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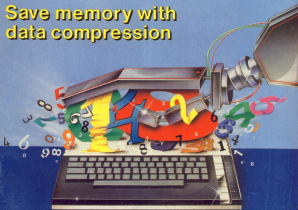
# ATARI USER

Vol. 2 No. 9 January 1987 £1

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this  
issue



## Save memory with data compression



**Mastering your Atari's IO ports**

**Peripherals: Extending your system**

**Atari's 80 column add-on reviewed**

**Atari User Show  
— a full report**

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Editor in Chief: Mike Bixby

Features Editors: Andrew Bennett

André Willey

Production Editor: Peter Glover

Art Editor: Heather Sheldrick

Reviews Editor: Christopher Payne

News Editor: Mike Cowley

Advertisements Manager: John Biding

Advertising Sales: John Snowdon

Editorial: 081-456 6335

Administration: 081-456 6383

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

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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 5285TSM, its £299 price tag places it in direct competition with the recently launched Amstrad PC1612.

Similar in appearance to the 1040STP, it has a modulator for TV like the 5285TM and a built-in 500K

disc drive like the 1040STP.

The 5285TSM 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 mar-

ketplace because for a long time it wasn't considered a viable product for the UK.

But recently-appointed Atari UK general manager Bob Glasdon 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", Glasdon told Atari User.

# 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 5285TM and 1040STP 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 Fastform and dBase as well as titles from Papyrus, Game and Artic 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 Glasdon.

"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 Mastertrack, a multitrack midi sequencer for the Atari ST.

It features real-time and step-time recording, three modes of quantisation, and outposts 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.

# 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 Zylis, director of Middlesex-based distributor Robtek, says a McEmulator will be in the shops in Britain as day now.

"The response has been explosive", he told Atari User, "and at a retail price of £159.95 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 stand-alone 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 tentatively withdrawn when Apple threatened legal action.

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

Data Pacific later re-released the device without the cards. Purchasers have to persuade their local Apple

dealer to supply them with the cards from the official Apple spare 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 Zylis.

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Teletexts: £1.45 for up to 300 words. An illustrated greetings card (for birthdays, birthdays, etc.) costs an extra 21p. Enhanced support to Britain first past the following day. Overseas mail: 21p (Germany, Denmark), 30p (USA, Canada, Australia, Singapore, Hong Kong, Saudi) for first 2,048 characters. For additional 1,024 characters: 14p and 14p.

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## Online Santa a hit

*You'll decide by Father Christmas to go online for the festive season around a major attraction for the kids - even for some previously rather big ones.*

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

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

*And of those more than one third are believed to have come from adults.*

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

*"The response was quite incredible," said Derek Mitchell, head of Mincalms. "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.

Warner 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 his 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, 1600 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 his 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 go hand in hand with a similar set-up in the US and start right 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 Elizabeth Software has released a utility for Atari 8 bit owners who enjoy working with wood.

Timberate is an aid to coding 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 projects with varying prices and tolerances.

"Atari minis were selected for the initial version of the program because they are low-cost, well tested machines with disc drives", said a spokesman for Elizabeth.

Timberate 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 headquarters.

"A letter published in the June issue of Atari User from reader Norman Williamson 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 effect, 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

**LEADERS** 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.

Ongoing combat the micro keeps track of every shot 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 \$69.95.

\*\*\*

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

Bookkeeper costs £98, Accountant £140 and Accountant Plus £195.

\*\*\*

Which member of the Royal Family had 15 fingers? To find out you'll have to buy the new Trivia Challenge from Miredale for the Atari ST.

The quiz program also allows users to create their own question-and-answer files. Price £79.95.

\*\*\*

**LATEST** batch of releases in the Silver 150 range from Firebird includes other space shoot-em-up games: *Warhawk* and *Centauri* of Griffin for the Atari 8 bit micros. Price £1.99 each.



Brian Clough and CDS Software managing director Giga Hunter replay 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 MicroPress, 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 computers", 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 MicroPress – 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 *Polls* *Boyce* category. Producing only a handful of titles each year, MicroPress 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 nasty", says Bell.

MicroPress 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*, *Glenn 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 MicroPress 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, MicroPress 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 survival 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 version, £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 Gerni 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, new graph function, print screen datasets, statistics, area graphs, and variable x and y origins.

K-Graph 2 can be used in conjunction with K-Speed – also to be upgraded soon – or as a stand alone package. Price £29.95, with upgrade to original K-Graph discs available for £10.

## Eye on the weather

**WILSON** assistant 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 and wish to re-start my contact 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, 4840 94355.

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 Mackay 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 dispatch 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 com-

puter 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 Mackay, said: "The improved telex facility is one that will save MicroLink subscribers time and money, combine 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 150 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 35 per cent of first class mail from London to the major cities of Birmingham, Belfast, Glasgow, Manchester and Liverpool is not arriving on time.

And more than 30 per cent of first class letters from Manchester, Glasgow and Belfast fail 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 time-stamped 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 airlinks, 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."

# American \$cene

EDWARD SHARR reports

PRIDE of place at the fall Comdex show went to Atari which, as expected, set up its stand near the entrance to the main hall of the Las Vegas Convention center.

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 1280-based Hayes compatible modem from Atari — the 54012.

This took precedence over the XDP60 — an 60 column card for the XLIVE 8 bit computers.

The 54012 modem is another of those amazing price breakthrough items that Atari is renowned for.

This fully Hayes compatible beastie offers 200 baud Bell tones, along with V201200 baud frequencies for both sides of the Atlantic within its \$99.95 price tag.

Unlike many other Atari units, the 54012 modem features a fully-fledged 28-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 '88. The UK? Well there are quite a few UK dealers who do mail order with credit cards.

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Not exactly of the US but causing a stir over there is a Swedish Atari bulletin board — seems every Atari comes back in 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 3400 baud.

Subject to further liaison 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 Exchange (SIX) runs on an Apple Macintosh Plus (shamelessly 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 01-048-470-27183 at all normal CCITT modem speeds up to 3400 baud — have fun dialling!

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The December issue of *Atari* 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 Symp of Atlantic BBS.

Several other symps in the US are striping blue murder since they spotted several of the so-called hot tips appearing way back on their BBSs and in magazines such as *Computer* and *Analog*, the Atari Dos 3.0s manual and even good old *Atari's* back issues themselves!

