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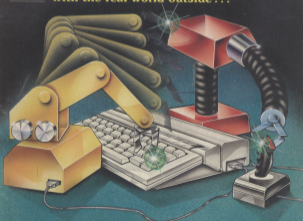
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this
issue



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Take your choice of two special offers if you subscribe to Atari User this month.

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Even if you've already got a subscription, there's a special offer on the Hacker's Handbook, plus lots of other goodies.

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Two completely different approaches to the same problem - how to give your 520ST a massive 1024k memory.

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Andrew Bennett gives you more hints and tips on the ST, and answers some of your queries.



Art and the ST

BEING developed by Astronema Software for release by Microsoft next month is ST Art. This paint program will handle both graphics and text, produce an A4 printer for instant leaflets, and offer a realistic display facility with simple animation.

It will be compatible with the ST version of Microsoft's personal publishing package *Page Street Editor*, due to be launched in September.

No price has been set for this latter package, but it is likely that two versions will be published - a full-blown professional program and a cut-down version for the home, education and small business markets.

Also promised by Microsoft for the ST are *Strike Force Harrier* and *Spitfire 40* for flight simulation fans.

Accounts suite

A SUITE of integrated accounting software for the Atari ST range has been released by Systematic International Microsystems.

The range includes General Ledger and Financial Planning, Sales Ledger, Purchase Ledger, Invoicing, Stock Control, Payroll and Job Costing.

Prices range from £250 to £490.

EXIT THE 520ST PACKAGE

THE 520ST-based computer package that spearheaded the rebirth of Atari under Jack Tramiel has been phased out.

Having served its purpose of achieving a foothold in the UK serious-user market, the original £745 configuration of release, monitor, external disc drive and mouse has been overtaken by the new breed of Atari technology.

This includes the 520STX, 1040STP and the soon-to-be-available 520STX.

Since the basic 520ST would be of little use without its own monitor, the 520STX includes a modulator which allows connection to a domestic television set.

The £399.99 520STX will still run with either a monochrome or an RGB colour monitor, and can be connected to a composite colour monitor such as a TV with a video input socket.

Although the operating system - 100/56M - is now provided in ROM, you must now buy an external disc drive to actually do anything with the machine - unless you want to wait for the new cartridge-based software to be released.

Atari's 500B drive, originally supplied with the 520ST, costs £149.99 and the 1mbyte ver-



Making way for new breed

sion £199.99. Alternatively, Southern-based AST has produced an ST compatible 1mbyte drive for the surprisingly low price of £89.

There is still no information as to when the 520STXs with built-in disc drive will be available, although a price of

£499.99 has been announced.

For those who still want to buy a bundled machine at an all-in price, Atari's 1mbyte monitor with a built-in 1mbyte drive - the 1040STP - is available with a monochrome monitor at £299, or with an RGB colour monitor at £399.

ATARIS IN YOUTH TRAINING DRIVE

THE proceeds of a lost property sale by police has helped buy Atari machines for a youth club project.

One of the computers, an Atari 1300X, was taken from the Honor Oak Youth Club, Lewisham, and used for demonstrations at a national conference on computer work in the Youth Service about the Royal Princess on the Thames.

The club's senior youth worker, Mike Partners, said: "We have four Ataris - two 800XLs, a 1300X and a 520ST with disc drive - all bought by donations from friends of the club, Inter-Action - an educational charity - and local



Atari in use at the conference

police after their lost property sale.

"The conference tried to show how youth clubs now need computers to train youngsters ready for the new age of technology. I think

within the next five years no one will even be able to get a job-stacking shelves unless they can use a computer".

Atari has already funded the buying of machines for youth clubs and in the past also loaned

100 8000Ls for use at community camps.

The company also donated two 800XLs to Inter-Action and Community Computers UK, who help link organisations to potential backers.

The Ataris are helping teachers Britain's youth clubs into job springboards, according to Ed Herman, founder of Inter-Action, an educational, non-profit making charity, which aids clubs and organisations.

● The Department of Education and Science has just announced a £75,000 grant over the next three years to Inter-Action for their youth club computer projects.

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Bits & Bytes Atari Top Twenty Chart			
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Atari 1040S	2	2	10
Atari 1040SE	3	3	10
Atari 1040SFX	4	4	10
Atari 1040SFX2	5	5	10
Atari 1040SFX3	6	6	10
Atari 1040SFX4	7	7	10
Atari 1040SFX5	8	8	10
Atari 1040SFX6	9	9	10
Atari 1040SFX7	10	10	10
Atari 1040SFX8	11	11	10
Atari 1040SFX9	12	12	10
Atari 1040SFX10	13	13	10
Atari 1040SFX11	14	14	10
Atari 1040SFX12	15	15	10
Atari 1040SFX13	16	16	10
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BIG BOOST FOR ATARI SOFTWARE

FOLLOWING major deals with two top independent software houses a new series of Atari ST adventure games from Rainbird Software is in the pipeline.

The recently-released *The Pawn* is one of seven disc-based adventures to be written for Rainbird over the next two years by Magnetic Scrolls.

Level 9 Computing has also signed an agreement to provide three Rainbird products for the Atari ST over the coming year. After meeting program authors from the two companies publisher Tony Rainbird said: "Part of the Rainbird expansion will involve revealing the current trend of imported American software, to which we've already made a considerable impression on the American market with British games and utilities".

Magnetic Scrolls' commitment will give Rainbird world marketing rights for a further six new games after *The Pawn*, starting with *The Guild of Thieves*, available in the autumn. All programs will be disc based and 16 bit versions



will feature "stunning" illustrations.

Andy Sinclair, managing director of Magnetic Scrolls, said: "This agreement with Rainbird enables us to continue our research into natural language and other artificial intelligence-related projects".

Level 9's deal was signed by Peter Austin, one of the partners in the brothers-and-sister company. He said: "We expect a substantial increase in adventure playing and Rainbird is prepared to support our products in a unique way".

Rainbird will initially market Level 9's re-written *Colossal* trilogy - *Colossal Adventure*,

Dungeon Adventure and *Adventure Quest* - as a disc set (£19.95 for the Atari ST and a triple cassette at £13.95 for the 8 bit machines).

A second multi-titled adventure, provisionally called *Knights Out*, is due out in September, with a third, probably a three-cassette package, following two months later.

Picture shows Rainbird's adventure teams (left to right) the Level 9 brothers-and-sister team of Mike, Peter, Nick and Margaret Austin, Mike Clark, Tony Rainbird and Paula Byrne of Rainbird Software and Ken Gordon and Andy Sinclair of Magnetic Scrolls.

Tips for authors

GAMES publisher Superior Software is looking for people with new ideas for programs for the Atari range.

The firm is offering a free guidelines, *Top Tips for Games Authors*, which contains general advice about selecting suitable software publishers and writing games software.

Sales manager Ken Campbell says: "The rewards for games authors can be enormous.

"Tim Tyler, one of our authors, who is only 13, has amassed more than £26,000 in royalties over the past year and that figure is still increasing week by week".

ATARI'S ST PRINTER

ATARI has launched the first of its own range of printers for its ST computers.

The SMM804 dot matrix 80 column printer introduces a new line of high speed printers that will be of integrated design to complement the 16 bit ST range.

Rob Harding, Atari UK's marketing manager, said: "It is our intention to become the major supplier of all kinds of printers including the daisywheel, dot matrix and laser models during the next 12 to 18 months.

"They will all be priced at affordable levels in order to sell substantial volumes".

The SMM804 costs £129.

Single handed joystick

TWO new joysticks for the Atari games machines have been launched by Palen Electronics.

The Fantastic II has rapid-action dual electronic fire buttons suitable for both left and right handed players.

It also has eight directional movement with auto-centering and auto-fire control and comes with a two metre cord. Price: £5.95.

The Galactador II Plus has microswitches with auto-fire capability and two fire buttons so users can shoot with thumb and trigger finger. The mechanism can be locked to allow a continuous burst of bullets.

Single-handed video game play is possible with the Galactador II Plus as a result of the built-in cursor keys. It costs £12.95.



ACCOUNTS ON MENU

records of stock.

CashLink Accounts costs £295. A full accounting package with Atari 520SE, disc drive, monitor, printer and accounts program is offered at £1195.

A NEW version of CashLink Accounts has been produced by CashLink for the Atari 520SE.

The program, designed for small to medium-sized businesses, takes advantage of windows and pull-down menus.

It offers a complete accounts department, handling all credit accounts and cash sales, with full accounting ledgers and

Budget Gold

A GAME that cost almost £50 when it was first imported from the USA is now on sale for just £2.99 for the Atari 8-bit machines.

Shamus, an all action adventure, is one of four bargain priced arcade games from America now being sold under license by US Gold in Britain.

The Americans series also includes New York City, where dangers lurk at famous landmarks. Scooter, a multi-level three dimensional game, and Gates Padies with 16 screens of action-packed challenges.

All cost £2.99, and are available on cassette only.

Inside the ST

THREE new books for the Atari ST user come from First Publishing.

The Anatomy of the Atari ST includes detailed descriptions of the sound and graphic chips, internal hardware and a fully documented BIOS assembly listing.

Gain on the Atari ST gives information on the Gem operating system in easy-to-follow language.

Atari ST Tricks and Tips explains basic commands to access Gem using VDMSD and GEMDOS and describes resource files with examples. Each book costs £12.99.

Bugs menace

GEM! warfare is the theme of Firstbit's Atari 486 release, the Camel Game. It comprises three phases in which there is just one chance to save the world from germ bugs that infect a look-alike Halléy's Comet.

The aim is to hit enough of the germ bugs to stop a colony reproducing and infesting the earth's surface. Price £T.99.



ATARI WILL BID FOR NAVY CONTRACT

ATARI will be competing when tenders are invited by the Royal Navy to supply standard courses for floating classrooms for its junior officers and young sailors.

Britain has had to double the number of sailors in sea-going jobs, cutting the time spent in educational training ashore.

Some warships have a variety of computers bought from ship's funds for study and recreation, as well as the officially installed computers needed for analysis of performance of missiles, guns and other weapons.

But the Royal Navy wants a standard machine capable of helping sailors' basic education in mathematics, English and other subjects, as well as

professional courses previously taught ashore.

The idea is that by providing a standard computer a step-by-step teaching system can be worked out so sailors can learn either computerised operational work or O&B and O&C subjects at their own pace and be able to go back over parts they do not understand.

A Ministry of Defence spokesman told Atari User: "It is the intention to purchase a standard computer for all our ships for the education of sailors and junior officers afloat. But what type of computer will be installed will of course depend on the competitive price of the tenders".

The Royal Navy at present has 28 submarines, three oil-

craft carriers, 14 destroyers, four Fleet tender training ships, an ice-patrol vessel, eight survey ships, and a number of frigates, which would all need computers - the larger vessels requiring many additional machines.

Rob Harding, marketing director of Atari, said: "We are very interested to hear about this opportunity to provide computers for the Royal Navy."

"The ST range offers undeniable value both in price and performance and is also very flexible."

The ST is proving very popular at all levels of education and should suit them perfectly.

"A number of educational packages will be ready for the ST in the near future".



Part of Textstar's new showroom

Business is booming

MORE than 1,400,000 has been installed by distributor Textstar Computers to improve its services for Atari users.

Over the last three years business boomed so much at its West London shop - just 750 sq ft - the company was forced to move to larger premises.

In two months two buildings covering 7,000 sq ft in Southall have been converted into a well-stocked warehouse and extensive showroom.

Roxy Diesel, managing director, said: "The Atari ST range brought about increased sales".

Upgrade the 520 ST to one megabyte and add the professional look from under £100!

MEMORY CARDS

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NEWSLETTER

MICROLINK TRANSFERS SPACE PROBE DATA

MICROLINK has been chosen to provide vital transmission communications for a project that will eventually push back the frontiers of space exploration.

An organization called **Aspa** - Association in Scotland To Research Into Astronautics - is experimenting with the design of a spacecraft that could travel millions of miles hopping from planet to planet and will survive a closer encounter with the sun.

It is based on a concept known as **Waverider**, originated 20 years ago at Glasgow University by Professor Terence Monweller, where the vehicle

flies at hypersonic speeds in the shock waves produced by its leading edges.

The project has attracted the attention of the Jet Propulsion Laboratory of the University of California which is working with NASA which is working with NASA which is working with NASA

The **Advertiser** was the main spokesman for the vehicle's progress because it can travel for long periods by leaving from one planet to another, harnessing the gravitational force of each in the manner of a slingshot.

A leading member of the Starprobe team, James Macdonald, has been in Scotland

to see the work in progress. "Waverider is an ideal solution, perhaps the only one, to the problem of finding a vehicle with a high lift-to-drag ratio", he said after his inspection.

Microlink's role in the project is to act as a fast and efficient medium for transmitting information from Aspa in Scotland to the Jet Propulsion Laboratory in California.

"Wind tunnel test data and other data are constantly being accumulated and have to be passed on to JPL, as soon as possible. Therefore we have turned to Microlink as a cost-effective and rapid means of data transfer", said a spokesman.

Airlines guide goes on-line

AVANT handles all a subscriber to **Microlink** has entered an era of trouble-free and more economical flight arrangements.

The reason is that **Microlink** now provides instant round-the-clock information from the table of passengers, the International Official Airlines Guide.

Known as **OAG**, it offers the very latest data from more than 780 airlines world-wide, with details of 17 million flights.

Microlink subscribers can be connected within seconds via satellite to the **OAG** computer in Oak Brook, Illinois, which monitors the 38,000 changes in fares which take place daily, and the 30,000 weekly schedule revisions.

And **OAG** is a real money-saver because all the fares for each airline on any given route are accessible from the lowest to the highest.

The service also boasts an "elegant" time feature which takes into account any stopover time during flights, thus enabling the passenger to select the journey with the shortest possible duration.

The **OAG** service is easy to use. It will accept full spellings or airline codes or destinations, and the user can select information either by single line entries or by using prompts on the system.

Menu for a good night out

ALL the world's a stage, and nowhere more so than London where theatregoers have a choice of over 40 glittering shows.

Now, in association with renowned booking agency Edwards & Birkhead, **Microlink** can reserve your seat in the stalls at any of them.

TheatreLink is a new service from **Microlink** incorporating every play, musical, thriller, comedy and opera - plus major reviews and cast lists - being presented in the capital.

The cosmopolitan of entertainment ranges from the evergreen **the Mousetrap**, through old and new favour-

ites like **Elton John**, **Cats** and **Rain** for **Your Will**, to the new musical **Tom**.

To help you make your choice, the menu not only gives a full alphabetical list of every show currently running in London but also breaks it down into categories such as musicals, plays, comedies, thrillers and so on.

And as well as performance times and seat prices, each individual show listing contains the names of the stars appearing and a helpful description of its theme.

