit which the ST drives can think in. Therefore even a file which contains nothing but your name will take up 2 sectors, or 1k of the disc.

And of course there are 360 clusters to a disc. This also means that you can be left with a disc which is apparently full but has dozens of single unused sectors.

Therefore the above figures changes to 6 sectors for the directory, 12 for the FAT (which is in fact 5 sectors long and is stored twice on each disc for safety) and 2 for the boot information. This makes a total of 22 sectors or 11264 bytes.

The seven sectors of the disc directory contains 8 entries about each file on the disc. Each of the entries is 32 bytes long and is made up of the

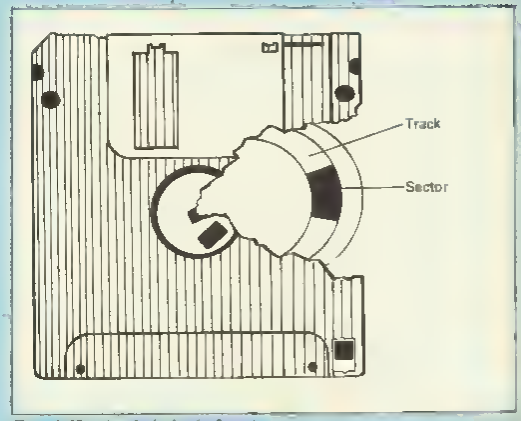
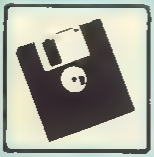


Figure 1: 10 sector single density format



Name	Size (Bytes)
Filename	8
Extension	3
Attributes	1
Reserved	1
Time of last change	2
Date of last change	2
Where file begins	2
File size	4

Figure II Directory entry

Range	Meaning
0	Unused and available
2 to 4080	Part of a file
4081 to 4087	Unusable – Damaged
4088 to 4095	End of a file

Figure III Possible FAT entry values

information in Figure II

The third entry the files' attributes, consists of 8 bits of information such as whether the file is read only Most of the attributes, for example whether the file is hidden – not shown in a directory of the disc – are not used on the ST

The FAT keeps track of which sectors belong to which files, since a file isn't one continuous area of sectors but is stored on whichever sectors are available on the disc

It is made up of entries for each of the clusters on the disc Each of the FAT entries is 1 5 bytes or 12 bits long and can hold a number between 0 and 4095 The possible values that can be found in a FAT entry are shown in Figure III

If a FAT entry has a value between 2 and 4080 it points to the next cluster which contains the file That cluster s FAT entry contains a pointer to the next cluster and so on until we reach a FAT entry of between 4088 and 4095, which is the last cluster of the file

If some of the information on one of the sectors of one of your discs become damaged or corrupted, you can usually repair it using the information above and one of the disc doctor programs that are available for the ST These include Hippo Disk Utilities, Disk Help from Microdeal and the one which is proving most popular with the ST community – Disk Doctor from Antic

Remember to make attempted repairs on a back up of your damaged disc – not the original – so that you can try again if something goes wrong ■

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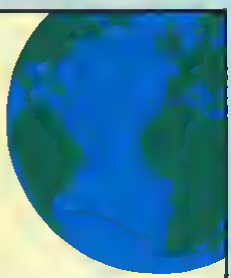
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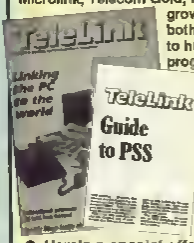
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Quiet as a whisper

It is inevitable that any successful computer will inspire the industry to produce add-ons of all shapes and sizes Until recently, there was only one supplier of ST disc drives – Atari itself

Now there are two more on the scene in the shape of Applied Systems and Techniques (AST) and Cumana who are well known for their BBC Micro drives The AST drives were reviewed in the August issue of *Atari ST User*, so here we take a close look at Cumana's offerings, both 3 5 and 5 25in drives

The 3 5in drives are double sided models which can store 720k on a single disc and come as either single or double drive units

Finished in a shade of grey similar to that of the Atari drives, the Cumana variety are not as wide or as high but they are almost the same length But unlike the Atari drives they have a built in power supply which eliminates the need for a brick sized transformer under your desk.

Another difference is that instead of Atari's round cable, the Cumana drives are supplied with a ribbon cable and a special adaptar plugging it into the back of the ST or an Atari drive.

The single Cumana drive can only be used as drive B in connection with an Atari drive, since it has no socket into which to plug another Atari drive Therefore if you already own an Atari drive, it will remain as drive A and the Cumana drive becomes drive B

If you have a 1040, 2080 or 4160 with their built-in drives, the Cumana drive is used as drive B Since the ST can only be connected to two floppy disc drives at once Cumana s dual disc units can only be attached to the 520ST

In operation the Cumana drives are whisper quiet, sounding more like a hard disc than the Atari floppy drives Unfortunately – due to a quirk in the design of the ST which is in no way Cumana s fault – both motors operate when you access a drive

This means that if you have an Atari drive as A and a Cumana unit as drive B, the noise that the Atari drive makes will drown out the quietness of the Cumana unit. The same happens when you have two Atari drives or two Cumana drives connected, but you can't tell because both drives sound the same