\*\*\*

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

Latest reports from Atari 802 indicate that this \$120 add-on to the ST will be available from February. The chip comes as an easily fitted plug-in-back ram unit which fits into existing PCB slots.

\*\*\*

Causes 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 inescapable.

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 last week on it? Or even a week's? Probably not.

Now you don't need to. MichTron's new Backup utility is far more 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 automates 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 companion floppies, saving even more time.

Backup will be available from MichTron from December 1st onwards for \$29.95 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.

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Sail on the subject of hard discs, the Supra Corporation has notified owners of the Supra 30MB Hard Drive manufactured by HEC that they may develop encoding problems.

In a message sent to users of the Atari Developers' Forum, an CompuServe, Supra said that some disc drives manufactured between August 18 and October 18, 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 MM/YY or MM/YYYY.

Users who suspect a problem with their drive should contact Supra Technical Support on 0101-603-587-8081.

## Get by with a little help from your friends

### By Brillig

TWO months mark the start of our Lifetime career. 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 Lifetime. 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 Lifetime, please always remember to enclose a stamped, self-addressed envelope for a reply. The Lifetime 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 Heynsmith (Zork II) and A. Jones (Hitch-hiker's Guide To The Galaxy — HNGG).

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

Mr Jones also mentions a couple of glitches he's found. First, in HNGG, he says that if you enter the same 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 Indiana — 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 Fuzzoff, Drop All then repeatedly Feed Pair, 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 Rian of Wolverhampton is in the dungeon in Blackworks 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. Existing adventurers!

### LIFELINE

The following readers offer their postal help with these adventures:

● Linda Heynsmith, 57 Ravenwood Place, Gedbridge, Livingston, West Lothian EH5 6PP; Snakeoil, Return To Eden, Emerald Isle, Red Moon, Earthquake 1988, Curse of Crookery Manor, Escape From Treason, Golden Broom, Wizard of Nixio, Perseus and Andromeda, Arrow of Death 1 & 2, Time Machine, Possibility Experiment, Escape From Polaris 2, Ten Little Indians, Circus, Woodworks, Pirate Island, Dallas Quest, Zork I.

● Eric Nolan, 21 Whitebrook Park, Tallaght, Dublin 24; Transylvania, Bloodstained Sword, Lords of Time, Dallas Quest, Zork I, Enchanter, Colossal Adventure, Castellan, Aylem, Ghost Town, Muck.

● Nigel Morse, 15 Greenleaf Avenue, Westbury Hills, Worcester WR3 9RG; Zork I, 1 & 2, Ravenhill, Suspended, Starcross, Hitch-Hiker's Guide To The Galaxy, Watchtowers, Infidel, Cultivators, Enchanter, Sorcerer, Snowball, Morden's Quest.

### GLITCH OF THE MONTH

Jon Bradbury of Sheffield has spotted a glitch at the very end of Zork I. The description states that "You are standing before a Barrow of Gnomes. In the end 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 strange.

Can you help hold some form of record by finding a glitch at the very end of an adventure — can anyone beat it or find one right at the start?

### HINTS 'N' TIPS

#### COLLOSSAL CAVE — Robin Red

What use is the huge mirror?  
GOTO CRIST RUBY ALPO FROU J  
POET GOLF FRUU CYRI NOYIN ACBH TSSO RICH RUJZ  
FRWD DAHS ENT

#### HITCHHIKER'S GUIDE TO THE GALAXY — Infocom

Can't demonstrate your intelligence to the door?  
XODX WAPA SIRE WAGNA ZHT  
EMT EMUS EHTT AMIT ONON AAET EVAH TSUM UOY

#### ZORK II — Infocom

Can't open the safe box?  
TROP ERME SUCH DUDU CULD HOMO LROM HT  
Trapped with the red sphinx?  
ONE LAND HAS REVN DAY RT  
See carpet growing fast?  
MLER ALJCA EHTM DMTY ANOMV ORHT S'EN OFSA  
PUEE  
Caddy angled room's a mystery?  
WS. HRL. EN. ESO GTAR EHTM OYVO SHCT ILL ABBS  
AAAS IT?  
Tugary hedges baffling you?  
TNAV ELEV TONE RAYE MTSA NHTT ERON GI

CLIQUE to 18,000 people flocked to the Atari Christmas Show during the three day event in London. Mangling with the crowds to cast a critical eye over what was happening was a team from Atari U.K. 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

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 André 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 7800 games cartridges, thus opening up the first real upgrade market in video game console history.

The unit is based around a 6800 chip running at 1.78 MHz, with 4k each of ram and rom. Its screen display — handled by the Maria chip originally designed 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, naturally, 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 £70 mark.

Titles currently available in the States for the 7800 include *Kerchunk*, *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

## Games console has super graphics



such as Databyte, Tyresoft and Red Rat software.

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

Databyte, which specialises in licensed US products, launched *Marmite's Revenge*, *Adam Caveman* and *Polar Plams*, all priced at £9.95 on tape and £14.95 on disc.

Tyresoft 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 but seen 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 480 through to the 1080E.

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 Rabbit, 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 test 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 cur-

rently restricted to running only the test 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

## What the exhibitors said . . .

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 Area Software of Cardiff - Bridge, Trivia ST, Peggermann, Willy the Kid and Flip Flip.

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

Trivia can be played by between two and four players, offering a total of 1600 questions on a diverse range of subjects in both English and French.

Peggermann 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 Flip - recreates the board game Reversi on the ST.

Area also unveiled three slightly more so-called games titles for the ST at £19.95 each.

Space Pilot enables the player to man the sides of alien planets while repelling the attacks of hostile star ships against right spectacular scrolling backgrounds.

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

That Boxing from Area is a 3D game which enables the player to compete

## Games prices take a tumble

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.

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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".

HOW successful was the Atari Christmas Show?

The people who are probably in the best position to assess this were at the cheap 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, Illux Ship

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"We had an excellent show. We made a lot of contacts and were very pleased with the outcome" - Jeremy Wylie, Polaris

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"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, Syndrome Maske

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"A fantastic roaring success. The first 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 basket" - Mike Jones, Software Express

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

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"It went very well for us. Our products were very much in demand and we sold out of everything we took down" - Charles Mole, Compumart Concepts

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"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, Kiki Automation

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



# 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, far was it the product that he found lacking. It was the fact that the Atari message was still being around gathering dust in Slough.