Bookings on **TheatreLink** can be made 24 hours a day, seven days a week up to the day before the performance you wish to attend. Seats for

Friday and Saturday performances must be booked at least two days in advance.

Reservations will be confirmed by your mailbox within an hour if you book between 10am and 4.30pm, Monday to Friday.

Tickets will be charged to your credit card and either posted to you on the same day or held at the box office of the appropriate theatre.

TheatreLink is menu driven for maximum user-friendliness and also incorporates a section giving all the latest show news and a breakdown of which theatres will have seats available for performances during the current week.

American Scene

EDWARD SHARK reports

MDW York, New York, so good they named it twice! This is a debatable fact for those who have spent any time there, but one good thing to come from the Big Apple is Philon. It's one of the most professional of the software houses currently writing for the ST.

Two products have emerged from this company - Henry's Fundamental Basic and Fast/Basic M. The former is an introductory language which can be used by first time users through to advanced Basic programmers.

The package contains a whole host of built-in features but, more importantly, it is upwardly compatible with the second package.



Fast/Basic M is Microsoft MBasic compatible, which means that programs can be transported from other micros. The two packages represent a strong opposition to the current Atari ST Basic and the price will not break the bank. Henry's Basic will retail for £40 and Fast/Basic M for £35.

Philon also plans three more titles to add to the ST library - Fast/C, priced at £125 and Fast/Portrait and Fast/Color at £245.

The graphics aspect of the ST is an exciting area for many people. The sheer resolution of the ST graphics handling makes the machine a must for creative people. Degas was the first to illustrate the power of the machine's graphic capabilities, and we are now starting to see more graphic packages arrive on the scene. Kent Software has produced three, one of which, Topsetter, claims to be the perfect tool for layout and design. I found it interesting in as much as you can load Degas pictures into the program and reduce or enlarge them and add text. At £39.95 it represents a good utility to use alongside Degas.

Moving on to the real professional programs we find Easy-Draw from MI-Graph which is truly excellent. If you have ever had the good fortune to see Gerni Draw this package will amaze you.

You can create floor plans, landscape design, architectural designs, or simply draw pretty pictures. The printed results are very good, with the ability to print either a landscape picture or a portrait.

Apart from owning a 132005 and a 5205T, I also admit to an IBM XT. Until recently the IBM was very useful because, in the course of its working week, I used a very powerful relational database, dBase II (it did the job excellently - until I received a package from a company called Holmes and Bushworth).

H & B Base is basically dBase II, but for the 52070405T. You can even run dBase II files created on another machine without any alterations. It retails for £99.99, and should turn out to be the software package of the year for the serious business user.

For the 8-bit Atari, Origin Systems has at last released the long awaited sequel to Ultima III. Not surprisingly it is called Ultima IV. The game claims to be 15 times larger than its predecessor and takes up four disc sides.



Inside the packaging you will find the discs, a book on the history of the kingdom of Britannia, another on the Mystic Wisdom of the game and a very informative players reference guide. The nicest touch to the whole package is the map, which is printed in full colour on cloth and looks rather nice on my wall. It will doubtless be available within the next few months from US Gold, but do not expect all the refinements that come with the US version.

The American Civil War is the topic of 88T's latest contribution to the world of the strategist. Battle of Antietam for the 8-bit Atari is set in Maryland on the day the battle took place between Robert E. Lee and his army of North Virginia and the army of the Potomac lead by General George McClellan. The simulation is up to the usual 88T standards and

retails for £39.95.

If you read last month's column you might remember a company I told you about called Hippopotamus. Well, I have received another Hippo package for the ST called HippoConcept which is an outline and idea processor.

Imagine you are preparing notes on a subject but do not have the time to elaborate on those notes at the time you record them. When you come back to them, the program will allow you to elaborate and format them into an orderly manner, adding, deleting and editing as necessary.



It is difficult to explain the full working details of the program in a few words but, for the person who likes to put his or her ideas down on the spur of the moment, and make sense of them at a later date, this package will certainly help.

When it comes to arcade games and the like my interest begins to fall. On the other hand, I do enjoy it game where you are not tied down to speed and joystick ability. Word for Word is for me. Copyright and trademarks prevent the authors, Ray View Software, from calling it by the name I do, and that is Scribble.

This is possibly the best version of the famous board game produced for any computer. I don't need to say much more, apart from the fact that when used on the ST the mouse is invaluable. The price of the game in the UK will be £39.95.

I have just finished reading the American magazines *Amic* and *Amiga*, and I am pleased to say that the products reviewed in their latest issues are ones that Atari User covered some time ago!

It is nice to find that a British magazine is more up-to-date on American products than the Americans themselves, and you can read *Atari User* for a third of the cost of our American cousins.

Until the next time.

Classy classic

Program: The Tail of Beta Lyrae
Price: £8.99 (casualist),
£14.99 (total)
Supplier: Datacube, Suite 214
Rivers Terrace, Highgate
Road, London NW6 1PL
Tel: 01-482 1155

DESPITE its novel title, The Tail of Beta Lyrae turns out to be none other than a cloned version of Skieside, a game that first saw the dim light of an arcade about three or four years ago.

Basically the game consists of flying a fighter spacecraft through a series of courses. The happenings on screen are displayed in standard two-dimensional, cross-sectional mode. Your view is from the side.

The spacecraft flies from left to right through the caves but can accelerate or decelerate, and can move up and down. The cave scenery scrolls smoothly to the left as you progress.

The cave system is divided into a number of sectors, each being further divided into subsectors. Your progress is marked by indicators at the top of the screen.

If you lose one of your lives by crashing into something solid or getting shot down, you

continue from the particular sector and sub-sector where the disaster occurred.

Loose all of your lives, though, and you are right back at the beginning of the complex again.

Each sector gets progressively harder, with the caves ever more claustrophobic and twisty. Likewise the quantity, variety and pertinaciousness of the cave's defence systems grow with each passing sector.

The defence systems consist of two main elements. First, there are obstacles which block your way but don't go out of their way to attack your ship.

These consist of such things as generators, scanners, antennae and mid-air barricades.

Secondly there are the actively aggressive components such as alien vessels, asteroids and different types of ground to air missiles - rockets, lasers and plasma streamers.

Particularly nasty are the Rockfibre missiles which, as their name suggests, fly up at an angle towards the unprotected rear of your ship.

Your sole means of defence, apart from agility, is a forward-firing, repeater



cannon which is used to blast any obstacles and attackers that are destructible - and not all are.

If you are skilled enough to reach them, there are city settlements and the aliens' power generators within the complex. Your mission is to destroy these generators.

The game allows up to four players and has six skill levels. Level 1 being tough and 6 plain suicidal, so fast and ruthless are the attackers and hazards.

You may choose to have five or seven spacecraft at your disposal.

One unusual feature is that the caves and their contents appear to be randomly generated during play, so the game is different each time you start up your spacecraft.

The drawback is that there is no way you can map the cave layouts, thus making

eventual victory that much more difficult.

Not an original game by any means, and I missed the ability to battle as well as shoot that other versions have included. Even so, this is the best Skieside clone I've seen on any video.

Presentations, graphics, sound effects and music are all good quality, and with its random generator and range of options, the game should prove to be durable.

The Tail Of Beta Lyrae is an exciting and challenging shoot-em-up that any fan of the genre would enjoy playing. A first-rate implementation of a classic arcade game.

Bob Chappell

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

A seat on the managers' bench

Program: Football Manager
Price: £9.95
Supplier: Datacube Games, PO
Albert Road, Bournemouth
BH7 1BZ. Tel: 01202
229404

As you have guessed, your role here is to manage a club of your choice. The job ahead is to make your club from the Fourth Division to the first, and possibly win the FA Cup on the way.

This is by no means easy because players get injured, you lose a few too many matches and your gate receipts go down forcing you to take out a loan - with all the

hazards of borrowing from the bank.

The first thing you do is select one of the current British Football Association league sides. Next you select a skill level, ranging from beginner to genius. All choices are made via the keyboard, so be prepared for lots of typing.

Then on to the main screen where you sell or let your players, arrange a loan, or perhaps pay one back. Loans can range from £150,000 for a Fourth Division team to £1,000,000 if you make it to the top.

Before every match you select your team. A careful

evaluation of a player's morale, energy and skill will be needed if you want to succeed.

After every match you are given your share of the gate receipts and shown the results of the other games played in your division, thus allowing a league table to be calculated.

Fourteen matches later you are marked for your end of season league placement. If you are promoted you can look forward to the start of a new season.

Football Manager is a fun game with only three faults. It is written in Basic, so play is rather slow, there are no graphics, and it is only

available on cassette. This is a shame as so many Apple owners have disc drives now. Software houses should take note.

On the positive side, there is a save game feature which means that you don't have to start from scratch every time you load.

Football Manager is a good game in which you can really get involved.

Paul Irvine

Sound	..... 8/10
Graphics	..... 8/10
Playability	..... 7
Value for money	..... 8
Overall	..... 8

Cavern capers

Program: *Sidewinder*
Price: £9.99 (retail),
 £14.95 (hbl)
Distributor: Futureware, 143
 Grove Inn Road, London
 W67 1JH, 081-61-089
 7317

SIDWINDER is a well-written arcade game where you have to pilot a helicopter through underground enemy installations in search of kidnapped colleagues.

As my helicopter appeared on the take-off pad the screen filled with laser beams, gravity bombs and various large buildings and caverns.

I took off and the screen scrolled from right to left, revealing even more traps and

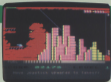
joystick-breaking twists and turns.

Reaching the other end of the cavern after what seemed a nerve-shattering eternity I landed on the pad. Suddenly this raised to an upper take-off point and I had to fly back to the starting pad while avoiding new hazards.

Eventually I completed the first level, and progressed to a more difficult cavern with stronger defences.

You can replenish your ever-declining fuel supply by bombing fuel pods.

There are five caverns, and the fuel pods become harder and harder to hit. If you manage to complete the fifth cave there is quite a surprise in store, but I will leave that for



you to discover for yourselves.

Sidewinder is great fun to play because it holds your attention, something that is missing from a lot of software nowadays. I found it very addictive, playing game after game to get on to the next cavern.

The program also offers a

screen editor which allows you to design your own caverns, saving them to disc or tape.

Paul Irvine

Sound	F
Graphics	H
Playability	H
Value for money	H
Overall	H

Danger, addictive

Program: *Boulderdash II*
Price: £9.99 (retail),
 £14.94 (hbl)
Distributor: Dynamic, Suite 314,
 Grove Terrace, Wightgate
 Road, London SW46 1PL, Tel
 01-462 1750

If you've a taste for games that leave you red-eyed and stiff-fingered, that have you saying for the 89th consecutive time, "I'll just have one more go", that even such an inescapable grip that you lose track of time, then *Boulderdash II* is just your cup of tea.

Its predecessor, *Boulderdash*, was one of the most enjoyable, addictive games ever released, a computer classic no less. This follow-up, although it is pretty much the same release as before, is every bit as gripping.

You control a cute little figure called Rockford who binks and taps his foot impatiently if you leave him idle. Rockford's task is to turn his way through a series of two-dimensional caves and collect as many jewels as he can.

Now while the plot may

strike you as perhaps lacking in the originality department and although the graphics, while pleasant, are nothing to gaze about, the game has one ingredient that sets the whole thing alight and starts the old adrenalin coursing. In a word, boulders.

Large boulders, embedded in various parts of the strata, are scattered liberally throughout the cave system. What makes the game so much fun is that the boulders are prone to come crashing down with a noise like thunder.

If Rockford is in the path of a falling boulder, and doesn't shift smartly out of the way, he gets squashed and loses one of his three lives.

The boulders drip predictably. They will either fall straight down if unsupported or topple off underlying objects if there's nothing else to hold them in place.

You'll soon master the laws of physics in *Boulderdash* but there still remains the need to adopt a careful strategy if you're to succeed.

As well as the boulders, reeling bunterflies, amoebas, reptiles and other obstacles



and obstacles see to it that you're kept on your toes.

You control Rockford's movements with normal joystick manipulations. He leaves a tunnel behind him as he goes, and automatically collects any jewels he passes over.

When a certain number of jewels have been gathered, a secret exit appears, giving Rockford the chance to move on to the next cave.

There are 18 new caves to traverse, each of which consists of several scrolling screens and has its own unique layout and set of problems.

To increase the playing life of the game, each cave has five selectable difficulty levels; the greater the difficulty level, the more jewels you have to

collect and the less time you have to do it in.

In addition, there are four non-obligatory intermissions to solve, giving you the chance to earn valuable bonus points.

The program also thoughtfully provides the option of starting at caves A, E, I or M so you can get to see a lot of the game from the word go.

The *Boulderdash* exploits are classic - great fun and numbingly addictive. Become enslaved - go buy *Boulderdash II*.

Bob Chappell

Sound	B
Graphics	B
Playability	H
Value for money	B
Overall	H

Wearing well...

Programs: Atari Classics
Price: £9.95 (attract),
£14.95 (box)

Supplier: GD Euro Fantasy
Industrial Systems, Manager
Square, Wokingham, RG7
4JY. Tel: 027-859 8000.

GAMES compendiums seem to be all the rage at the moment. *Atari Classics* is a collection of four fairly ancient Atari games bundled together on a single cassette or disc - Pole Position, Pac-Man, Mr Golf and Dig-Dug.

At least three were originally released on ROM cartridges (whatever happened to cartridges?) so this cardboard collection acquires a strong whiff of nostalgia. Nothing wrong with that, especially if the games are still fun to play.

Pole Position is still one of the best motor racing games around and is a real test for any Atari owner. The game gives you the chance to drive a racing car at half-raising speed around any of three different race tracks, competing against other computer-controlled cars.

To enter a race proper, you

first have to complete a qualifying race within a time limit. How fast you qualify governs your position on the starting grid in the subsequent race.

Options include selecting the course and number of laps, and having a practice race without other cars getting in your way.

Several that part of the later instructions which tell you how to control the car - it's wrong. For the record, the car accelerates automatically. Joy-stick forward switches you into high gear, backward into low while left and right move the car in that direction. To brake, press the fire button.

An exhilarating game - fast movement, good use of sound and graphics and still one of my personal favourites.

Pac-Man must surely be familiar to everyone. You control the famous yellow, jaw-chomping head and zoom around a simple maze, gobbling up dots while dodging menacing ghosts.

Special energy dots which allow you to turn the tables on the ghosts and the inclusion of several difficulty levels add to



the fun.

A simple game by current standards, yet still powerfully addictive. One of the few arcade conversions worthy of the title classic.

Mr Do!, with a 15 minute lead time from cassette, consistently refused to boot up successfully. Let's hope that it was just the review tape at fault otherwise there could be a lot of frustrated buyers.

From memory, the game itself could almost be described as a loose combination of *Pac-Man* and *Scatterdash*. You zoom around a field fighting for cherries, cakes, puddings, burgers and so on while avoiding giant falling apples and fending off monsters with your Powerball.