Cumana also manufacture 5 25in drives for the ST These are double sided and can hold up to 720k on a standard floppy disc of the kind found on the 8 bit Ataris and the IBM PC While they cost slightly more than their 3 5in counterparts the actual discs themselves are about half the price

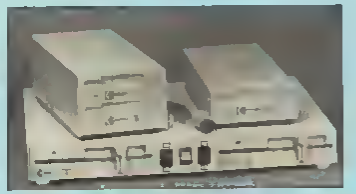
As with the 3 5in drives, you can attach one or two of them to your ST and they can be freely mixed – Cumana even makes one unit, the CCA2000S, which has both a 5 25 and a 3 5in drive

Of course you can't read standard 3 5in drives on a 5 25in drive and you don't get any more storage So why attach one to the ST?

When Atari designed the ST, it wisely opted for the MSdos disc format standard This means that with a 5 25in drive attached to your ST you can read and write files which will be compatible with the IBM PCs

The result is that you can work with an IBM at the office and at home on your ST – as long as the programs which you are using can understand each other s files For example, VIP Professional from Silica Shop can read and write files which are compatible with Lotus 1 2 3 on the IBM And you can save IBM word processor files in Ascii for loading into 1st Word or most other ST word processors

To conclude, I found Cumana's disc drives to be of the highest quality and fully compatible with the ST In price, size and quietness they out perform their Atari counterparts easily – give them serious consideration when you're thinking about upgrading! ■



Cumana offers 3 5in and 5.25in systems – or even a combination of the two

By Andrew Bennett



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 tele phone 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 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 sub scription 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 teleshdpping 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 communi cations – just as quick as using the pndne 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?

MicroLink application form: Page 8

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If you've written any useful or interesting five line programs in either Atari Basic, Fast Basic or Logo, why not send them in to our five-liners section for ST owners?

We pay £25 for each one published

Simply send a copy on disc along with a clear listing and good explanatory notes to

ST Five liners, Atari User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY

TEXT TYPES

from S. CHERIAN

THIS allows you to change the height, font, style and colour of any text displayed by your Atari Basic programs

Line Breakdown

10 Fulls and clears the output window and inputs the various values
20 Sets the character height
30 Sets the style of the character
40 Sets the font
50 Inputs the text and prints it to the screen

```
10  fullw 2:clearw 2:input "charheight,font,colour,effect,posx,posy",a,b,c,d,x,y
20  poke contrl,12:poke contrl+2,1:poke contrl+6,0:poke ptsin,0:poke ptsin+2,a   :vdisys(0)
30  poke contrl,106: poke contrl+2,0: poke contrl+6,1:poke intin,d:vdisys(0)
40  poke contrl,21:poke contrl+2,0:poke contrl+6,1:poke intin,b:vdisys(0)
50  input "text ",a$:  color c: gotoxy x,y: ?a$: goto 10
```

TEXT SCROLLER

from ADAM KENNEDY

HERE'S a quick and easy way of smooth scrolling text across the screen in Atari Basic, using Gem call 8. The text to be scrolled is placed in *a$*

Line Breakdown

10 Set up the variables
20 Put the Ascii values of the letters into the *intin* array
30 Poke in the position of the text
40 Do the call and change the colour of the text accordingly. If the text has reached the right hand edge of the screen, wrap it round to the other side
50 Jump back to line 30

```
10  done=0:x=0:y=200:poke contrl,0:poke contrl+2,1:a$="string to scroll"
20  poke intin,32:for i=1 to len(a$):poke intin+2*i,asc(mid$(a$,i,1))):next i
30  poke ptsin,x:poke ptsin+2,y                                    :poke contrl+6,len(a$)+1
40  color 1,1,1,1,1:vdisys(0):x=x+4:if x>640 then x=4
50  goto 30
```



COMPETITION

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2nd PRIZE

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3rd PRIZE

PINBALL
UTILITIES

and ALL three winners will receive a presentation copy of Shuttle II, the NASA space simulation, signed by the author

HOW TO ENTER

Just answer the five straightforward questions cut out or photocopy the entry form and send it to the address below
Your entry must arrive by January 31, 1987

QUESTIONS

1 What was the name of the first Space Shuttle?
2 What was the name of the first dog in space?
3 What does NASA stand for?
4 What was the name of the first artificial satellite?
5 Name the three Apollo crewmen who lost their lives on the launch pad?

Answers

1 _____
2 _____
3 _____
4 _____
5 _____

Name _____

Address _____

_____

Postcode _____

Send to
Shuttle Competition, Atari User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY

Joystick control

WE start this month with a query from Gerry Berwick from Denwwt regarding reading joystick values from Atari Basic

I'm afraid that due to some peculiarities in the keyboard controller chip which also controls the joystick ports on the ST, joystick control is not possible from Atari or even Fast Basic and is difficult even in C

I suggest that you consider using the mouse for non keyboard program control, which is simple in Fast Basic and relatively easy in Atari Basic. See Program 1 for the method of using the mouse from Atari Basic.