"I found a company that had big 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, then they may as well go along with mine", says Bob Gleadow.

"That's because we offer better sounds, better graphics and programs

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

oriented towards what they really want to do with their machines".

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 overhear 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

brilliant – 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 one 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



industry team works", 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 fars 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 Gleadlow started moving up the ladder because - as he puts it - "I was cheap and cheerful".

By 1984, 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 Gleadlow.

"The thing that I noticed about Jack when I first met him was that there was like an energy field around him", recalls Bob Gleadlow. "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 Gleadlow.

"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 Tramiel 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 reinforcement".

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

But his speciality - was the area in which he shone - was in marketing decisions.

Known as the hard-end of the computer game, this involves getting rid of stock that is put in politically 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 Gleadlow. "My first impression of a mine 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 Gleadlow worked first in the UK, then Europe and finally was dispatched 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 Gleadlow.

"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

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

Tramiel had walked out of Commodore.

"It was a rumour at first but then we couldn't get in touch with him", says Bob Gleadlow. "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 Gleadlow 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 Gleadlow 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 Gleadlow 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 Gleadlow 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 Gleadlow.

"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 Brough, 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 Gleadlow, 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 sell 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 Gleadlow 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 mislead 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 1983. Its 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 as well.

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 Aspi-writer Plus, which will then become Atariwriter 80.

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

The unit communicates with the host computer via two serial data lines — pins 2 and 3 and one of the second joystick port. This data is shifted at a rate of 15.36kbaud, 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 bidirectional 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 load automatically from the I/O port in much the same way as a disc drive or SMD 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 19.2kbaud, 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 19.2kbaud 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 multi-column 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. ■



## Gold on course

**Program:** *Lander Board*  
**Price:** £9.99 (suggested) / £14.99 (full)  
**Supplier:** US Gold, Unit 2 & 3, Mottled Way, Mottled, Birmingham, B9 3AT  
 Tel: 021 358 2388

AFTER playing a few golf games on the Atari, including one featuring a player whose club action resembled a one-armed wrestler in a fierce air gale, I was despatching a decent golf simulation.

New Landerboard 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 5. At the novice level you only concentrate on selecting the club and the force of the shot.

Amateurs have the additional worry of keeping on 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.

Scores 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 12 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 view, the graphics are only adequate — the lack of trees and landers 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 £9.50, containing four new 18-hole courses, and this should keep me playing for quite some while to come.

**Ken Grassham**

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

## Asteroid assault

**Program:** *Warhawk*  
**Price:** £1.99 (suggested) / £4.99 (full)  
**Supplier:** Firebird, 84-28 New Oxford Street, London WC1A 1PS  
 Tel: 01-278 6788

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 cold and twelve minutes' listening 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 *Xenious*.

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 herds 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 resume 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	8
Value for money	8
Overall	8

## Rat's flying high

**Program:** *Laser Hawk*  
**Price:** £3.99 (suggested), £9.95 (fixed)  
**Supplier:** Red Rat, 73 Avenue Street, Manchester M20 3DU.  
 Tel: 061-635 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 dropper through five increasingly difficult zones, you avoid or destroy various robo-ships, missile launching sites, parked space ships, buildings and volcanoes – while keeping an eye on your fuel level.

Progress through the zone is shown 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, ensuring every time a game is started.

If your dropper gets clipped, 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 *Hawk*'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.

**Nigel Reynolds**

Sound	2
Graphics	4
Playability	3
Value for money	3
Overall	3



## Old magic is there

**Program:** *Froggie*  
**Price:** £2.99  
**Supplier:** Americans via US Data Units 2 & 3, Norfolk Way, Wokingham RG40 3JF.  
 Tel: 011-356 3369

CAST your mind back to games of long ago. Reincarnation in additive pieces of nonsense called Froggie!

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

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

Froggie is a small, slow-gaited chap who starts off in

a safe zone at the bottom of the screen.

He must cross a railway 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 railway are golf-carts, lawn-mowers and bulldozers, all of which can bring sudden squashing to Froggie if he gets in their way.

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

Once safely over, Froggie tucks himself as a traffic-free river bank. At the higher levels, a huge frog comes galumphing along this bank bent on crushing anyone in its path. (Froggie's revenge!)

Froggie must now tra-

verse the river, also threatened. He accomplishes this by leaping on passing logs, canoes and alligators, hop-scooting his way to the far bank.

Just to make life more stimulating, the golfer's mouths open at random and a time limit adds memorably 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.

Froggie is an old game yet it still has that magical pelling 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	3
Graphics	2
Playability	3
Value for money	3
Overall	3

## Ageing dragons

**Program:** *Queston*  
**Price:** £9.95 (suggested) / £14.95 (list)  
**Supplier:** *Strategic Simulations* c/o US Gold, Units 2 & 3, Midland Way, Redford, Birmingham B3 7JX, Tel: 011-258 2088

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.

*Queston* is a rather old game, since 1984, and shows its age.

As a lowly elf, it has fallen to you to save the Queston Empire from Mator, 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 smites 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 armor 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 map. Dungeons are shown as 3D type maps.

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 then *Queston* should fit the bill.

**Bob Chappell**

<b>Sound</b> .....	8
<b>Graphics</b> .....	6
<b>Playability</b> .....	8
<b>Value for money</b> .....	7
<b>Overall</b> .....	7

## Useful collection

**Program:** *Simult* *Mix Volume 9*  
**Price:** £3.95 (suggested) / £4.95 (list)  
**Supplier:** *Playtek Software*, 1 Northfields, Portsmouth (Sussex), Hampshire PO6 1BX, Tel: 071-633 7262

**COMPILATION** means continuous action 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: *Electricglide* and *Timefall* from English Software and *Fort Apocalypse* and *Driftin* from US Gold.

For those who have never played it or read the reviews in *Mean* (yes, suffice it to say that *Electricglide* is a Pole Position variant where the objective is to dodge strange objects and race

against time. A fast, tough game.

*Timefall* 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.

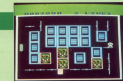
The top one is a *Sherlock* hybrid in which you plot a spaceship over various terrain, shooting enemy craft, missiles and orbs.

The middle screen is a Jet Boat Jack boat-ride. You must jet around the corners, 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.