It will not have escaped

your notice that when it comes to computer game plots, reality and logic inevitably take a back seat.

Dig-Dug was fairly popular in its time but this conversion of a golden title fails to sparkle. It is similar to, but nowhere near as good as, *Mr Do!* It is graphically crude, lacks variety of challenge and, worst of all, plays slowly.

Dig-Dug compares badly with today's standard of releases. The rest hold up pretty well, though.

Bob Chappell

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

Desperate drive

Program: The Last '88
Price: £19.95

Supplier: Westminster 9043
Rings, 8-10 Paul Street,
London EC2A 4JF. Tel:
01-777 9880

THE Last '88 is one of the first budget games to appear for the Atari computers and is a very interesting release too.

During the nuclear war you have stayed hidden in your base developing a super car - the '88. Now, in a desperate attempt to reach the remainder of mankind, you come out into the open only to discover that there is an unrelenting nuclear boom with only minutes left before a clean-out.

So you must drive to your base in the short time remaining - but will you make it?

If you think *Daknaggle* is difficult, you will find this game even more so. It isn't so much that you have a very short time in which to return to base, but more a matter of controlling the '88.

Instead of a straightforward up, down, left and right to control the car you have left, right, accelerate and decelerate.

It is very easy to skid off the road at any speed, so slots the speeds that you have to travel at in order to reach the base in time.

To add to your troubles you have a limited amount of fuel and your radiation shield gets progressively weaker.

On the positive side, the graphics are excellent and the sound is very smooth.

The screen is divided into



two: the top half shows a bird's-eye view of your car as it travels along the road, and the bottom half shows your dashboard.

An ever-present onboard computer tells you how far it is to the base and how much time remains before the bomb goes off.

The Last '88 is a good game,

which lets itself down because it is extremely difficult to play. But at the asking price it is certainly a worthwhile challenge.

Ben Holligan

Sound	8
Graphics	9
Playability	6
Value for money	8
Overall	7

Making your own mazes

THIS program was written for those of you who liked my Cavern Escape in last month's *After User*. The problem with that game is that as soon as you have explored the maze of rooms, drawn a map and completed the game much of the enjoyment has been removed.

With *Maze Creator* you can now make a new maze using the same elements as in the original game. Conversely if the game is too difficult you can make the game easier to complete.

Firstly I will explain how the maze is made up. There are four basic room layouts built into the program. These are arranged in a 10 by 10 square with variable connections between them. They are numbered from 0 to 99 starting in the top left corner running in horizontal rows.

The start is always 0 and the end is always 99. These cannot be altered easily. The data for the exits of the rooms, the type of room, its name and the difficulty factor are all stored in data statements in lines 2000 to 2099. The key and lock rooms are defined in lines 1190 to 1199.

The maze creator program will allow easy design of a new maze and automatically create a file which will merge and replace these lines in *Cavern Escape*.

The program is easily used and largely self-explanatory. After it is run the screen will blank for a few seconds to read in a new character set. It will then create the current maze on the screen. The key rooms are in blue and the lock rooms are in red.

All the connections between the rooms are shown. The program will



MIKE ROWE tells how to enhance *Cavern Escape*

then ask if you are happy with the look and key rooms as they are. Enter Y if you are or N if you want different rooms.

If you want to alter these rooms you will be asked for a new location for each key and lock in turn. You must enter the number corresponding with new room from 1 to 99 - do not use 99 as this is the end.

After all the locks and keys are placed a flashing cursor will appear on the map. Use joystick 1 to move this to the first square to be edited and press the button. The room type will then be displayed in the text area of the screen.

You can cycle through the four types available using the joystick. When you have the type you require

displayed press the button to store it. Next the difficulty level is displayed. Again alter this with the joystick and press the button.

Only rooms 3 and 4 are affected and the higher the number the greater the difficulty. After this the room being edited is placed to the right of the map with the exits displayed. Cycle through the various combinations of exits until the desired one is found using the joystick and then press the button.

After this you are asked to type in the room title. If you just press return the standard name for that type of room will be used. This will then bring back the flashing cursor and you are ready to edit the next square. If you have finished editing just press Start. This brings up a prompt for a filename to save the data to.

If you are using a cassette enter C. If disc type D otherwise, for example MAKE.LST. This will produce a listed file of the necessary lines of data to alter the original program.

When this is completed load in the

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original *Cavern Escape* program, type **ENTER "C:"** or **ENTER "COMPAZLIST"** and merge in the new data files. Save out the new program under a different filename, and **YOLA** a new game.

The program is essentially aimed at hackers at heart. As such it is not the most elegant piece of programming. There is a lot of error trapping built in, but it is very easy to make an impossible maze or even a version which will not run at all. A few golden rules will help prevent this:

◆ Lock and key rooms should not be placed on the same square under any circumstances.

◆ Lock rooms always need an East exit and therefore cannot be placed on the right column of rooms on the map.

◆ The program will usually stop you from making an exit which leads off the map as this is obviously impossible.

◆ Remember to place corresponding rooms so if a room has an East exit

the room to the right of it must have a West exit. If not you will end up with a one-way door allowing movement in one direction only. This is used in the original maze to create five dead-end rooms.

◆ A hallway room needs exits in all four directions and this is automatically done. However this means you cannot have one of these at the edge of the map.

I hope this utility helps you get more enjoyment from *Cavern Escape*. Happy creating.

```

10 KEY XXXXXXXXXXXX
      XXXXXXXXXXXX
      XXXXXXXXXXXX
100 GOTO 3000
102 GOTO 3000
104 GOTO 300
106 GOTO 300
108 GOTO 300
110 GOTO 400
112 GOTO 300
114 KEY XXXXXXXXXXXX
100 FOR I=0 TO 9:FOR J=0 TO 9
110 POSITION I,J
112 GOTO 1200
114 FOR I=0 TO 9:FOR J=0 TO 9:FOR K=0 TO 9
116
117 IF @FF@I@J THEN GOTO 1
118 NEXT J
119 IF @XXXXXXXXXXXX@
120 NEXT J
121 NEXT I
122 NEXT K
123 NEXT I
124 KEY XXXXXXXXXXXX
100 @G@I@J @,I,J
102 POSITION I,J:IF @L@ THEN GOTO 1
104 POSITION I,J:IF @C@ THEN GOTO 1
106 @L@I@J@
108 IF @H@ @I @J @ @I@ THEN GOTO 2
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Player designer takes the tedium out of plotting all those pixels

Part Two of **STEPHEN WILLIAMSON's** series on player missile graphics



We already know that a player is a shape formed by pixels plotted within a player stripe. The normal method of designing a player is to draw the shape on graph paper and work out the data that is used by the player missile system to define that shape.

To do this requires a little knowledge of binary maths. Stripped down to its bare essentials, a computer is not very intelligent. Its heart is an area which recognises whether a switch is turned off or on. In the case of the Atari there are eight switches or gates through which a small electrical current can pass.

In the binary system, if a current is present this is represented by the number 1, and if there is no current 0 is used. Because the Atari works on an eight gate system it is called an 8 bit machine. Its big brother the Atari ST uses a 16 bit system which is more powerful.

When we design a player we have to work in a similar way. The width of the player stripe is eight pixels and within any row pixels can either be turned on (1) or turned off (0).

Figure 1 is a diagram of the bug encountered in last month's program. The shape occupies 11 rows within the player stripe. Each empty square in the diagram represents a section of the stripe where no pixel has been plotted, with the filled squares

representing the plotted pixels that make up the bug shape. In each row of eight pixels there are various combinations of pixels that are either switched on or switched off. Figure 1 also shows the binary representation of the shape.

Although the Atari works at the binary level it will not directly accept binary input. In the early days of the first mainframe computers programmers wrote their programs in the binary system.

But it was soon evident that the human mind, unlike computers, finds writing programs as a series of 0s and 1s very tedious and the chances of making errors are high. Hence the need for computer languages — machine code, Pascal, Cobol, good old Basic and so on.

Having designed the player using a binary-type system we have to convert all those 0s and 1s into something that the Atari can understand. This is done by a process known as bit-mapping. In each row of the design, the combination of pixels that are off or on can be represented by a single number.

To do this each pixel space within a row is assigned a numerical value. Starting from the last column on the right the first position is assigned a value of 1, the next column to the left 2 (double 1), the next column 4 (double 2) and so on until the left

hand column becomes 128 — Figure 1 should make this clear.

By adding up the values of all the plotted pixels in a row we arrive at a single number that represents the pattern of pixels, or the bit pattern.

If you look at the top row of the diagram, a pixel has been plotted in the 8 column and a pixel plotted in the 32 column. Adding these two together gives a value of 40 which is the numerical code that represents the pattern of pixels in this row.

Using the bit-map system any combination of eight pixels that are on or off can be given a single number value from 0 — which equals no pixels plotted — to 255 when all the pixels in a row have been plotted ($255 = 128 + 64 + 32 + 16 + 8 + 4 + 2 + 1$).

255, which in binary maths is equivalent to current being present in all eight gates, is the maximum value that can be understood by the 8 bit system which is why if you poke a value above 255 into any address you will get an error message.

Of course in Basic we can use numbers larger than 255, but this is only because the Basic interpreter breaks larger numbers up into two or more 8 bit numbers before passing them on to the processor.

The diagram shows how the bug shape is coded into a series of 11 bit-mapped numbers which can then be incorporated into data statements

In a Basic program to be read and poked into the area of memory where the appropriate player stripe data is held. We will look at how this area is allocated next month.

This bit-mapping process may seem a bit cumbersome. It is also difficult to visualise what the graph paper plotted shape will actually look like on the screen. Graph paper consists of squares whereas player missile plots are actually rectangular, so there is a problem in working out the correct ratio of height to width.

But take heart, the computer is designed to take the strain out of such tasks. This month's program is a player designer that works out the correct bit-mapped numbers. The designer will allow you to design and edit player shapes in such a way that you will see exactly how the shape will look when used in your player missile programs.

The designer plots a grid of dots eight wide by 20 high which represents an enlarged section of a player stripe. A cursor can be moved around this grid using a joystick.

By pressing the fire button an asterisk will appear beneath the cursor and the equivalent pixel will be plotted on the player stripe which has been set up to the right of the grid. Placing the cursor over an asterisk and pressing the fire button will cause

the asterisk to be erased and the equivalent pixel in the player stripe will be switched off.

At the bottom of the screen is a list of the various options that are available to the operator. Key C changes the colour and brightness of the player. The system used is the same as that found in the Atari Reference Guide with a 16 colour palette - 0 to 15 - and brightness range from 0 to 14.

Only even brightness numbers alter the brightness. If an odd number is entered then the brightness value one below this number will be used by the system. After entering a brightness or colour value, press Return.

When satisfied with your design pressing D gives a list of the bit-mapped numbers that represent the shape, and these can then be used in programs to create the same player shape again. If you are not satisfied with the design then E erases the shape and you can start again.

Key M moves the player around the screen using the joystick. The player missile system supports up to four players. The designer allows you to design more than one player. By placing a player next to another player a wider or taller shape can be designed.

Although the designer only allows

you to design a player up to a maximum of 20 pixels high this restriction can be overcome by placing one player directly above another. The program will work out the number codes for each shape separately but these can be easily combined in your own programs for taller shapes.

A two colour player can be designed by placing players over or near each other. In this way you could, for example, design a man with a pink head using one player and the rest of him a different colour using another. Multicoloured designs are possible by using all four players.

To further increase the option of multicoloured players pressing key O gives a third colour when two players overlap. This third colour is decided by the Atari II, for example, you overlap a green player with a blue player the resultant third colour will be orange. Experiment with this option to see other colour combinations.

Another restriction of the overlap facility is that it only works with Player 0 overlapping with Player 1 and Player 2 with Player 3. You cannot get a third colour by overlapping Player 0 with Player 2, or Player 1 with Player 3 and so on. So remember to stick to the 0 and 1 or 2

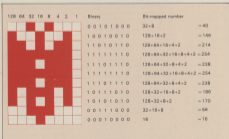


Figure 1. Bit map of a player

and 3 combination. Pressing Key 0 again switches off the overlap mode.

A player can be a single or double resolution player. All players must be in the same resolution, so due to a limitation within the player missile graphic system it is not possible to mix players of different resolutions. It may be possible to overcome this limitation with the clever use of interrupts - but this could only be done in machine code and is beyond the scope of this series.

Key 8 changes the size of the player on the horizontal plane. The player missile system has three size options - normal size, double size and

quadruple size. Unlike the resolution option it is possible to mix players of different sizes. Press keys 0 to 3 to change the player which the designer is operating on.

The program could also be used to design characters in programs where you want to redefine all or part of the Atari character set. This can be achieved by using eight rows of the grid only - which will not give an accurate depiction of the redifined character as character pixels are smaller than player pixels - but it does bit-map the character correctly and is a lot easier than working with squared paper.

I will not go into how the designer program is constructed as plenty of BEM statements label each section of the program. At the end of the series when I have detailed all the processes needed to control the player missile system it may be useful to refer back to the program listing of the designer to see how the program options manipulate the player missile system - how the program changes resolution, size, plots pixels, moves players and so on.

Next month I will show you how to make the shape that you have designed appear on the screen from within a player missile program.