★ ★ ★

John Packard from Swansea writes to ask me how to use the Gem file selector from his C programs. Although the file selector is one the most commonly used routines in ST programs, it is not mentioned in a number of books about Gem routines and is even omitted from some C manuals.

Looking at the accompanying screen dump you will see that the file selector is made up from four parts – the name of the current directory and file,

```
10  REM PRINT MOUSE POSITION AND BUTTON STATUS
20  A%=0
30  CONTROL=PEEK(A%)
40  GLOBAL=PEEK(A%+4)
50  GINTIN=PEEK(A%+8)
60  GINTOUT=PEEK(A%+12)
70  ADDRIN=PEEK(A%+16)
80  ADDROUT=PEEK(A%+20)
90  BEAGYS(79)
100 PRINT PEEK(GINTOUT+2) ; REM MOUSE X
110 PRINT PEEK(GINTOUT+4) ; REM MOUSE Y
120 PRINT PEEK(GINTOUT+6) ; REM MOUSE BUTTON
```

Program 1 Using the mouse from Atari Basic

the window containing the listing of the directory and the two buttons which you click on.

When you call the file selector, you must provide the routine with three inputs – directory path, initial selection and the name of a variable to hold the result of the button press.

The routine a call looks like this

return= fsel_input(path, selection, &button),

The value of the variable *return* can usually be ignored and is simply an error code which is positive if no error occurred.

The path is of type Char and will look something like

path[]="A * DOC/0";

If you change the directory path it will be stored in the variable *path*.

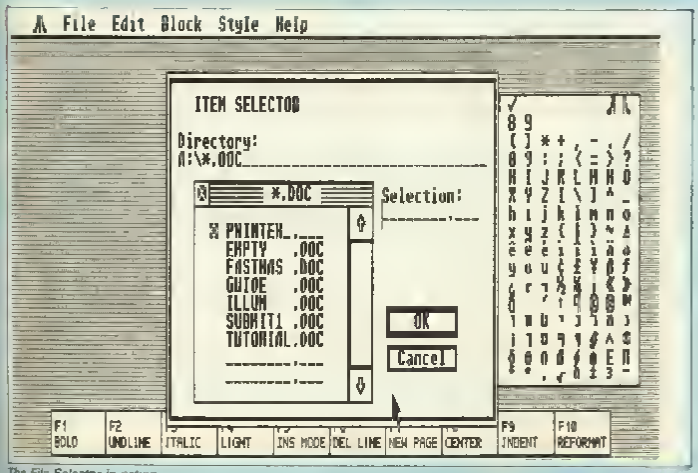
You should set the first byte of selection to zero if you wish the selection to be blank when you call the file selector

selection[0]=0,

Your final choice will be returned in the string selection.

button will hold either 0 if Cancel was clicked on or 1 if Return was pressed or OK was clicked on.

All other operations of the file selector, including moving through the directory and changing discs, are automatically handled by the



The File Selector in action

Send your Ateri ST queries to: Andrew Bennett, Atari ST User, Europa House, 68 Chester Road, Hezel Grove, Stockport SK7 5NY.

Q A

fsel_input routine

It is then up to your program to decide if the file exists, read it in delete it or whatever else you want to do

When the file selector routine ends, a large grey area will be left on the screen which your program will have to clean up by redrawing whatever was there before the file selector was called

★ ★ ★

Harry Rawcliffe writes to ask about the excessive cost of hard discs for the ST and whether there are any viable alternatives

Whereas hard disc units for the IBM PC and its compatibles seem to start at around £400 for 10Mb and £550 for 20Mb, the best price for an ST hard drive is around £750 for a 20Mb unit

If you can't afford this sort of price, your only alternative is to wait for the price to drop, which should begin to happen in the new year

If you don't necessarily require the speed of a hard disc but need the capacity you might have another choice in the near future

At least one British company is working to produce a new 3 5in unit for the ST which could store up to 6Mb It is currently waiting for the Far Eastern drive manufacturers to decide on the format and design of the drives I'll keep you informed of progress

★ ★ ★

There is a bug in the file selector routine which can cause you to completely lose whatever you are working on It rears its ugly head when you click on the directory line of the file selector and change the current directory path

If you include an underscore (_) character in this line the ST will crash with 10 bomb symbols appearing on the screen

To see this for yourself, load 1st Word and click on the directory line when the file selector is showing Press the underscore character once and see the result

The crash is unrecoverable – the only solution is to reboot your ST Now that you know about the problem you'll be able to avoid it and Atari will hopefully fix it in the next upgrade of Gem

★ ★ ★

A few of you have written in concerning a problem with last month's screen conversion programs which convert a colour screen to one which can be viewed in black and white, high resolution mode

The problem arises when you attempt to run the programs on an ST which has more than 512k of memory A completely blank screen will appear when the program is supposed to be displaying the picture as it is converted

A couple of very simple changes will correct this problem for 1Mb STs

In Program I change the &H78000 in lines 20 and 220 to &HF8000 In Program II change the &H78000 in lines 1 and 61 to &HF8000 Both programs will now operate correctly

We must ask that you always take the various possible locations for the screen into account when you are writing your programs in whatever language ■

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