*Driftin* 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 trouble-makers 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**

<b>Sound</b> .....	8
<b>Graphics</b> .....	7
<b>Playability</b> .....	7
<b>Value for money</b> .....	8
<b>Overall</b> .....	8



## 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 800XL and the 48k 800XL, and more recently still by the 128k 1300XL.

In the States there were also the 1280XL, 1480XL and 1480XL.D machines, but these were soon abandoned in favour of the newer 800XL and 800XL.



800XL



1300XL

# 8-B ADD C

ANDRÉ WILLEY serves th

## Printers

Atari's 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 daisy-wheel 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 800 dot matrix unit and the 800 thermal printer, and the more recent 1000 plotter and 1000, 1009 and 1000XL 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 800 unit which also features four RS232 ports. Alternatively you could buy one of the many printer-only devices advertised in Atari User.



Brother PR-20



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 Comelapex – 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

surveys the peripheral scene



## 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 680 unit. You could also consider getting Mitac's Technology's Datatel 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 W52000, but — if you can afford the extra cash — a 1200 baud unit (W52) 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.



From VTX 5600 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 pictures — but these can be expensive.

Other peripherals available include the ComputerFare video digitizer which we looked at a couple of issues ago, a real-time clock cartridge similar to that from RCD, hard disc units such as the Supra 10Mb unit and the new KEP-60 60 column module from Atari.



Atari's ComputerFare video digitizer (left) Quacknor II Turbo joystick

the Atari tape 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 6 bit machines use 5.25in discs and the first drive available over here was the 680 unit which could store up to 80k of data and programs per disc.

More recently the 1050 drive has been released with a capacity of 130k — or 160k 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.



# 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 290 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 statements.