```

10 DIM A$(255),B$(255),C$(255),D$(255)
20 DIM X(255),Y(255),Z(255),W(255)
30 DIM S(255),T(255),U(255),V(255)
40 DIM P(255),Q(255),R(255),S(255)
50 DIM L(255)
60 DIM M(255),N(255),O(255),P(255)
70 DIM Q(255),R(255),S(255),T(255)
80 DIM U(255),V(255),W(255),X(255)
90 DIM Y(255),Z(255),AA(255),BB(255)
100 DIM CC(255),DD(255),EE(255),FF(255)
110 DIM GG(255),HH(255),II(255),JJ(255)
120 DIM KK(255),LL(255),MM(255),NN(255)
130 DIM OO(255),PP(255),QQ(255),RR(255)
140 DIM SS(255),TT(255),UU(255),VV(255)
150 DIM WW(255),XX(255),YY(255),ZZ(255)
160 DIM AAA(255),BBB(255),CCC(255),DDD(255)
170 DIM EEE(255),FFF(255),GGG(255),HHH(255)
180 DIM III(255),JJJ(255),KKK(255),LLL(255)
190 DIM MMM(255),NNN(255),OOO(255),PPP(255)
200 DIM QQQ(255),RRR(255),SSS(255),TTT(255)
210 DIM UUU(255),VVV(255),WWW(255),XXX(255)
220 DIM YYY(255),ZZZ(255),AAA(255),BBB(255)
230 DIM CCC(255),DDD(255),EEE(255),FFF(255)
240 DIM GGG(255),HHH(255),III(255),JJJ(255)
250 DIM KKK(255),LLL(255),MMM(255),NNN(255)
260 DIM OOO(255),PPP(255),QQQ(255),RRR(255)
270 DIM SSS(255),TTT(255),UUU(255),VVV(255)
280 DIM WWW(255),XXX(255),YYY(255),ZZZ(255)
290 DIM AAA(255),BBB(255),CCC(255),DDD(255)
300 DIM EEE(255),FFF(255),GGG(255),HHH(255)
310 DIM III(255),JJJ(255),KKK(255),LLL(255)
320 DIM MMM(255),NNN(255),OOO(255),PPP(255)
330 DIM QQQ(255),RRR(255),SSS(255),TTT(255)
340 DIM UUU(255),VVV(255),WWW(255),XXX(255)
350 DIM YYY(255),ZZZ(255),AAA(255),BBB(255)
360 DIM CCC(255),DDD(255),EEE(255),FFF(255)
370 DIM GGG(255),HHH(255),III(255),JJJ(255)
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410 DIM WWW(255),XXX(255),YYY(255),ZZZ(255)
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430 DIM EEE(255),FFF(255),GGG(255),HHH(255)
440 DIM III(255),JJJ(255),KKK(255),LLL(255)
450 DIM MMM(255),NNN(255),OOO(255),PPP(255)
460 DIM QQQ(255),RRR(255),SSS(255),TTT(255)
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640 DIM KKK(255),LLL(255),MMM(255),NNN(255)
650 DIM OOO(255),PPP(255),QQQ(255),RRR(255)
660 DIM SSS(255),TTT(255),UUU(255),VVV(255)
670 DIM WWW(255),XXX(255),YYY(255),ZZZ(255)
680 DIM AAA(255),BBB(255),CCC(255),DDD(255)
690 DIM EEE(255),FFF(255),GGG(255),HHH(255)
700 DIM III(255),JJJ(255),KKK(255),LLL(255)
710 DIM MMM(255),NNN(255),OOO(255),PPP(255)
720 DIM QQQ(255),RRR(255),SSS(255),TTT(255)
730 DIM UUU(255),VVV(255),WWW(255),XXX(255)
740 DIM YYY(255),ZZZ(255),AAA(255),BBB(255)
750 DIM CCC(255),DDD(255),EEE(255),FFF(255)
760 DIM GGG(255),HHH(255),III(255),JJJ(255)
770 DIM KKK(255),LLL(255),MMM(255),NNN(255)
780 DIM OOO(255),PPP(255),QQQ(255),RRR(255)
790 DIM SSS(255),TTT(255),UUU(255),VVV(255)
800 DIM WWW(255),XXX(255),YYY(255),ZZZ(255)
810 DIM AAA(255),BBB(255),CCC(255),DDD(255)
820 DIM EEE(255),FFF(255),GGG(255),HHH(255)
830 DIM III(255),JJJ(255),KKK(255),LLL(255)
840 DIM MMM(255),NNN(255),OOO(255),PPP(255)
850 DIM QQQ(255),RRR(255),SSS(255),TTT(255)
860 DIM UUU(255),VVV(255),WWW(255),XXX(255)
870 DIM YYY(255),ZZZ(255),AAA(255),BBB(255)
880 DIM CCC(255),DDD(255),EEE(255),FFF(255)
890 DIM GGG(255),HHH(255),III(255),JJJ(255)
900 DIM KKK(255),LLL(255),MMM(255),NNN(255)
910 DIM OOO(255),PPP(255),QQQ(255),RRR(255)
920 DIM SSS(255),TTT(255),UUU(255),VVV(255)
930 DIM WWW(255),XXX(255),YYY(255),ZZZ(255)
940 DIM AAA(255),BBB(255),CCC(255),DDD(255)
950 DIM EEE(255),FFF(255),GGG(255),HHH(255)
960 DIM III(255),JJJ(255),KKK(255),LLL(255)
970 DIM MMM(255),NNN(255),OOO(255),PPP(255)
980 DIM QQQ(255),RRR(255),SSS(255),TTT(255)
990 DIM UUU(255),VVV(255),WWW(255),XXX(255)

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WHAT ARE YOU MISSING?

At PAGE 4 Magazine we recently had a readers survey. Here's what some of our existing readers said.

- | | | | | |
|---|---|--|---|--|
| "The greatest benefit is I can read it at home." | "I love spending time on Page 7!" | "It's my all-arounder of the best one when it comes to fun!" | "I've kept up the good work and hope for Page 7 and more!" | "It is the best magazine I have ever read in the magazine business!" |
| "The best is Cover Story." | "Well, you know, spending time and time being entertained!" | "They're a complete fun for magazine readers - read it!" | "I do love magazine delivered to my door!" | "Page 7 is definitely great! It's got higher quality content! I read it all the time!" |
| "Page 7 has been working for hours with each issue!" | "I love my published magazine on my table!" | "I'm not a subscriber, but I definitely enjoy the magazine!" | "I read magazine including home!" | "I believe and probably more with each issue!" |
| "Only good magazine - it has helped me a lot." | "Excellent entertainment!" | "Independent!" | "Great value for money and full of information!" | "The best that magazine in magazine!" |
| "Great magazine that I feel the authors building." | "They have got me excited in it!" | "It was the magazine that I got!" | "I would totally love to have more magazine work in it!" | "I think it is an excellent magazine and I love it!" |
| "Excellent!" | "They continue to be very exciting and interesting!" | "I don't feel that way!" | "I would love to see!" | "Excellent magazine - I love you guys!" |
| "This fabulous magazine will continue to provide great magazine entertainment!" | "Page 7 is a real magazine magazine that has helped me a lot in my career!" | "I'm not!" | "I would love to see it, very interesting!" | "Great value for the money - it's great and well worth the money!" |
| "Excellent way magazine with each issue. Great feature of content!" | "It's always an very interesting and informative!" | "I would love to see!" | "I would love to see the money magazine, I see them keep on the good work!" | "Excellent feature, great, informative and - it's great and well worth the money!" |
| "The best Atari mag on the market!" | "I don't Page 7 is the best magazine on the market today!" | "Great only good Page 7 is the best magazine that I read. It has all the information of a great magazine, it's a pleasure to read it!" | "Excellent magazine - keep on the good work!" | "I think I had more of the magazine content. Maybe in print, you're doing excellent!" |
| "Excellent time to subscribe!" | "I read Atari magazine on my computer, it's a great magazine!" | "I would love to see it!" | "I would love to see it, very interesting!" | "I agree, readers should enjoy each and every issue, thank you!" |
| "Excellent magazine - very good value. Always good articles, reviews, interviews, etc." | "I read it every aspect of Atari, enjoying the magazine to enjoy!" | "I would love to see it!" | "I would love to see it, very interesting!" | |
| "The magazine is excellent!" | | | | |

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PAGE 6 - COMPLIMENTING AND EXPANDING THE WORLD OF ATARI

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THIS series will be all about hardware you can make for your 486/500/XL/XE. We'll be describing devices to manage your central heating, water your house plants, control your train set or operate your burglar alarms.

We'll also look at remote key-boards customised for children, disabled people or ham-fisted amateurs. Energy saving aids, acoustic interfaces and simple robotics.

All these are driven by software written in Basic or by simple USB-level machine code routines.

All the gadgets work through the joystick ports and this month we will explore the various signals you can put in and get out. Figure 1 shows the pin functions.

Pins 1 to 4 are the main on or off signal lines and they are normally held at +5v by internal circuitry. A signal occurs when the line is taken to



Figure 1. Joystick pin connections

0v by some external means, like a joystick. You can plug a switching device of your own to port 1, and read its output by PEEK STICK(X), or PEEK (532).

The pattern of highs and lows on the four signal lines is interpreted as a 4 bit binary number with 0v meaning on and +5v meaning off, so a number between 0 and 15 will be returned.

It's best if the transition from +5v to 0v is rapid so sensors which produce a slowly changing output, like temperature-sensitive resistors, are not really satisfactory. Devices that switch quickly - like photocodes or keyboard switches - are suitable, so long as they can handle at least 1 milliamperes per line.

The signal lines can easily be turned into output switches. POKE (540)B, 58 - POKE (540)B, 255 - POKE (540)B, 60 - to set up both ports for output, then POKE a number between 0 and 255 into (540)B. The

Control it - with a mere wave of your hand

number will appear in binary form at port 1 - bits 0 to 3 - and port 2 - bits 4 to 7.

In output mode pins 1 to 4 are held at +5v while they are off and fall to 0v when they switch on. They can each sink 15mA in the on state, which is enough to control transistors, thyristors, LEDs and integrated circuit devices.

Some form of current and voltage amplification will normally be needed before these outputs can do useful work in the outside world, but with appropriate hardware you could control appliances the size of Tower Bridge. More about this next month.

By LEN GOLDING

Pin 6 is the joystick trigger line. It can't be made into an output, but remains effective as an input regardless of how the four signal lines are configured.

Taking this pin to 0v will change the number in address 644 from 1 to 0. This opens the way for simple feedback - a motorised device driven by pins 1 to 4 could send a stop signal when it had finished opening a door or drawing the curtains.

The pin could also be used as a fault line, triggering an alarm if anything went wrong with the hardware. As with the signal pins 1

milliamperes of current is required to make it operate.

Pin 7 is connected to the "positive" side of the internal power supply, and is held constantly at +5v. It will deliver 500 milliamperes or more if you let it, but Atari specify a maximum current drain of 50mA, shared between the ports.

If you try to draw more you could end up with an expensive smell, so it's a good idea to build some form of current-limiting protection into any circuit that draws power from this pin. A 50mA quick-blow fuse is used in the gadgets we will be describing.

Pin 8 is the common 0v line. It connects to all the rest of the computer circuitry and provides the 0v point for signal and trigger inputs.

Pins 5 and 9 are analog inputs designed for use with paddles. A variable resistance can be connected between either of these pins and the +5v line. The computer measures this resistance, converts it into a number between 1 (1k or less) and 229 (500k or more) and then puts the result into address 624 (pin 9) or 625 (pin 5).

These pins continue to work as inputs even when the signal lines are outputting data, so complex feedback is possible. The obvious use is for servo sensors in robot arms.

Pins 1 to 4 can control motor

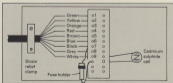


Figure 2. Pin connections for joystick

on/off lines, while variable resistors connected to pins 8 and 9 monitor the degree of rotation in two dimensions.

The analog inputs can also be used for devices which produce a slowly changing voltage. How about a photocell to set a burglar-deterrent program running when it gets dark? Or sensors to control temperature and exposure times in your darkroom? Or a humidity monitor for the conservatory? Or a transducer that will react to sound? It's all possible without too much knowledge of electronics.

Here's a simple light-sensitive gadget to get you started. You will need the materials shown in the parts list. First tear the extension lead using joystick and paddles in the usual way. If all is well unplug it, cut off the end you don't need and carefully strip about ½ in. of insulation from each of the nine wires.

Screw the terminal block to the baseboard and attach the wires as in Figure 1. The colours shown are those used in the Tandy extension lead - other makes may be different.

Now fit the cadmium outside cell as the terminal block as shown, check that all the screw terminals are tight and then plug the gadget into port 1. Run this program:

```
10 PRINT "LIGHT-SENSITIVE GADGET"
20 POSITION 2,8:GOTO 10:PRINT "1"
30 GOTO 10
```

Initially the displayed number will be low - probably less than 10 - but if you now cover the cell with your hand the number will rise rapidly to 80 or more. Try this:

```
10 PRINT "LIGHT-SENSITIVE GADGET"
20 GOTO 10
```

and you get a light-activated number which guarantees to delight even the youngest members of the family.

Shopkeepers could use this device to make their window displays more alluring. Fit extension leads to the cell and tape it inside the window so that passers-by can cover it with their hands. Then write appropriate software to generate something interesting on the TV screen when the number in 034 exceeds your

threshold value.

A similar gadget can also be used to help train hand coordination in severely disabled children who have little control over body movement. Handers waving will have no effect, but careful positioning of the hand can be made to produce some form of reward.

Next month we'll explain how to use the four signal lines an output available and how you can get them to control high power appliances.

Parts list
Joystick extension lead (Tandy 376-1078 or similar).
Cadmium outside cell - ORP12 or equivalent. Maxcell type HR12L, Tandy 376-116A or similar.
50mm quick blow fuse and holder.
12 way 5 amp moulded terminal block (Maplin HFD18, Tandy 61-2308 or from most electrical shops).
Baseboard (about 8in x 12in preferably 13mm or 15mm ply).
Total cost around £8.50.



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World War 2 (7)	1.00	10.00							
World War 2 (8)	1.00	10.00							
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World War 2 (50)	1.00	10.00							

IN this final part of the compiler series I'll give those commands which the compiler provides but which have no direct equivalent in Atari Basic.

Firstly let me introduce the concept of a named procedure. These are like subroutines, but they differ from them in the fact that each named procedure can have its own local variables, and that a named procedure not surprisingly has a name. To handle named procedures the Compiler Basic has three new keywords — DEFPROC, VAR, and ENDPROC.

Using these keywords let's define a named procedure called DELAY which loops around doing nothing for a short time. We could use a FOR...NEXT loop to provide the delay, say FOR N (=1) TO 1000. Here's a possible solution:

```
1000 DEFPROC DELAY
1010 VAR N
1020 N=1: FOR N TO 1000: NEXT N
1030 ENDPROC
```

Note the use of VAR N in line 1010 which declares N to be a local variable. In effect this means that the procedure DELAY has its own private variable called N which no one else may use. Another way of looking at it is that if any other procedure or program is using N for some purpose then calling procedure DELAY will not cause N to be corrupted. An example will make this clearer:

```
1000 N=5: FOR N TO 100
1010 PROC DELAY
1020 NEXT N
```

PROC is similar to GOSUB — it just causes DELAY to be executed. Notice that this piece of code uses N for its loop counter, as does DELAY. However DELAY uses its own private variable called N and this is quite separate from the variable used in lines 1000 to 1020. The compiler will quite happily keep track of the two variables even though you might expect it to become confused.

This powerful feature of the compiler allows you to develop self-contained procedures with their own variables. You can then safely use these in your programs without having to worry about what variables you used and whether or not they clash with the variables in your current program — which is more than likely with variable names just one letter long. Programming in small packages like this is sometimes called structured programming.

Another construct which lends

itself to structured programming is the REPEAT...UNTIL loop. This allows you to repeat a sequence of statements until some condition becomes true. For example:

```
DEFPROC PROC SOUND (N=UNTIL P=1)
```

This will execute the procedure SOMETHING repeatedly until P is set equal to 1. It is a clearer way to write the loop than using IF...THEN...GOTO.