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 checklist program Get it Right! Alternatively you can download Molehunter from MircLink, where all our monthly games and other programs are to be found.

```

10 REM MÖLE HÜNTER
20 REM BY KELVIN LUSH
30 REM OUR AGONY GAMES JANUARY 1986
40 REM PROGRAM MOLEHUNTER
50 REM (LOWEST REM 1000)
60 SCREEN 20
70 SCREEN 100:FOR A=0 TO 4:
80 GOTO 200:GOTO 3:GOTO 5
90 FOR B=0 TO 4:FOR C=0 TO 4:
100 FOR D=0 TO 4:FOR E=0 TO 4:
110 FOR F=0 TO 4:FOR G=0 TO 4:
120 FOR H=0 TO 4:FOR I=0 TO 4:
130 FOR J=0 TO 4:FOR K=0 TO 4:
140 FOR L=0 TO 4:FOR M=0 TO 4:
150 FOR N=0 TO 4:FOR O=0 TO 4:
160 FOR P=0 TO 4:FOR Q=0 TO 4:
170 FOR R=0 TO 4:FOR S=0 TO 4:
180 FOR T=0 TO 4:FOR U=0 TO 4:
190 FOR V=0 TO 4:FOR W=0 TO 4:
200 FOR X=0 TO 4:FOR Y=0 TO 4:
210 FOR Z=0 TO 4:FOR AA=0 TO 4:
220 FOR AB=0 TO 4:FOR AC=0 TO 4:
230 FOR AD=0 TO 4:FOR AE=0 TO 4:
240 FOR AF=0 TO 4:FOR AG=0 TO 4:
250 FOR AH=0 TO 4:FOR AI=0 TO 4:
260 FOR AJ=0 TO 4:FOR AK=0 TO 4:
270 FOR AL=0 TO 4:FOR AM=0 TO 4:
280 FOR AN=0 TO 4:FOR AO=0 TO 4:
290 FOR AP=0 TO 4:FOR AQ=0 TO 4:
300 FOR AR=0 TO 4:FOR AS=0 TO 4:
310 FOR AT=0 TO 4:FOR AU=0 TO 4:
320 FOR AV=0 TO 4:FOR AW=0 TO 4:
330 FOR AX=0 TO 4:FOR AY=0 TO 4:
340 FOR AZ=0 TO 4:FOR BA=0 TO 4:
350 FOR BB=0 TO 4:FOR BC=0 TO 4:
360 FOR BD=0 TO 4:FOR BE=0 TO 4:
370 FOR BF=0 TO 4:FOR BG=0 TO 4:
380 FOR BH=0 TO 4:FOR BI=0 TO 4:
390 FOR BJ=0 TO 4:FOR BK=0 TO 4:
400 FOR BL=0 TO 4:FOR BM=0 TO 4:
410 FOR BN=0 TO 4:FOR BO=0 TO 4:
420 FOR BP=0 TO 4:FOR BQ=0 TO 4:
430 FOR BR=0 TO 4:FOR BS=0 TO 4:
440 FOR BT=0 TO 4:FOR BU=0 TO 4:
450 FOR BV=0 TO 4:FOR BW=0 TO 4:
460 FOR BX=0 TO 4:FOR BY=0 TO 4:
470 FOR BZ=0 TO 4:FOR CA=0 TO 4:
480 FOR CB=0 TO 4:FOR CC=0 TO 4:
490 FOR CD=0 TO 4:FOR CE=0 TO 4:
500 FOR CF=0 TO 4:FOR CG=0 TO 4:
510 FOR CH=0 TO 4:FOR CI=0 TO 4:
520 FOR CJ=0 TO 4:FOR CK=0 TO 4:
530 FOR CL=0 TO 4:FOR CM=0 TO 4:
540 FOR CN=0 TO 4:FOR CO=0 TO 4:
550 FOR CP=0 TO 4:FOR CQ=0 TO 4:
560 FOR CR=0 TO 4:FOR CS=0 TO 4:
570 FOR CT=0 TO 4:FOR CU=0 TO 4:
580 FOR CV=0 TO 4:FOR CW=0 TO 4:
590 FOR CX=0 TO 4:FOR CY=0 TO 4:
600 FOR CZ=0 TO 4:FOR DA=0 TO 4:
610 FOR DB=0 TO 4:FOR DC=0 TO 4:
620 FOR DD=0 TO 4:FOR DE=0 TO 4:
630 FOR DF=0 TO 4:FOR DG=0 TO 4:
640 FOR DH=0 TO 4:FOR DI=0 TO 4:
650 FOR DJ=0 TO 4:FOR DK=0 TO 4:
660 FOR DL=0 TO 4:FOR DM=0 TO 4:
670 FOR DN=0 TO 4:FOR DO=0 TO 4:
680 FOR DP=0 TO 4:FOR DQ=0 TO 4:
690 FOR DR=0 TO 4:FOR DS=0 TO 4:
700 FOR DT=0 TO 4:FOR DU=0 TO 4:
710 FOR DV=0 TO 4:FOR DW=0 TO 4:
720 FOR DX=0 TO 4:FOR DY=0 TO 4:
730 FOR DZ=0 TO 4:FOR EA=0 TO 4:
740 FOR EB=0 TO 4:FOR EC=0 TO 4:
750 FOR ED=0 TO 4:FOR EE=0 TO 4:
760 FOR EF=0 TO 4:FOR EG=0 TO 4:
770 FOR EH=0 TO 4:FOR EI=0 TO 4:
780 FOR EJ=0 TO 4:FOR EK=0 TO 4:
790 FOR EL=0 TO 4:FOR EM=0 TO 4:
800 FOR EN=0 TO 4:FOR EO=0 TO 4:
810 FOR EP=0 TO 4:FOR EQ=0 TO 4:
820 FOR ER=0 TO 4:FOR ES=0 TO 4:
830 FOR ET=0 TO 4:FOR EU=0 TO 4:
840 FOR EV=0 TO 4:FOR EW=0 TO 4:
850 FOR EX=0 TO 4:FOR EY=0 TO 4:
860 FOR EZ=0 TO 4:FOR FA=0 TO 4:
870 FOR FB=0 TO 4:FOR FC=0 TO 4:
880 FOR FD=0 TO 4:FOR FE=0 TO 4:
890 FOR FF=0 TO 4:FOR FG=0 TO 4:
900 FOR FH=0 TO 4:FOR FI=0 TO 4:
910 FOR FJ=0 TO 4:FOR FK=0 TO 4:
920 FOR FL=0 TO 4:FOR FM=0 TO 4:
930 FOR FN=0 TO 4:FOR FO=0 TO 4:
940 FOR FP=0 TO 4:FOR FQ=0 TO 4:
950 FOR FR=0 TO 4:FOR FS=0 TO 4:
960 FOR FT=0 TO 4:FOR FU=0 TO 4:
970 FOR FV=0 TO 4:FOR FW=0 TO 4:
980 FOR FX=0 TO 4:FOR FY=0 TO 4:
990 FOR FZ=0 TO 4:FOR GA=0 TO 4:
1000 FOR GB=0 TO 4:FOR GC=0 TO 4:
1010 FOR GD=0 TO 4:FOR GE=0 TO 4:
1020 FOR GF=0 TO 4:FOR GG=0 TO 4:
1030 FOR GH=0 TO 4:FOR GI=0 TO 4:
1040 FOR GJ=0 TO 4:FOR GK=0 TO 4:
1050 FOR GL=0 TO 4:FOR GM=0 TO 4:
1060 FOR GN=0 TO 4:FOR GO=0 TO 4:
1070 FOR GP=0 TO 4:FOR GQ=0 TO 4:
1080 FOR GR=0 TO 4:FOR GS=0 TO 4:
1090 FOR GT=0 TO 4:FOR GU=0 TO 4:
1100 FOR GV=0 TO 4:FOR GW=0 TO 4:
1110 FOR GX=0 TO 4:FOR GY=0 TO 4:
1120 FOR GZ=0 TO 4:FOR HA=0 TO 4:
1130 FOR HB=0 TO 4:FOR HC=0 TO 4:
1140 FOR HD=0 TO 4:FOR HE=0 TO 4:
1150 FOR HF=0 TO 4:FOR HG=0 TO 4:
1160 FOR HH=0 TO 4:FOR HI=0 TO 4:
1170 FOR HJ=0 TO 4:FOR HK=0 TO 4:
1180 FOR HL=0 TO 4:FOR HM=0 TO 4:
1190 FOR HN=0 TO 4:FOR HO=0 TO 4:
1200 FOR HP=0 TO 4:FOR HQ=0 TO 4:
1210 FOR HR=0 TO 4:FOR HS=0 TO 4:
1220 FOR HT=0 TO 4:FOR HU=0 TO 4:
1230 FOR HV=0 TO 4:FOR HW=0 TO 4:
1240 FOR HX=0 TO 4:FOR HY=0 TO 4:
1250 FOR HZ=0 TO 4:FOR IA=0 TO 4:
1260 FOR IB=0 TO 4:FOR IC=0 TO 4:
1270 FOR ID=0 TO 4:FOR IE=0 TO 4:
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## NEW

### NEW FROM CENTRONICS

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20	20000	20	20000	20	20000
30	30000	30	30000	30	30000
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100	100000	100	100000	100	100000
110	110000	110	110000	110	110000
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130	130000	130	130000	130	130000
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380	380000	380	380000	380	380000
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In this fast and furious game you control a powerful spacecraft destined for the Xosion Star Corporation's solar energy grid. Your job is to collect as much energy as possible, avoiding the grid walls and disruptive energy pulses.

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Just match the date and time on the edges of both the 14" diameter hemispheres and you will see the stars as they will appear in the sky that night, including all the major constellations visible with the naked eye.

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:

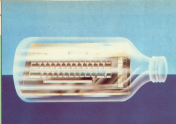
- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Postcode: \_\_\_\_\_ Age: \_\_\_\_\_

Send to:  
Sunsat Competition, Atari User, Europa House,  
68 Chester Road, Hazel Grove, Stockport SK7 5NS.



# How to squeeze a quart into a pint glass

**STEPHEN WILLIAMSON** presents a simple way to compress data – 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 sentences:

- "You are in an underground cave".
- "You are in a large underground cavern. Statues 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 x 120).

Add more detail by increasing the descriptions to an average of 300 letters or 6 screen lines and this jumps to 48,000 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 1080031P 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 8's *Worm in Paradise* adventure which has over 350 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 8 uses a technique known as data compression. Text is coded in less memory bytes than the number of letters in the original text.

Level 8 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 8 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 grubby green dragon".

The letters ee appear three times – in red, 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 sll a grubby g@lin dragon".

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

"@ you see a grubby @in dragon".

The full version of the sentence is, including spaces, 39 letters long, the second @ and the third @ – 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 160 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 is 1000 which is set in line 10.

If you want to analyse a longer string then line 10 must be changed and the maximum length of the string `PRG550` altered in line 50. If you are using a file 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 360 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 1130 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 80 such combinations. If you want to include combinations that only occur more than three times then the variable `PRG6` can be changed in line 105.

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 680 assign replacement inverse characters (ASCII characters 169 to 255) to each.

Not all these codes will necessarily be used in the encoding process. You may for example find the letter combinations `th` (`space+1+6`) 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 690 to 760. 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 (`PRG550`) is compiled which copies the string `TEXT%`, but closes up the gaps left by replacing the three letters

found 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 shared 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



with single characters (lines 770 to 860).

After the text has been encoded the compressed version (`PRG550`) 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 1260 to 1460) using the `PUT` command to record each character.

As well as the compressed string being saved, the string `CODE%` (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 `CODE%` 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

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 then 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 `th` (`space+1+6`) and that some parts of the text could be encoded with other 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. We should you'll have your own ideas on improving compressions. Why not write in and let us know?







# 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 each question 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 #1,0,"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 filepass such as "C:", "D: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 5% of program space to allow for

a possible future disc drive.

It would be far better if the memory-saving 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 #1,0,"P:"
PRINT #1, "HELLO"
CLOSE #1
```

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
\$C0B + 0	ICH0	1	Index into HATABS
\$C0B + 1	ICID0	1	Device number (D1, D2...)
\$C0B + 2	ICCOM	1	Command type (OPEN, CLOSE...)
\$C0B + 3	ICSTA	1	Current status of device
\$C0B + 4	ICBUH	2	Buffer or R/Wpass address
\$C0B + 4,7	ICPLH	2	Address of put-byte routine (C-1)
\$C0B + 8,9	ICBUH	2	Buffer data length sent/returned
\$C0B + 10	ICAR1	1	Auxiliary byte 1
\$C0B + 11	ICAR2	1	Auxiliary byte 2
\$C0B + 12	ICAR3	1	Auxiliary byte 3
\$C0B + 13	ICAR4	1	Auxiliary byte 4
\$C0B + 14	ICAR5	1	Auxiliary byte 5
\$C0B + 15	ICAR6	1	Auxiliary byte 6

Figure 1  
CIO structure

## I/O Channels









**COULD** you tell me where I can obtain the original Atari joystick Model C840, or telling 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 badly 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 and without doing irreparable damage.**

**If you are unable to help on that front, could you recommend any alternative joystick? I did buy a Quikstick stick from the Minidisk stand at the Atari computer show in March (1988), but after being accustomed to the sensitivity of**

**the Atari sticks I felt like using a 'shoot' with a loose handle. I also missed the base mounted the button.**

**I have been considering the Mach 1 joystick from Chessah Marketing, but £74.99 is rather a lot of money to spend only to find that I have bought another shoot.**

**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.C. Shop from Chessah, Wex for the invaluable tip about the small hole in the bottom of the C840. (June 1988 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. Gilling, 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.

## Auto Run for cassettes

**REGARDING** Ian James' query on auto run for cassettes, if he types `START "C:"` with the inverted commas as opposed to the normal `C:\>` and then when he wants to run program types `RUN "C:"` instead of `C:\>` as we normally do he will find the program will, as he puts it, *auto-run*.

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

■ This method does indeed work, but in a future issue we'll be 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 as 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 JOO, 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 JOO 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 Aladdin to re-ink printer ribbons.

**It was such a pity that their address was not included in the article. — D.A. Swaine, Kansas, Tennessee.**

■ Aladdin's address is: 9 Orion Ave, Manchester 10.

## To buy or not to buy

**I OWN** an 800XL. I have tried `PRINT` commands, the result was BS, 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-**

## 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 not as it does with one?**

**It does not list on the screen I have loaded Get it Right and then see it but all that happened was the program ran but no characters was**

**produced.**

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

**I have typed `PRINT` (LIST) and the answer was BS or I type if 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 reload the LISTED tape and press the Play key before you run Get it Right!**

programming in advanced machine code.

Also they said that I could have a Rev. C, but the 8000 could give me a Rev. B answer (80). This could apply to many other Atari units.

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 Heyes, Lynn, Oklahoma.

■ And we thought we'd heard the last of the Rev B/Rev C problem! If Silles told you that you'd only need Revision C Basic if you were working in machine code then they were really 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 broken Revision C cartridge then you will get the correct PERC value.

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

## 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, S, R, ., 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. — Shana Collette, 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

## ATARI USER Mailbag

WE welcome letters from readers — about your experiences using the Atari system, 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  
Europe House  
68 Chester Road  
Hazel Grove  
Stockport SK7 5NY

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 things there is a checkroom list, being a first timer I do not have the program for the checkroom. Could you please supply it? — R. Broadhead, Doncaster.

■ Our checkroom 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 43.

## Modem compatibility

I HAVE recently become interested in linking my 8000 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 300/3000.

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-Vieterm software, which will also work with the 850.

## Pound printing

REGARDING Pat Rax's letter in the September 1988 *Atari User*, I am getting a little tired of people trying to tell me that there is a way of putting the Z 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 Z sign I want to put a figure directly after it, say 11Z. 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 B1 or Esc B10. The second example would force an error, the first would have the desired effect.

The best that can be done is Z 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. Oh 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+0 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+0 48 would be a zero, Control+0 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 *AMARSI* 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 XMM500 is Epson-compatible, but 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 up/down and entering the codes for each page, but this is awkward and not always reliable. Now can I get around this? — Charles T. Miller, RAF Alconbury, Huntingdon.

■ The XMM500 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 strikes, have you thought of putting the start double strike command as the first part of a page header line? This might well cure your problems.

## Golden oldies

EXTRAORDINARY! Does that software house allow Atari loading for the Atari 8 bit machines, so the software

that's written at the moment isn't munching up to the quality on other machines.

Please would you review some of the older but brilliant games, like Crystal Castles, Right Sam 8, Chop-Lifter, Jumpman, Rainbow Master, Neonrunner, Tennis, etc.'s quest for times.

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 Cudgill

■ Anyone interested in the worth of older games for their 8 bit Atari should read the Games Old and New article in last month's Atari User.

## Cartridge loading

I HAVE just got a new game, Pharaoh's 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. Walsford.