And now on to what is possibly the most powerful feature of the compiler — the keywords which deal with timed interrupts. These are ENTER, AFTER, ENTRY and EXIT. The ENTER command is a little like GOSUB. Here's an example of it being used:

```
ENTER ROUTINE: AFTER 10
```

What this means is enter the piece of code called routine, but wait until after 10 jiffies (50ths of a second) has elapsed. While the program is waiting for the 10 jiffies to elapse it simply continues executing the statements in your program. Once the time limit is up the program stops whatever it is doing and enters the routine which you have specified.

Once the routine has executed to completion the program resumes executing where it left off. You may be asking yourself what the point of it is, but I can assure you that it is extremely useful — how does interrupt-driven music in perfect tempo grab you?

Before I show you how you might go about that here's how you set up an entry routine as I call them. You simply bracket the code to be entered with the keywords ENTRY and EXIT as follows:

```
1000 ENTRY ROUTINE:PROC
SOMETHING:EXIT
```

Of course you don't have to call your ENTRY routine by the name ROUTINE, any name will do.

Program 1 provides a procedure called SET UP MUSIC which starts the music playing when you execute PROC SET UP MUSIC. The DATA statements in lines 8050 to 8110 are the data for the music. These are pairs of tones — pitch and duration.

There are 12 notes in the example data list, but you can have as many as you want. The numbers were chosen at random so I doubt if it sounds that good. Note that the ENTRY routine sets up variables P and D and also

BASIC COMPILER

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```

0000 DEFPROC GET OF MUSIC:RESTORE MUSIC LIST
0100 ENTER MUSIC: MTON 1
0200 ENDPROC
0300 ENTRY MUSIC
0400 READ I:IF I=0 THEN RESTORE MUSIC LIST:GOTO 0040 ENDIF
0500 SOUND B,P,10,3
0600 READ I:GOTO 1
0700 EXIT
0800 LABEL MUSIC LIST
0900 DATA 2,2,1,5,6,7,8,9
1000 DATA 1,10,11,12,13,3
1100 DATA 14,16,19,21,26,4
1200 DATA 0:END OF LIST

```

Program 1:Music demo

requires the exclusive use of the READ . . . DATA mechanism, so the main program mustn't use the READ or RESTORE keywords.

Note also that line 0000 uses AFTER without an ENTER keyword - this is perfectly valid and simply means Call me again after 1/500th of a second. It is a fairly simple matter to change this program so that it deals with all four sound channels and/or the distortion and volume parameters.

If you try this bear in mind that you can't have very much code in between the ENTRY and EXIT keywords. This is because the time available for an ENTRY routine to execute in is very limited. For this reason you should keep your routines as short as possible - exactly how short is a matter of trial and error.

There are still a few compiler commands I haven't dealt with. These are ZERO, INC, DEC, BASIC, CODE, ENDCODE and a special version of GET. ZERO simply sets variables to be equal to zero, ZERO A,B,C for example is just a shorthand for A=0,B=0,C=0.

It will also execute quicker than the assignments. INC and DEC are similar to ZERO. They increment and decrement variables respectively. INC A,B,C is equivalent to A=A+1,B=B+1,C=C+1. Similarly DEC A,B,C is the same as A=A-1,B=B-1,C=C-1.

The command GET may be used to read a character from the keyboard. GET K will wait for a key to be pressed and will set K equal to the ASCII code of the key being pressed.

The command BASIC may be used to return your USR function -

remember compiler programs end up as USR functions - to BASIC. You can use the keyword on its own or follow it with an expression.

BASIC Z for example will cause the value Z to be returned as the answer given by the USR function. You can have more complex expressions too, such as BASIC X/255 which will return the hi-byte of X in Atari Basic.

While we're on the subject of the USR function you may have been

wondering what becomes of the USR function's arguments when the function is executed. The answer is that they are stored into the compiler's variables A to Z as follows:

- A will equal the number of arguments (0 if there were none)
- B will equal the first argument, if any
- C will equal the second argument, if any, and so on with Z equalling the 25th argument, if any!

So if your compiled program is called with X=USR114338,1,2,31 you will find that A will equal 3, B will equal 1, C will equal 2 and D will equal 3. You can ignore this or you can check A to see if there have been any arguments, and give an error message or process the arguments as appropriate.

Whatever you do there is no danger of the arguments being left on the stack and crashing the computer - the compiler looks after the stack. See Programs 8 and 18 for examples of compiler programs which process arguments.

The only keywords left are CODE and ENDCODE. These allow you to

```

1000 IF NOT THEN PROC ERROR ENDF: REM WRONG NUMBER OF ARGUMENTS
1100 PROC COPY
1200 PROC RESTORE
1300 BASIC 1/255: REM RETURN HI-BYTE TO BASIC
1400 DEFPROC COPY
1500 VAR B,I
1600 B:=256+256: REM SIZE OF REM CHARACTER SET
1700 FOR B TO 0:0+128:POKE B,0: INC B: NEXT B: REM COPY TO RAM
1800 ENDFPROC
1900 DEFPROC RESTORE
2000 VAR C,A,I
2100 RESTORE MROMS
2200 REPORT:READ C: REM READ CODE OF CHARACTER TO RESTORE
2300 IF C<128 THEN
2400 B:=0:FOR B TO 0+128:POKE B,1:NEXT B: REM RESTORE THIS CHARACTER
2500 ENDF
2600 UNTIL C=255
2700 ENDFPROC
2800 REM DATA FOR REM CHARACTER SET FOLLOWS
2900 DATA 1,255,129,129,129,129,129,129,129,129
3000 REM INSERT YOUR OWN DATA HERE...
3100 DATA 255
3200 DEFPROC ERROR
3300 PRINT 255:PRINT "CHARACTER SET FILE - BAD ARGUMENTS":PRINT
3400 BASIC 256: REM RETURN OLD CHARACTER SET HI-BYTE
3500 ENDFPROC: REM NOT REALLY NECESSARY!

```

Program 10: Do not type in ASM statements as they use too much memory in a 128k machine

embed assembly language in your compiled programs. The only restrictions are that you must leave the Y register equal to zero when you finish and that each instruction must be on its own line. Here's an example:

```
1000 DEFPROC SOUNDWAVE
1010 CODE
1020 NOP
1030 NOP
1040 ENDCODE
1050 ENDPROC
```

Note the spacing of these lines — two spaces before the assembler instructions and one before CODE and ENDCODE. You should follow this exactly. You may put anything between the keywords CODE and ENDCODE which the assembler recognises — you are effectively talking directly to the assembler without the compiler's intervention until it spots the keyword ENDCODE.

Well that's it. By now you should have a good idea of what can and cannot be done with the compiler. Let me leave you with two example programs. Program 11 is a routine to redefine the character set. It takes one argument, the address to which the character set is to be moved — this should be a pointer to free space of 1k in size.

You can call the routine with X=USR14338,CHBASE where CHBASE is the address where you want the character set. X will be set to the hi-byte of CHBASE. Simply POKE 755 with X and you will have redefined the character set.

The whole process — copying the ROM set and poking the bytes for the new character definitions — takes about 1/70th of a second. Compare this with the usual please wait message while an Atari Basic program redefines the character set.

Program 12 is an alarm clock routine. It takes one argument, the number of jiffies which you want to elapse. After this number of jiffies has elapsed you will hear a beeping sound and the message "Wakey Wakey!" will be displayed on the screen. Although just a toy program really, it does demonstrate the ability of ENTRY routines to work concurrently with Atari Basic.

To call the routines try X=USR14338,1000. The computer

will reply READY. You can carry on typing but after 1000 jiffies — about 20 seconds — the fun begins.

One final program. Remember I said that PRINT cannot display a number on the screen but that you could write a routine to do it? Here it is, presented as a named procedure. It will display the contents of the variable N on the screen. To print an expression just set N equal to the expression and call PROC PRINT N.

```
0000 DEFPROC PRINT N
0010 VAR C,J,A,I
0020 LOCAL B
0030 B:=N*10000
0040 REPUNT
0050 C:=N/10000:J:=N/1000
0060 IF C=0 THEN C:=0:EXIT
0070 IF C10 THEN PRINT C^" "B:GOTO 0050
0080 UNTIL B=0
0090 ENDPROC
```

```
1000 GO40 TO:ROR SET TIMER TO:ZERO
1010 ENTER TICK:AFTR 1:ROR SET TIMER ROUTINE GO40
1020 BASE:ROR BACK TO:BASE
```

```
1030 ENTER TICK
1040 LOC 0:ROR COUNT 0:GO40 TO:GO40 IS IN THE ARGUMENT GIVEN BY THE USER
1050 IF 0=0 THEN ENTER ALARM:GOTO:ROR IF TIME UP THEN ALERT:GOTO
1060 AFTR 1:ROR CALL:HE:ALARM:AFTR 1:JIFFY
1070 EXIT:ROR RESUME INTERRUPTED PROGRAM
```

```
1080 ENTER ALARM
1090 C:=0:V:=0:Y:=WKEY:WKEY:!!!"
1100 PROC PRINT 0:ROR DISPLAY MESSAGE
1110 SOUND 0,30,10,0:ROR MAKE A NOISE
1120 ENTER ALERT:AFTR 10:ROR CALL:GOTO TO:STOP NOISE:AFTR 10:JIFFY:GOTO
1130 EXIT
```

```
1140 ENTER GOTO
1150 SOUND 0,0,0,0:ROR SILENCE:GOTO:GOTO 0
1160 C:=0:V:=0:Y=""
1170 PROC PRINT 0:ROR BLANK OUT MESSAGE
1180 ENTER ALARM:AFTR 10:ROR FLASH MESSAGE:ALARM:AFTR 10:JIFFY:GOTO
1190 EXIT
```

```
1200 DEFPROC PRINT 0
1210 VAR T,C,D,I,J
1220 T:=0:INC 0
1230 C:=000+C:0:=10000
1240 REPUNT
1250 IF 000+(000+11)=0 THEN BEEP:OVERSHOOT:EXIT
1260 B:=0:INC 0
1270 IF 011 THEN C:=0:PROC:CONVERT:CONVERT:CONVERT:CONVERT:CONVERT:CONVERT
1280:EXIT
1290 UNTIL 0=0
1300 LABEL:OVERSHOOT
1310 ENDPROC
```

```
1320 DEFPROC CONVRT C
1330 IF C10 THEN C:=CONVRT:CONVERT:CONVERT:CONVERT:CONVERT:CONVERT:CONVERT
1340 IF C10 THEN C:=CONVERT:CONVERT:CONVERT:CONVERT:CONVERT:CONVERT:CONVERT
1350 LABEL:CONVERT
1360 ENDPROC
```

Program 12. Alarm clock. Again don't type the ROM statements in

Compiler Library for the XL and XE

THERE was a small omission in the machine code Compiler Library listing in the April issue. Put simply, it will not function correctly if you have an XL or XE computer, although it works fine on the old 400/800 machines.

To correct the program so that it will work on both types of machines, edit in your Assembler/Editor using the original program from tape or disc.

Now add the new lines (right) and LIST it back on to your tape or disc. Lines 2 and 70 remove the references to the old EOUTCH and GET routines, while lines 87D to 87D allow the whole program to find out which sort of computer it is running on, in order to jump to the relevant EOUTCH or GET subroutine.