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

Pharaoh'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 Modem/disk 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 disk on my 800XL. — William Owen, Glasgow.

■ Finally, you must remember to have your disk drive turned on and your DDD disk 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 disk (see your DOS manual for information on how to do this) and type BASIC "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. Williams, Middlesbrough, Lines.

■ For more information on this subject you should read the Computers review in the November issue of Atari User.

## Reverse video

HAVING successfully used my Atari User for a Right/Left 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 4260, 4470 and 4260.

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 to create video on the tape I thought. — H.P. Martin, Hatfield, 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 8, I promptly went out and bought it.

Well what can I say. Smash Hits is fantastic. After creating a Spectrum and a VIC20 I didn't know a computer game could be nearly like an arcade game. Thanks. — Jim Lennon, Leeds.

## Recorders and TrakBalls

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

What is the difference between the NCT1 and the NCT2 data recorders?

One final thing, are there any free 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. — Yvonne Olivier, 2 rue de la Liberté, 91320 St. Michel-Caselle, France.

correspond with Atari users anywhere in Europe. — Vasilis Pasmadakis, Aris Karatzidis, Athinapitou 8, GR-54625, Thessaloniki, Greece.

WE own an Atari 1000X with a 1080 disk drive and an Atari 1080 STP with both monochrome and colour monitor and would like to

swap Atari and ideas. — Klaus-Jürgen Jahn, 48, 2670 Pader, Belgium.

supposed to be comparable with any joystick-controlled game or function. — Paul Myers, Rossmore, Cheshire.

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

As for *Chop-Off*, 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 AmigaSoft 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 supercedes the XC11 recorder, but doesn't

seem to be quite as good. The XC12 is based on the Phonematch 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 football does indeed have a fire button — in fact it has two for greater convenience.

You can use a football in place of a joystick just so long as you remember to set it to 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 in-

crease 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 disk to speeds of up to 7400 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 entered

## YOUR HINTS AND TIPS

HERE are some tips for various Atari games.

Beer Belly Bart's Brew-Dr: 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 down men in and carry the base around with you.

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

Rescue on Fractalus: Only open the airlock when the pilot bungs 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 speech bubble 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.

Zonia: 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 hatchcock, boot and glass of water floating on it go through and up the ladder and there you are. If one or more are not floating then you must collect that item. — R.A. Lane, Derby.

## PASSWORDS

HERE are some passwords for Atari games:

Warhawk:

047H0W4R5K0U5E

Miner 2049er:

7110000001

Phoenician Curse:

57M570705

Dimensional Mine:

4000000004

— Paul Simpson, Swansea.

## SYNTHESIZER

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

There are music books out

for the Real Harris Synthesizer and, as the synthesizer has the same number of keys, these are ideal for the program. — Lee Mawson, Derby.

## USEFUL POKE

WITH reference to the letter from Jan Noble in the September 1986 Atari User, I have a POKE that may be of interest to him.

If you POKE \$4010 with 52 you will be able to play Live Strife or whatever through the tape unit while typing in letters.

Putting the same address with 53 disables the facility.

One hint: if an 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 \$50 for silence or 3 to resume normally.

Finally, can anyone tell

me the secret of getting through the third level of Super Tuxen?

Keep up the good work on the magazine, but I'll have some more on advanced (machine code!) sound techniques please. — Clive Alexander, Cardiff.

## CHEAT MODE

AFTER reading James Lloyd's tip on *Beauty and the Beast* in the October Atari User I was surprised to find that he had omitted the cheat mode.

To enter this mode, set special code to 67000, then hold down the P 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 — four mode on/off

D — advance one level

A — decrease one level

The code for ultimate beauty on *Warhawk* is: 047H0W4R5K0U5E

Can anyone help me to solve the final obstacle in *Factor*, 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 recordings.

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 FDC decoder circuitry.

## HELP!

*HAAS anyone else out there get Crusade in Europe? I really enjoy this game but have had the most annoying problem saving the longer scenarios so that I can come back to them later.*

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

*Twice I've written to Micro Probe at Albany House, but*

*they've not replied and so, though I enjoy the simulation, I can't tackle the longer scenarios as I haven't 16 hours in spare to do it all in one go. — Patrick Smith, Portsmouth.*

*I RECENTLY bought smash hits Vol. 5 for my Atari 800X, and I am having problems with the game Mediator.*

*I can load my spaceship and collect all six bones.*

*After collecting bone No. 6 my horse appears but now what do I do? Can anyone help? C.P. Satter, Barry, South Glamorgan.*

*I HAVE a problem with Mastertronic's smash hits Ninja. Where do I go after Akuma's chamber? — John Baxter, Dunderdon, 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 Gladiat 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.*

*I know of my problems. Here are hints for a couple of games.*

*Gladiat: While the life is moving up hold the javelin to the left and you will start off at top speed.*

*Jay in Spar II: When lightning drops on the right hand side and you'll always win. — Philip Snape, Ramorn, Cheshire.*

## ACTION BIKER

*I FIND my Atari 800X computer very demanding 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 Commodore. He had hoped there was a city after the race.*

*Action Biker objects and places:*

*The tree near the gate — crash helmet. Back of petrol station — riding leathers.*

*At the back of the background — lightning rods.*

*Building yard — gears.*

*In fences by background — 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 background — mudguards.*

*In fences near to drag track — sunglasses.*

*Inside background — falling.*

*Next to drag track — can of pop.*

*Building yard — wheel.*

*In fences near drag track — exhaust pipe.*

*In the ramps — power*

*brakes.*

*Back of petrol station — speedometer.*

*Building yard — brake lamp.*

*Back of background — oil can.*

*Building yard ramps — turbo charger.*

*The ramp — cooling fan.*

*Back of petrol station — indicators.*

*Top of background — mirror.*

*Next to drag track — two time limit.*

*Building yard ramps — reflections.*

*Next to drag track — road signs.*

*Back of petrol station — electric starter.*

*On top of the background — lunch box.*

*Next to drag track — CD radio.*

*Building site — go faster stripes.*

*Next to petrol station — water pipe.*

*Next to ramps — the anti-impulser.*

*In lake — fog lamp.*

*Building yard ramps — stop watch.*

*Back of background — moss on trees.*

*Building yard ramps — petrol's 10-11.*

*Lake — electronic ignition.*

*Pond — new counter.*

*The ramp — 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 logo is AUSA-TRAILA.*

*The security checks are:*

*1. MAGMA/CTD.*

*2. JLY/CTD/CTD.*

*3. HYPERMAG/CTD.*

*4. AUSA/CTD.*

*Here is the route I took and what I offered: France, Egypt, chronology, Greece-state of Nat, Chinese-made search, New Zealand to Swiss state, Hong-Kong state and bonds. Russia-cultured pearls, England-Jade carving or Silver camera, Brazil-Jade carving or Silver camera, San Francisco-Master's album.*

*Also password for Oliver Follies are: Frank, fenda, north and south. — Mark Ashton, Hagley, West Midlands.*



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and play . . .  
and play . . .*

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High-pressure conditions resulted in reduced porosity, increased brittleness and other effects. Results are discussed.

**STUDY ROOMS:** 100-101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916,

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- **Partial Input/Output Mode**
- **Internally Generated Input/Output Mode**
- **External Input/Output Mode**
- **External Input**
- **External Output**

Source: U.S. Census Bureau, *Marriage, Divorce, Remarriage in the 1990s* (Washington, D.C.: U.S. Government Printing Office, 1995), p. 10.

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Figure 1. The effect of the concentration of the solution on the adsorption of the dye. The concentration of the solution was 0.01, 0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.09, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.5, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 15.0, 20.0, 30.0, 40.0, 50.0, 60.0, 70.0, 80.0, 90.0, 100.0, 150.0, 200.0, 300.0, 400.0, 500.0, 600.0, 700.0, 800.0, 900.0, 1000.0, 1500.0, 2000.0, 3000.0, 4000.0, 5000.0, 6000.0, 7000.0, 8000.0, 9000.0, 10000.0, 15000.0, 20000.0, 30000.0, 40000.0, 50000.0, 60000.0, 70000.0, 80000.0, 90000.0, 100000.0, 150000.0, 200000.0, 300000.0, 400000.0, 500000.0, 600000.0, 700000.0, 800000.0, 900000.0, 1000000.0, 1500000.0, 2000000.0, 3000000.0, 4000000.0, 5000000.0, 6000000.0, 7000000.0, 8000000.0, 9000000.0, 10000000.0, 15000000.0, 20000000.0, 30000000.0, 40000000.0, 50000000.0, 60000000.0, 70000000.0, 80000000.0, 90000000.0, 100000000.0, 150000000.0, 200000000.0, 300000000.0, 400000000.0, 500000000.0, 600000000.0, 700000000.0, 800000000.0, 900000000.0, 1000000000.0, 1500000000.0, 2000000000.0, 3000000000.0, 4000000000.0, 5000000000.0, 6000000000.0, 7000000000.0, 8000000000.0, 9000000000.0, 10000000000.0, 15000000000.0, 20000000000.0, 30000000000.0, 40000000000.0, 50000000000.0, 60000000000.0, 70000000000.0, 80000000000.0, 90000000000.0, 100000000000.0, 150000000000.0, 200000000000.0, 300000000000.0, 400000000000.0, 500000000000.0, 600000000000.0, 700000000000.0, 800000000000.0, 900000000000.0, 1000000000000.0, 1500000000000.0, 2000000000000.0, 3000000000000.0, 4000000000000.0, 5000000000000.0, 6000000000000.0, 7000000000000.0, 8000000000000.0, 9000000000000.0, 10000000000000.0, 15000000000000.0, 20000000000000.0, 30000000000000.0, 40000000000000.0, 50000000000000.0, 60000000000000.0, 70000000000000.0, 80000000000000.0, 90000000000000.0, 100000000000000.0, 150000000000000.0, 200000000000000.0, 300000000000000.0, 400000000000000.0, 500000000000000.0, 600000000000000.0, 700000000000000.0, 800000000000000.0, 900000000000000.0, 1000000000000000.0, 1500000000000000.0, 2000000000000000.0, 3000000000000000.0, 4000000000000000.0, 5000000000000000.0, 6000000000000000.0, 7000000000000000.0, 8000000000000000.0, 9000000000000000.0, 10000000000000000.0, 15000000000000000.0, 20000000000000000.0, 30000000000000000.0, 40000000000000000.0, 50000000000000000.0, 60000000000000000.0, 70000000000000000.0, 80000000000000000.0, 90000000000000000.0, 100000000000000000.0, 150000000000000000.0, 200000000000000000.0, 300000000000000000.0, 400000000000000000.0, 500000000000000000.0, 600000000000000000.0, 700000000000000000.0, 800000000000000000.0, 900000000000000000.0, 1000000000000000000.0, 1500000000000000000.0, 2000000000000000000.0, 3000000000000000000.0, 4000000000000000000.0, 5000000000000000000.0, 6000000000000000000.0, 7000000000000000000.0, 8000000000000000000.0, 9000000000000000000.0, 10000000000000000000.0, 15000000000000000000.0, 20000000000000000000.0, 30000000000000000000.0, 40000000000000000000.0, 50000000000000000000.0, 60000000000000000000.0, 70000000000000000000.0, 80000000000000000000.0, 90000000000000000000.0, 100000000000000000000.0, 150000000000000000000.0, 200000000000000000000.0, 300000000000000000000.0, 400000000000000000000.0, 500000000000000000000.0, 600000000000000000000.0, 700000000000000000000.0, 800000000000000000000.0, 900000000000000000000.0, 1000000000000000000000.0, 1500000000000000000000.0, 2000000000000000000000.0, 3000000000000000000000.0, 4000000000000000000000.0, 5000000000000000000000.0, 6000000000000000000000.0, 7000000000000000000000.0, 8000000000000000000000.0, 9000000000000000000000.0, 10000000000000000000000.0, 15000000000000000000000.0, 20000000000000000000000.0, 30000000000000000000000.0, 40000000000000000000000.0, 50000000000000000000000.0, 60000000000000000000000.0, 70000000000000000000000.0, 80000000000000000000000.0, 90000000000000000000000.0, 100000000000000000000000.0, 150000000000000000000000.0, 200000000000000000000000.0, 300000000000000000000000.0, 400000000000000000000000.0, 500000000000000000000000.0, 600000000000000000000000.0, 700000000000000000000000.0, 800000000000000000000000.0, 900000000000000000000000.0, 10000000

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