```

80 (COMPILER LIBRARY WITH ALIVE MODE)
81 70 GETSET = 8000
82 8000 LOAD FOR ALIVE YOUTCH = GET
83 8001 EOUTCH FOR
84 8002 LDA GETSET
85 8003 CMP #80C
86 8004 BNE #8007
87 8005 PLA
88 8006 JMP #8004
89 8007 EOUTCH PLA
90 8008 JMP #8000
91 8009 LDA GETSET
92 800A CMP #80C
93 800B BNE #800E
94 800C PLA
95 800D JMP #8004
96 800E EOUTCH PLA
97 800F JMP #8000
98 8010 LDA GETSET
99 8011 CMP #80C
100 8012 BNE #8015
101 8013 PLA
102 8014 JMP #8004
103 8015 EOUTCH PLA
104 8016 JMP #8000

```

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AFTER all the excitement of the Atari Show I seem to have a brief lull between games being released and arriving for review, so it gives me a chance to catch up with my mailing and to look at an older game from the Infocom Wizards.

First out of the bag is Phillip Turner playing the excellent *Dungeon Adventure* from Level 9. (By the way I fear that the whole *Dungeon* trilogy is to be released soon - good news for anyone wanting to get into adventuring in a Colossal way.

Despite being called *Brillig* the Brilliant - I fancy will get you part of the way - I am loathe to solve a lot of problems, as often the solution to one will lead on to others without further help being required.

So Phillip to get past the alien you need to turn deaf ears to her call. To do this I am yourself with some seeds that may make your ears go a bit poppy.

Also having trouble with Level 9 is Michael Byrne from Eire who is playing *Red Moon*. Among other things he is being blinded by the flashing lights. To stop these dazzling you need to think like a mason.

They see something round and dark to get rid of the things they don't want. So drop it there. Also if you saw April's glitch column you may know how to swim and breathe underwater, but it is easier than you think.

Another question about *Red Moon*

Dungeon trilogy is on its way

comes from Colin Brant of Rotherham who asks why the keyboard locks up in mid-game and he has to switch off and reloaded. Any ideas folks? Colin says he is going to cast the Zapping spell at his computer if it happens again.

Richard Burke of Gwent is one of several readers stuck in *The Psi-Off* from Alan Bigmore. Never mind the bone for the dog, Richard. He wants something far more juicy, so why not spice it up for him a little and let him

By Brillig

make good use of the fence!

As for the picture, you need to have a good feel for what you are looking for, but the desk should help you get the right combination.

Duncan Husband was smashed on the nose when he attempted to climb the fence. By whom he asks? The fence of course Duncan - oh that sort of fence. Well it is an almost deserted car-park.

Last of this month's Help batch goes to Sharon Stowell of Chester who is stuck in *Mender's Quest*. She wants to get past the pegmy and the cannibalous plant.

To get past the first you need some puff and a tube with thorns and berries to load it.

Once you have done that guess what you need for the second. As I said earlier one solution often opens

Glitches of the Month:

Vic Rowlands has finally finished *The Psi-Off* and is now hooked on adventures. He found an interesting glitch in the game and wins this month's T-shirt.

Desperate to get into the vault after a good deal of drilling Vic went hunting for things to help him get in.

After transporting the entire contents of New Jersey to the

bank he found the correct item near the start of the game - ain't it after ya the way - but on arriving at the Bank found that his handiwork had been repaired.

Someone got a nice lot of weekend overtime to do it, but fortunately for Vic they had left the tools lying around and he finished the game.

A medium size T-shirt for you Vic, as you forget to stitch your size. If this is too small for you pass it on to your wife for the valuable hints she gave you.

up ideas for solving other problems.

Now a plea for assistance for two patient adventurers playing a game I know not, Synsoft's *Quasimodo*. Dave and Joy are going bananas trying to get the sacred list of jewels back to their rightful home from the bell tower.

If anyone can help them send the answer to me by first class carrier pigeon and I will pass on the solution. Don't give up Dave and Joy, we'll save you yet.

As magic seems to be the trendy theme for adventures I have reviewed Infocom's new release, *Spellbreaker*. The third of the Enchanter trilogy sent me scuttling back to the original game for a play.

You play an inexperienced Enchanter sent to combat the might of the evil Kull whose power is rising in a castle to the east.

Armed with only a few weak spells you are despatched by Belboz the necromancer to do your best. The



most charitable thing that you can say about *Belboz* is that he does relieve you each time you get killed.

Like any sensible person sent to deal with evil in the east I rapidly set out west, only to be caught by the series of signs asking me why I was doing just that.

Admitted I slunk back through the almost deserted castle village to attend my gruesome fate and gruesome it was. I was imprisoned and then sacrificed on a bloody altar, only to be revived and returned.

The game pervades evil and the

oppressive feeling of being spied on. It is an excellent example of how to transport you to another time and place, and give you a real sense of being there.

The scroll facility is a boon to remember the complicated spell names, and the standard of prose never falls below superb. If you want to be a screen's apprentice look no further than *Spellbreaker*.

Next month I shall look at the work of another well known adventure author, Jim Pearson, but until then keep making those maps.

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Incoming telex 5.0p for each currently addressed telex delivered to your mailbox. Occurring a mailbox reference from the sender incurs a further charge of 5.0p.

It is not possible to deliver a telex without a mailbox reference. If a telex is received without a mailbox reference the sender will be advised of non-delivery and asked to provide a mailbox reference.

Telexes are not collected for telex and using the facility will incur any additional fee time and a month. Further cost a charge of 5.0p units a month. Further storage charges could be incurred depending on the amount of telex storage and the use made of short code and message file facilities.

Telemessages E1.25 for up to 100 words.

Telemessages are transmitted on standard pricing cost for 10p units.

Radiotelexing Free charge.

If you have a BT Radiotelex you can be paged automatically whenever a message is waiting in your mailbox.

International Mail. For the best 2,000 characters - 70p to Germany and Denmark, 80p to USA, Australia, Canada, Singapore, Hong Kong and India. For additional 1,000 characters - 50p (50p).

These charges refer to the transmission of information by the Dublin service to other Dublin services outside the UK and the Isle of Man. Multiple copies to additional offices are extra space fees and incur other transmission charge.

Billing and Payment. All charges quoted are exclusive of VAT. Currently all bills are rendered monthly.

Software over the telephone

MicroLink is writing up a central store of software programs which you'll be able to download directly into your system. The range will include games, utilities, educational and business programs, and will cover all of the most popular makes of micro.

Talk to the world - by satellite

MicroLink is part of the international Datalink network. In the USA, Australia and a growing number of other countries there are many thousands of users with electronic mailboxes just few years. You can contact them just as easily as you do users in Britain - the only difference is that the messages from your keyboard go speeding around the world via satellite.

What you need to access MicroLink

You must have three things in order to use MicroLink: a computer fit for any make of micro, hard-disk drive or even an electronic typewriter provided it has communications facilities, a modem fit for a simple Prentice type using 1200/75 baud, or a more sophisticated one operating at 300/300 or 1200/300 baud, and appropriate communications software.

MicroLink

in association with

TELECOM GOLD

Application Form

I/we hereby apply to use MicroLink.

I I authorize my cheque for E6 payable to Datalink Publications as registration fee to MicroLink.

I I also wish to use Telex. I authorize you to charge an additional E25 to my account for validation.

I confirm that I am over 18 years of age.

I confirm that I accept the terms and conditions for the service being shown, a copy of which are available on request.

Signature _____

Date _____

FOR OFFICE USE ONLY:

Mailbox assigned _____

Start date _____

Payment _____

SEND TO:
MicroLink
Datalink Publications
Europa House
48 Chester Road
Hazel Grove
Stockport SK7 9NS

Name

Position

Company

Address

Telephone Datalink telephone

Comments/ment of Service

(Dates indicate months of commencement)

After 10 days for validation of mailbox

Payment

MicroLink Publications will debit the supplier's debit account by the commencement and billing dates will be handled by Telecom Gold as agents for Datalink Publications Ltd. Date of first payment to be on 10th of month following commencement. Please complete billing authorization form A, B or C below.

A. Direct Debiting Mandate Enter full postal address of Bank Branch:

To

MULTIPLE DLIs -AND GOLDFISH IN DIRE DANGER

CAN you give me some guidance on how to put more than one DLI on the screen at once? I never was keen when an interrupt was before I read Mike Rowe's article in the September Atari User.

A few months ago I ordered a Revision C Basic cartridge from Steve Sharp. When I plugged it in I assumed it was a C ROM by PEEKing location 43234. This returned 234 — a C ROM, but my 80081 was configured to look as if I am quite frustrated as to what I do next. If someone would help me, I'd eat my pointer. — **David Macleod, Edinburgh.**

● To use multiple DLIs simply use more mode lines with the 128 added to the display list number.

Each interrupt will go to the same address in memory, but you could then use a small counter routine to work out how many times it has been run, and so what to do next.

Alternatively location 54285 (ACCOUNT) will tell your routine how far down the screen the display is at any given time — thus you could work out when the interrupt had happened.

You will almost certainly find that the problems you are experiencing with Basic are more to do with a hardware fault than to the bugs in Revision B Basic.

Try taking the machine back to the dealer and explaining the situation. Otherwise, we recommend a medium dr's while you go with your mail.

Protocol standard

I'M WORRIED if you or one of your readers could help me. I need to transfer data from an Atari 8008L to an IBM PC. To do this, I require two communications programs, one for the Atari called *AtariLink* and one for the IBM called *PC Link*.

I have PC Link II, but so far I have been unable to locate *AtariLink* and the instructions that go with it.

I would be most grateful for

any advice you can give me. — **Louis Alexander, Newcastle, Surrey.**

● *AtariLink* is a protocol standard, not a program. Many communications packages for the 8008L give you either *AtariLink* or its close twin *AtariModem* for transferring data files.

Try Home-Pak or many of the public domain terminal programs available from user groups.

If you do not have the 858 interface module for RS-232 you could do a lot worse than getting *MicroLink* Technology's DataTari cable and terminal software package.

File end dilemma

AS A user of an Atari 8008L and 1050 disc drive I have come across a problem for which I can find no answer either in *Atari User* or my user manual.

I am experimenting with the command to gain access to the disc drive in order to write data to a named file — `DATA @ 1,4,0,"DISKARY1"` to write data to the file and `DATA @ 1,4,0,"DISKARY2"` to read from the file within a program.

I have succeeded in writing a program to give screens to ask a user to update a file called *DISKFILE* with new cheque details and so on and to erase details.

My problem is coming to display the read data. I can get the program to read and display the data from *DISKFILE* using `DATA @ 1,4,0,"DISKARY.FIL"` which is an OK, but as soon as the end of the file is reached at after displaying all the data I get error code 135

(program tried to read data after getting end-of-file).

Is there any recognized statement that tells the program that "at the file end" do something.

I feel sure that there must be a standard AT end of the phrase which I do not know about, can you please help me out? — **J.J. Mead, Watlock, Derbyshire.**

● Other than using a standard terminator such as "END", as you have said, you could have used the following line:

```
10 READ #DISKARY
2000 TO LINE 1000 OF
30 DISK ARARY
```

to read the program to a new line when the error occurs. You could then check `PEEK(126)` to find the error number.

If it is 135 (end of file), you could do whatever you need to in that case. Otherwise, you should handle the error in whatever way you feel appropriate, or halt with some form of printed "Error has occurred" message.

The most elegant method is still to read gracefully via a range record, with a read `TRAP` to handle any errors in the file.

Bring on Brataccas

THANKS for your magazine. As for the definitive issue for the long forgotten Atari users.

The 57 software page was appreciated, but what happened to *Brataccas* by *AtariLink*, a game with an in-depth review crying out to be written?

Something you might like to consider would be reviewing Atari arcade games dur-

ing to time. Some time ago now I had the pleasure of playing *Machine Madness* at Southend, and what an experience that was.

Played with a track-ball built into the machine, it's a game I can recommend to all Atari fans.

For some time now I have invited users of the Quik printing words at letter machines, so please help anyone heard of a similar program for Atari users? — **Geoff Redburn, Milton Keynes.**

● Try *Adventure Writer*, by Code Writer — if you can find one!

No great saving . . .

I OWN an 8008L and have recently obtained a CRI 4000 assembler module, which seems to work perfectly except for one thing.

The command `SAVE(BASIC)` which saves object code does not appear to be operating properly.

The command `ASSEMBLE(C)` appears to work properly. However when I try to save the saved object code from Basic, which according to page 65 of the manual it should do, the load routine crashes and no program is loaded.

I would be obliged if you could give me any advice on the above and also tell me if the particular assembler cartridge is fully compatible with the 8008L? — **Dominic S. Smith, Airdrie, Lanarkshire.**

● Your problems are all related to the fact that neither *Atari Basic* nor the cassette system fully support the normal binary load format of an object file.

For disc users, you just use the *Binary Load* option on the disc menu. For cassette users, since *Basic* will not load a binary load file, the file format of a binary save is as follows:

```
First 3 bytes: $$$ $$$
Next 3 bytes: First Address
```

Lo/Hi format

Page 2 (lines) Last Address to load Lo/Hi format

Then follows the data to go in the addresses specified. There may be further segments of data, each with the same format (although the \$FF \$FF is optional after the first segment). Thus, to load each segment, use something like this:

```
10 00 000 4 0000 000 000 000 000
1000 00 00 0000 0000
20 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0
30 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0
40 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0
50 0000 000 0000 000 000
60 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0
70 0000 0000
80 00 000000 0 0000
100 00 0 0 00000 00 000
120 00 0 0 00000 00 000
130 00 0 0
```

You may then GOTO line 80 again, until an END-OF-FILE happens. Be careful not to write your machine code programs using any areas of memory that Basic uses. Page 3 is an ideal place to use.

Auto-line feed tip

Is the Ferguson AC005 colour TV monitor capable of giving medium-colour resolution on the 317?

The 32007 comes with a high resolution monochrome monitor as standard if a high resolution (MAG) colour monitor were connected to the 317 would it give high resolution colour, high resolution monochrome or a medium resolution output?

I have an AT and an 317 and want to use 3205 with my 32005 printer. The trouble is that although the 317 gives an automatic line feed and carriage return output the 317 does not.

I know that to remedy this I should have to change the appropriate dip switch on the 32005, but obviously this is a great pain as it means taking the printer apart to do so.

Basically all I want to know is how can I change a dip switch without having to

ATARI USER Mailbag

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

The address to write to is:

Mailbag Editor
Atari User
Europe House
88 Chiswick Road
Hazel Grove
Stockport SK7 5NY

disconnect the printer? Can it be programmed or is there a piece of hardware that can be connected?

Laterly is the Juki 5620 colour printer any good, worth the cost and compatible with an Atari?

Also is Atari planning any further colour printers? By full size I mean at least 31 inches across. If so how much and when? — A.K. Bishop, Chessington, Surrey.

■ The Epson printers all have a pin on the Centronics interface which can select the auto-line feed for you. All you need to do is turn the switch to OE, whichever computer you are using, and adapt your 6 bit computer cable to connect pin 14 to ground (pin 18).

This will select the feature every time the cable is plugged in.

Monitor cable

I'MAG very interested in your review of the Sony 3201ACPT colour monitor in the January issue of Atari User.

This reviewer prompted me to write to Sony (UK) for information regarding a cable for use with their monitor but my letters have been received with the hint of total equality which no doubt we are both familiar with from long commences — including 4 Jan 1983. I repeat therefore, if you

would be kind enough to supply the information I require?

I'm unsure of the prospect of buying such an expensive piece of equipment would guarantee a reply. I was wrong! — S. Pattison, Leigh-on-Sea, Essex.

■ The cable you require is a standard Atari one, as the Sony monitor can accept a cable in almost any form you care to use.

The easiest one to use, should you wish to wire one yourself, would be a DIN plug at the Atari end with two phone type plugs — or a BNC and a phono — at the monitor end. Connect them as follows:

DIN pin 1: R/C
DIN pin 2: Screen for both other plugs
DIN pin 3: Phono centre pin
DIN pin 4: BNC centre pin (or other phono) if two phone used
DIN pin 5: R/C

Simply plug this cable into your Atari and into the Audio In and Video In sockets on the Sony, and it should work fine.

We trust this will solve all of your problems, as we have found it to be a very good monitor indeed.

Train cancelled

I OWN an Atari 600 XL with a 128K memory and have tried to program the Alphabet Train

shown in your May issue.

However I keep getting ERROR 147 or line 280 and ERROR 2 in line 800. How do I cut this out? — R. Pattison, Chessington, Surrey.

■ Unfortunately the 128K machine doesn't have enough memory for this program.

Manuals required

I OWN an Atari 400 and 1301A recorder. The information supplied with both said that I should have a manual I did not receive either.

Could you please tell me where I could buy the 400 and 1301A manuals?

Also I wish to have my 400 upgraded to 48K. Could you please recommend a relative upgrade and its cost? — Joseph Morgan, North Kilworth, Leicestershire.

■ Try Atari, or any main Atari dealer, for the books.

If you can't get Atari's own book there are plenty of others which will provide very much the same information.

As to upgrading your 400 it would be far cheaper to buy an 800XL from Dixons, as the last price I heard of on 488 boards for 800s was about £80.

Once you have done this you could sell off your old 400 and recorder, since the new machine comes with its own storage.

That rare 1200 XL

ATTENDING Although computer dealers in W.A. don't normally, I came across a number of an Atari computer I don't know of before.

Several books had references to the Atari 1200XL, and one had a picture. It was in the XL brown and white style but with other keys across the top of the keyboard and several keys numbered F7, F2 etc along with the Shift, Option keys.

The cartridge slot was on the side of the machine, which was sold to be 64K. I thought

the 1200XL had a very small convenience — P.J. Moon, Stafford, Beds.

■ The 1200XL was a forerunner to the 8000L, and was never released in the UK. It had a very short life of only a few months in the States, and is something of a collector's item these days.

Apart from the extra function keys and a couple of other minor details, it was simply an 8000L with no built-in Basic. This came as a surprise, as even the old 400/800 machines,

respectable the machine — K.T. Dobson, Cotteswold, Norwich.

Look to your rights

LOOK AWARD in the March issue of *Mailbag* the Play button of my F010 Atari recorder became dislodged in the 11th month after 12 month guarantee.

I contacted my local Atari service agents who stated that they no longer carry out repair under warranty — their minimum charge is £20 plus VAT — and I was advised to purchase a new D57T recorder.

However, I then contacted Atari's new policy that retailers should replace faulty items up to 90 days from purchase, and after that the item should be sent to the Atari repair depot at Slough — but I also remembered reading complaints that repairs had been taking between three and six months.

Nevertheless, I sent my F010 to Atari at Slough in January and it was returned to me repaired and certified fully tested within six working days of receipt.

The moral of this is — treat your poor rights while the 90 day warranty from your retailer, and after this time — and up to 12 months — return the items direct to Atari at Slough.

Don't go to any registered Atari service agents until after 12 months have elapsed — even then you may be told that the charge will be anything between 80 per cent and 85 per cent of a new one. — Norman Williamson, Sutton, Surrey.

Screen dump modified

I HAVE made two month copies to the 8020 screen dump in the January issue.

If one is aware of the colour registers is set to white, that is, paper colour, the printer gives through a post of that pen

which is not needed doing nothing.

My alternate allows you to skip the pen release that are not used.

Ask lines 201 to 203 and 251 to 254.

The second modification moves the pen and paper quieter by putting the noise and clear commands into a string.

Change lines 800 and 890, then delete lines 870, 900, 920, 940, 960, 980, 970 and 990. — Brian Wright, Hull, N. Humberstone.

10	PRINT "CASSIETTES"
20	FOR I=1 TO 10
30	PRINT "CASSIETTES"
40	FOR I=1 TO 10
50	PRINT "CASSIETTES"
60	FOR I=1 TO 10
70	PRINT "CASSIETTES"
80	FOR I=1 TO 10
90	PRINT "CASSIETTES"
100	FOR I=1 TO 10
110	PRINT "CASSIETTES"
120	FOR I=1 TO 10
130	PRINT "CASSIETTES"
140	FOR I=1 TO 10
150	PRINT "CASSIETTES"
160	FOR I=1 TO 10
170	PRINT "CASSIETTES"
180	FOR I=1 TO 10
190	PRINT "CASSIETTES"
200	FOR I=1 TO 10
210	PRINT "CASSIETTES"
220	FOR I=1 TO 10
230	PRINT "CASSIETTES"
240	FOR I=1 TO 10
250	PRINT "CASSIETTES"
260	FOR I=1 TO 10
270	PRINT "CASSIETTES"
280	FOR I=1 TO 10
290	PRINT "CASSIETTES"
300	FOR I=1 TO 10
310	PRINT "CASSIETTES"
320	FOR I=1 TO 10
330	PRINT "CASSIETTES"
340	FOR I=1 TO 10
350	PRINT "CASSIETTES"
360	FOR I=1 TO 10
370	PRINT "CASSIETTES"
380	FOR I=1 TO 10
390	PRINT "CASSIETTES"
400	FOR I=1 TO 10
410	PRINT "CASSIETTES"
420	FOR I=1 TO 10
430	PRINT "CASSIETTES"
440	FOR I=1 TO 10
450	PRINT "CASSIETTES"
460	FOR I=1 TO 10
470	PRINT "CASSIETTES"
480	FOR I=1 TO 10
490	PRINT "CASSIETTES"
500	FOR I=1 TO 10
510	PRINT "CASSIETTES"
520	FOR I=1 TO 10
530	PRINT "CASSIETTES"
540	FOR I=1 TO 10
550	PRINT "CASSIETTES"
560	FOR I=1 TO 10
570	PRINT "CASSIETTES"
580	FOR I=1 TO 10
590	PRINT "CASSIETTES"
600	FOR I=1 TO 10
610	PRINT "CASSIETTES"
620	FOR I=1 TO 10
630	PRINT "CASSIETTES"
640	FOR I=1 TO 10
650	PRINT "CASSIETTES"
660	FOR I=1 TO 10
670	PRINT "CASSIETTES"
680	FOR I=1 TO 10
690	PRINT "CASSIETTES"
700	FOR I=1 TO 10
710	PRINT "CASSIETTES"
720	FOR I=1 TO 10
730	PRINT "CASSIETTES"
740	FOR I=1 TO 10
750	PRINT "CASSIETTES"
760	FOR I=1 TO 10
770	PRINT "CASSIETTES"
780	FOR I=1 TO 10
790	PRINT "CASSIETTES"
800	FOR I=1 TO 10
810	PRINT "CASSIETTES"
820	FOR I=1 TO 10
830	PRINT "CASSIETTES"
840	FOR I=1 TO 10
850	PRINT "CASSIETTES"
860	FOR I=1 TO 10
870	PRINT "CASSIETTES"
880	FOR I=1 TO 10
890	PRINT "CASSIETTES"
900	FOR I=1 TO 10
910	PRINT "CASSIETTES"
920	FOR I=1 TO 10
930	PRINT "CASSIETTES"
940	FOR I=1 TO 10
950	PRINT "CASSIETTES"
960	FOR I=1 TO 10
970	PRINT "CASSIETTES"
980	FOR I=1 TO 10
990	PRINT "CASSIETTES"
1000	FOR I=1 TO 10

Speedy service

HOW writing to magazines and most people have complained to make I would like to give someone a hearty compliment for a change.

My son has an old 8000L and he wanted to buy an Atari 1050 800 drive. We looked through the February 1985 issue of *Atari User* and saw the advertisement by Component of Southampton, Lincs, who were offering 10 free discs with that drive disc.

I telephoned them on the morning of January 30 and enquired how soon I could expect delivery if I placed my order immediately and was informed it would be despatched that same day.

I placed the order and to the great delight of my son and

myself it arrived the following morning.

Well done Component, I know where I will be placing my orders in future. — John Steel, Hounslow.

Cassette capers

I WAS not surprised to hear about Gareth Jones's cassette capers, I myself was at one time in the same boat.

To help those people who see the 1070 cassette recorder, I thought I would give a few tips from my experience.

When a program needs to be saved from Basic I suggest an LPRINT program and it occurred with the printer off line. This clears the buffer of any garbage.

Also I would advise that the cassette be fully erased and advanced to 000 on the counter, as some cassettes have long leaders which interfere with the length of the first tape.

I have found that low quality cassettes greater than C80s can cause errors while writing during saving or loading and then cause crashes.

In general though good quality cassettes do not have this problem and I have used up to C80s. I should also add that the Basic CTS, described in Gareth's letter, also caused no problems, so I now avoid them.

Nevertheless, some programs still refuse to load. There are two methods which usually prove successful in correctly reloading the cassette.

The first is to advance and rewind the cassette completely several times, which removes uneven winding.

The second is to copy tape in tape using a high quality AFA and cassette. A combination of these techniques reduced my cassette failures rate. — Lee Chantler, Halesowen, West Midlands.

■ Good advice. Don't forget you only need the LPRINT on old 400/800 machines, not 800 or 810.

Stress analysis

I WANT stress analysis programs on an Atari 800XG. The following limitations in *Atari Basic* limit the length and complexity of these programs:

- The maximum number of variables available in one program is too small.
 - The maximum number of equations/letters in one line is also restrictive.
 - Can you help possibly with a better BA program which modifies the basic limitations?
- The first point means I have to stop a program and reenter or move separate ones in a time-consuming and sleep-inducing process.
- The latter point is really a nuisance as the various components of vector and matrix

maths need to be on the same line, otherwise the order in which the various components are read into the computer messes up the answers. — J.R. Carter, Holland.

■ The problem of number of variables being too small can be overcome quite easily. Probably the best way to do it would be to use just one array type variable.

Thus you only use up one name in the variable name table, but you could have 10, 20 or 1,000 entries in your dataset.

The second is harder to resolve. Certain increases are possible by using POKE \$2.0 to reset the margin, and by using abbreviations wherever possible.

However we don't see any reason why you can't put different parts of your calculations on different lines.

Simply split any formulae into parts, then have one line line to calculate the sum of the parts.

The process the computer uses to step along the parts of a single line is exactly the same as that used to step on to a new line, so simply break the problem down into smaller parts and put them on different lines.

Lighting interface

COULD you tell me how to connect an Atari 1300X up to lights and have it turning them on and off when a certain key is pressed?

Could you also produce an article on an Atari computer controlling different things around the house, such as

turning lights on and off at certain times.

What type of software would have to be written for both of the above? — Paul Myers, Harrow, Cheshire.

■ Can Golding still be covering this in his series on gadgets which begins in this issue.

International characters

WITH reference to your article in Q.D. *Discovery of Atarifile* in your December 1985 issue concerning printing the £ sign I would like to add the following information.

Not only do you have to turn on the international character set with `(CTRL-C) ST (CTRL-C) ST` but you then have to turn it off again before the end of the line with `(CTRL-C) ST (CTRL-C) ST`, if you do not turn it off you

Simpler user defined graphics

AFTER many hours of deciphering user defined graphics by adding up all those numbers, I sat down and wrote a formulae for getting around the problem.

Put down on grid paper your GDS. — an 8x8 grid should be used.

Draw a line straight down the grid middle and mark sides A and B.

Write down horizontally numbers 1 to 8 by the side and read 48 as well as left hand side hex code (see hex code).

Now carry on 48 the same as 44 then 24, 28, 34 etc. to 88.

Now you take line one hex and convert on the hex to dec converter. Do all 8 lines.

This method can be mastered and can be worked out in the mind. I hope this is a useful formulae. — D. Simpson, Shaftesbury, Dorset.



Hex to dec. converter

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
B	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Hex table

0																
1																
2																
3																
4																
5																
6																
7																
8																
9																
A																
B																
C																
D																
E																
F																

get it at the beginning of the text file.

I have read that you could put CTRL-01 27 CTRL-01 23 into the print formatting block at the beginning of a file that certainly using MacWriter and a 1007 printer this does not work because every time the start with 0.

I have taken the liberty of enclosing a copy of instructions for obtaining the IC2 which I put on disc so that I wouldn't have to keep explaining it to my wife and kids. If you think it is any use perhaps you could forward it to Mr or Mrs (or even Mrs) Dubois - Maurice R. Pearson, Wick, California.

When I want to write an International Character, say Z, I have to type CTRL-01 27 CTRL-01 23 to turn on the International Character Set and then CTRL-01 * (where * is a number below 26 in the back of the 1007 manual and appears an International character.)

I then turn off the ICE by typing CTRL-01 27 CTRL-01 24.

So the Z is written by typing CTRL-01 27 CTRL-01 23 CTRL-01 0 CTRL-01 27 CTRL-01 24 with no spaces between.

It is written by typing CTRL-01 27 CTRL-01 23 CTRL-01 26 CTRL-01 27 CTRL-01 24 with no spaces.

Accent on accents

I HAVE an 80080 which I use with a 1280 size drive, a 7027 printer and an AlanWriter also. I find when printing lengthy reports occasionally the 1007 will stop in mid-sentence and apparently lock up. I tried hitting Break and then P again, but all I got was "Device not available".

I contacted the HelpLine and was told that if I waited 45 minutes all should be well, so it was just the 1007 re-loading.

I tried that, and it undoubtedly they were right. The 1007 started off again 45 minutes later and completed the job.

My first query is this. As the

1007 doesn't make any move at all during the waiting time, what exactly is re-loading?

My second query is that when using the International Character Set the 1007 prints a small white square in the left hand margin. This square reports independently German or French words. Is there any way of printing out the set without this appearance?

Incidentally, congratulations on the magazine. I look forward to receiving it as much as I do my Warwick User Group's Nigger. I wish they were both weekly. - Bill Sibbey, Wells-Next-the-Sea, Norfolk.

Well, you'll never hear of it being called re-loading before, although we do know of the problem you refer to. It is basically a three-book to the type of printer which used to get very hot when used for long periods.

This computer simply pauses for a while to let the printer head cool down. This manifested itself in the old 400/800 series machines as a bug which repeated the last line of text after re-starting, which could be even more annoying.

As to your 3 problem, this is caused by the fact that AlanWriter sends extra control codes after a carriage return, and can be avoided by turning the International Character Set off again after each special character is printed, and then on again before the next one.

Use CTRL-01 27 CTRL-01 23 to turn it on, and CTRL-01 27 CTRL-01 24 to turn it back off again.

Database problem

PLEASE explain in very simple terms how to set my Home Filing Manager on an 12800 using the extra memory.

I have an 80080 and unless I can use the extra RAM I can't see any advantage in having the 12800. - J. Hopkins, Wiltshire, Corsham.

Sorry but you can't, as it isn't designed to use it. Try Syllibre for a database that can use 128k.

Testing RAM

COULD you please let me know if the 200 expansion RAM I have for my 80080 is faulty or does 20k + 10k add up to 30k or the 80080 only get 40 memory blocks when using the memory test.

Many games using 48k RAM like Cosmic Chess 3.0, F-15 Strike Eagle and Space Shuttle are OK. Solo Flight being the exception. Could I get this problem with Memory Test Navigator?

Has anyone else had this problem with RAM add-on's? - P.J. Tapscott, Watlington-Kings, Essex.

When you go from Basic to the self-test, Basic itself using up 6k of memory, so 40 blocks will be quite normal on the memory test.

To check the full 48k, hold down Option while you switch on. This will disable Basic completely and take you straight into the self-test.

You will get exactly the same result on an 80080, or a 12800, so don't worry about it. By the way, MemoryTest should work fine on your upgraded 80080, as, indeed, should Solo Flight.

Saving pictures

AFTER typing in the Canvas program from the December 1985 Issue User I positioned a tiny grid picture of which I will very proud.

I thought I would try to save the picture, and that's where the problem started.

I pressed Break and while the picture was still on the screen typed NEW and TO GR. FS=32.

Then I saved it on tape. I pressed Reset and typed NEW, and GR-10=32 result put the picture back on the screen.

But after the computer was restarted off and an apple I tried to load the picture but it was not there.

Could you please tell me

how to save pictures like this? - Alan Park, Garswood, Suffolk.

Although you could still see the pictures on your screen this was only because you had not cleared the memory when you did the GRAPHICS FS=32 call.

Similarly, NEW and RESET do not clear the graphics area. Only a GRAPHICS command can do this, and by adding 32 you selected a version which retains the previous picture.

Once you turned off the computer all of the memory was wiped - including your picture. Unfortunately, the SAVE command will only save your program, not other areas of memory.

The easiest way to save the picture is by a machine code routine, but a simple Basic version is as follows:

To SAVE (write the picture is showing):

```

DRAW GR GR=10,0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0

```

To LOAD again, use:

```

DRAW GR GR=10,0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0
DRAW GR GR=100:0:GR=100:0:0

```

Both of these could be added to the Canvas program if you want.

Stereo connection

HOW about some programs for the 12000 using more of the available memory?

Also, why my 12000 produce audio output of a level I do not very want? - Stewart Rowell, Evesham, Worce.

To use your stereo connect a mono DM plug from the Amiga monitor port to one of the Aux in sockets.

Take part in our wide-ranging Reader Survey, help to decide the kind of features you'll be reading in future issues of *Atari User*, and . . .

Win yourself the revolutionary

PSION ORGANISER

ONE of the reasons for the outstanding success of *Atari User* has been our determination to reflect, as far as we possibly can, the interests of our readers. We do this by careful study of the letters that pour into our editorial office every day, and by talking to the many thousands of readers who visited us at the Atari show.

Now, as we plan the features that will entertain, amuse and intrigue you during the rest of 1986 – and hopefully stimulate to make even more use of your Atari computer – we feel we need to take the pulse of the whole of our readership. To find out the kind of equipment you use now, and are considering buying in the future. To discover where your interests lie – and the subjects you would most like to read about in the pages of *Atari User*.

What YOU say when you fill in our reader survey on the opposite page could play a vital part in determining the kind of features you'll be reading in *Atari User* in months to come. So we're asking for the cooperation of every one of you in making it a success, whether you own an 8-bit computer or an ST.

To encourage you, we've some excellent prizes – the brand new Psion Organiser II, and ten luxury binders and dust covers for the names up.

Help us give you the magazine you want by filling in our reader survey form. If you would like to enter the draw, please include your name and address, but you can, of course, remain anonymous if you wish. Remember, you have 11 chances to win a prize.

II

Actual size when closed:
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This handheld Psion Organiser was a worldwide success when it was released two years ago. Now Psion have announced the Organiser II equipped with the latest CMOS technology.

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If you wish your survey form to be included in the draw for the Organiser II, please return it by June 30, 1986.

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How often do you buy **ATARI User?**

every issue 1 in 2
 1 in 3 less regularly

If you play games, which of the following types do you enjoy most?

arcade
 strategy leg chess, draughts
 adventure
 simulations

Which, if any, of the following models do you own?

WS2000 Nightingale
 WS3000 Voyager
 WS5000 V12
 other

Which of the following hard rates do you use?

500/200 1200/1200
 1200/15

If you own a printer, is it:
 dot matrix poster
 thermal other
 daisy-wheel

Please state manufacturer/type:

ATARI 1024

If you have a disk drive, is it:

510 1050
 other

Which pieces of hardware are you likely to buy over the next 3 months?

printer digitiser
 disk drive MIDI interface
 monitor platter
 modem joystick
 cassette recorder other

Which of the above do you intend to buy eventually?

How do you rate your knowledge of **Basic** programming?

Novice Experienced
 Intermediate Don't program

If you attend a computer club, please give its name and issue:

How do you purchase products for your Atari?

mail order
 high street shop
 subscription/sales
 Atari User special offers

Do you plan to attend the next **ATARI Show?**

Yes No

What your main interest is:

new product launches
 bargain prices
 purchasing a particular product
 the wide range of products on view

Where do you buy **ATARI User?**

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How many other people read your copy of **ATARI User?**

1 2
 3 4
 more than 5

Which other magazines do you read?

Amiga Meccano
 Amiga Computer Gamer
 Computer C & W
 Page 6 other

Which article, or series of articles, would you like **ATARI User** to contain in forthcoming issues?

Have you any general comments to make on the magazine contents?

Finally, by circling one number in each line, could you indicate your level of interest in the following articles? (1 lowest - 5 highest)

News	1	2	3	4	5	7	8	9
Beginner's Basic	1	2	3	4	5	7	8	9
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Commodities	1	2	3	4	5	7	8	9
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Adventure column	1	2	3	4	5	7	8	9
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Atari 8-bit computer owners

Which computer do you own?

400 1300XL
 800 1300SE
 800XL other
 other **800XL**

What memory capacity does your computer?

..... k

Do you own an **800** interface?

Yes No

Which of the following do you use?

Atari Editor Assistant Editor
 Pagefly Mac/80
 Wordpage Action 1
 Supervisor VisiCalc
 Logo SimCalc
 Microsoft Basic Seattle +

Please list any other non-game product you regularly use:

Speed script

Atari ST owners

Which computer do you own?

520ST 1040ST
 520STX

Which peripherals do you own?

3 1/2" drive hard disc
 1 mg drive printer
 other

Do you have **SEMITOS**?

on disc in ROM

What kind of monitor do you use?

colour monochrome
 monochrome

What do you mainly plan to use your **ST** for?

work programming
 personal/business games
 other

What languages do you use?

Basic Pascal
 Modula C
 other

List 3 software packages you regularly use:

1
2
3

THIS month we start another series from the prolific pen of LEN GOLDING. Just how creative can you be if limited to only five lines of Basic program?

Len starts the ball rolling with this Dice program and we've got some more of his little beauties for future months. But if YOU would like to contribute just remember the title of the series...

Five liners!

OUR first program simulates a die, displaying one of six possible faces after every roll.

It's fun to watch and can be used by small children or handicapped youngsters who would have difficulty handling traditional dice. It also makes a good pre-school counting and shape-recognition game in its own right.

Packing everything into five lines is tricky. You can't simply generate random dots on the screen because only six of the possible combinations look like real dice faces.

This five-liner gets round the problem by storing the six legal patterns in an array then using a system number (0 to 5) as an index into it.

A die face has three columns and three rows, so we need nine bytes of information to store each legal pattern of dots and spaces. Six possible faces therefore require a total of 54 bytes.

There's no need to arrange them as a 3 x 3 matrix in the computer's memory — a 64 x 1 array will do just as well and can be handled much more easily.

Line 10 switches the cursor off, clears the screen, sets up the array and puts the number 32 — blank space character — into every element. Then it opens the keyboard for input.

Line 30 loads the positions (4th, 8th, 17th, 20th and so on) where dot characters — CHR\$(20) — are to be stored. If you draw the array out on graph paper you would see that each



block of nine entries can be split into three sets of three, then arranged one under the other to form a die face.

Line 30 does nothing more than draw a box shape to contain the dots.

The POKI 764,1 command is there to fool the computer into thinking you've pressed a key. Without it your initial screen would just contain a rather enigmatic box with no dots in it.

Line 40 is where the main loop starts. It waits for any character key to be pressed, then generates two random numbers. The first is between five and 18 and determines how many times the die will roll before it settles.

The second ranges from 0 to 5 and determines which face will finally be displayed. This second number is multiplied by nine to find whereabouts in the array the chosen face pattern starts. Line 40 also produces a beeping sound to accompany the pattern changes.

Line 50 retrieves the chosen nine

bytes, chops them into three sets of three and prints each character — dot or space — at its correct position inside the box on screen.

```
10 POKI 764,1:PRINT CHR$(32);CHR$(32);CHR$(32);CHR$(32);CHR$(32);CHR$(32);CHR$(32);CHR$(32);CHR$(32)
20 FOR I=0 TO 5:FOR J=0 TO 2:FOR K=0 TO 2:GOSUB 30:PRINT:GOTO 20
30 FOR I=0 TO 5:FOR J=0 TO 2:FOR K=0 TO 2:IF RND(1)<=.5:PRINT ".";ELSE PRINT " ";
40 PRINT:FOR I=0 TO 5:PRINT:FOR J=0 TO 2:PRINT:FOR K=0 TO 2:PRINT:GOTO 40
50 PRINT:FOR I=0 TO 5:PRINT:FOR J=0 TO 2:PRINT:FOR K=0 TO 2:PRINT:GOTO 50
60 PRINT:FOR I=0 TO 5:PRINT:FOR J=0 TO 2:PRINT:FOR K=0 TO 2:PRINT:GOTO 60
70 PRINT:FOR I=0 TO 5:PRINT:FOR J=0 TO 2:PRINT:FOR K=0 TO 2:PRINT:GOTO 70
80 PRINT:FOR I=0 TO 5:PRINT:FOR J=0 TO 2:PRINT:FOR K=0 TO 2:PRINT:GOTO 80
90 PRINT:FOR I=0 TO 5:PRINT:FOR J=0 TO 2:PRINT:FOR K=0 TO 2:PRINT:GOTO 90
99 END
```

Got it
right!

NOVEMBER 1984 COMPUTING FOR BEGINNERS

IN 1984 IN 1984 IN 1984

These back issues are still available

May 1988 issue: Profile of Jack Tramiel, president of the new machine, Amiga Special, Advertising Alphabet Train, News story, Software reviews, Finally the 5000, Microsoft, Amiga Insights - *Hi Wire, Beginners and Graphics.*

June issue: Revision of the 13000, Software, Advertising Random walk here, Software reviews, Frog Jump, Microsoft, Amiga, Amiga Insights - *Hi Wire, Beginners and Graphics*, special 12 page feature on Communications.

July issue: *Examining*, Book Buy, CD-ROM, LPT Communications, Advertising, Display List Tutorial, Software review, Power Functions, Trainers Mark, Random Words, Microsoft, Amiga Insights - *Hi Wire, Beginners and Graphics.*

August issue: Analysis of 5000's processor performance, Reviews, Game Reviews, Assembly, Turbo Table program, free look at Logic Board 1995, Don 2.5 upgrade offer, Display List Tutorial, Microsoft, Software reviews, Insights - *Hi Wire, Beginners and Graphics.*

September issue: Fringe operators the 5000, Mike's 8 screen Army routine, Mike Marsh, Don Miller, Display List Tutorial, 68000 software review, in processing with Logic, Software reviews, Insights - *Hi Wire, Beginners and Graphics.*

October issue: Computer Caravan preview program, Update for 5090 5000 available, 13000 Run also available, Mike's money management, Features, Software reviews, 68000 operating instructions, shipping, Insights - *Hi Wire, Beginners and Graphics.*

November issue: *Concise* program, Microsoft upgrade offer, 50 graphics examples, 50 software list, Don's track game, Display List tutorial, Advertising, Microsoft, Software reviews, Insights - *Hi Wire, Beginners and Graphics.*

December issue: Check out program, Special features! Christmas, Amiga 50 reviews, GenWrite and GenDraw, Countdown game, Don's Apple List

tutorial, Software reviews, Left-handed joystick, Advertising, Beginners and Graphics.

January 1988 issue: Machine code games, Pt 1, that is education, Sony ST monitor review, Puzzle game, Short-cut update, Letter article, Software game, 13000 access using routine, programming in C on the ST, Advertising, Software reviews.

February issue: Machine code games Pt 2, C program in Logic, Finding colour using Highgate's multiplexer, Bridge program, Random management techniques, Intertape driver code, Review game, ST graphics prog, Advertising, Software reviews.

March issue: Machine code games Pt 3, Don's low program, Compile Pt 1, Beginner review, Chess move for only games, Book reviews, Advertising Software reviews, PLUS! *Amiga ST User's 5 Special review*, 50 Minutes and Colour again, Mike Pt 1, Making the most of the ST.

April issue: Sound synthesis, Computer 3, Logic reader 12 and 13, Reviews review, Game, the directory printing utility, Advertising Software reviews, PLUS! *Amiga ST User's Review of T3 utilities 2*, more on the file path, Making the most of the ST, and all the rest too.

May issue: Don's Travel Iterator, Cram-Design user game, Compile Pt 3, Page, Mike's Compile Pt 2, Area's Sorting Program, Advertising Software reviews, PLUS! *Amiga ST User's* don show review, The Power and Chair (Software) ST Graphics Pt 3, Special Power! (Picture compression) program, Making the most of your ST, and the later STs and ST news from the States.

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NOV: King Jump Guide the king to the throne in the winter of the snowlands. **120000 Run Power** Use the extra bits of memory to good effect. **Submariner** Handle the submarines. **Travis Bickle** Drive patterns with a joystick. **Rescue** **Brilliance** Get random numbers from machine code. **Friday** **Efficient** Get away the Friday. **Films** Access to their code!

JULY: Break Run Follow the deserted city and land safely. **Chameleon** Find out what's going on they made your feet. **Treasure Hunt** Use logical thinking to find the treasure. **Parasitic Generation** Keep generating parasites till you find out you are the host! **Code** Convert your machine into an object. **Demons** Control and use the machine programs the hell!

NOVEMBER **Assault** Make machine code programs using music. **Frankenstein** Save money with this fast machine simulation. **Machinist** Compile programs made easy. **Parasites** Prevent your programs from paying you. **Display List** Demonstration programs. **Golden 1985** Futuristic text adventure. **Track** **Tekket** Demonstration programs.

DECEMBER: Run **March** Help Homer the 18th month the most necessary month. **Chilly** **Water** Convert your machine code routines to GEMX systems. **Display List** Demonstration programs. **Screen-Draw** Using your Mode Streams to a 320 pixel. **Block** Solve the Block problem.

Then give your fingers a rest by sending for our monthly disc or cassette containing all the programs from each issue of Atari User. See order form opposite.



OCTOBER: Phantom Taster Run! **Memory Game** Exercise memory in fun and fast. **Display List** Demonstration programs. **Wing Page** Action game for one or two players. **Computer Games** Make your own mini-computer. **Rescue** **Update** Improve your text/TTY interface. **Run/Draw** Make the most of the 120000's extra memory.

NOVEMBER: Day Forth Help Day escape from the guards. **Calculator** Teach your Atari to be a mathematician. **Display List** Demonstration programs. **Smasher** **Operation** Units to provide logical functions. **Display List** and fill a circle. **Print** results of the month - **Display** machine code printout game.

DECEMBER: Consider Make version of the famous TV game. **Get It Right!** Don't Let's run this version program. **Draw** Run or handle on your feet. **Line Utility** Make using your. **Display List** Demonstration programs. **Print** results of the month - **Joe's Progress** machine code entertainment.

JANUARY 1986: Hello Help Mr Happy meet **Unlucky**. **Get It Right!** And Don't even think about jumping. **Miss** **Atkins**. The game is necessary, the machine code enters. **Linker** Make using programs may. **Data** Play the more or another player at the strategy game. **Draw** 1200 pixels/lines machine. **Print** results of the month - **Scramble** **Flights** machine code game.

FEBRUARY: Microcomputer Programs to manipulate **Microcomputer** screen. Check through them what they. **Shuttle** **Indigo** **Colorfully**. **Rescue** **Simple** to play, hard to master. **Bridge** The leading person's card game. **Print** results of the month. **Don't's** **Start** an adventure game you may never escape from.

MARCH: Home **Play** Knight's tour program. **Book** **Completed** Program to incorporate the new notes. **Home** **Atkins** First part of monthly filing. **Print** results of the month. **Rescue** to the **Center** - manage your own land and help Whiston land his!

APRIL: Squash Activate the hidden depths of the dual sound chip. **Don** **Index**. Keep track of the file and list items with the index printing program. **Display** **Make** the most of Modes 17 and 23. **Monitors** Can you beat the game that learns how to monitor?

MAY: Caves **Escape** Can you help Mr Co to escape from the dungeons with King Mowbray's gold? **Print** **Results** Program to incorporate the status of the game. **Spelling** **Autolink** Run weekly without spelling lists.

JUNE: Run **Control** Create hundreds of new music for the month. **Control** **Escape** game. **Print** **Results** **Program** Create your own MIDI songs with the **Print** **Results** Editor. **Print** **Line** & **Simple** **Display** routine - build it into your own program.

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