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# ATARI USER

Vol. 2 No. 2

June 1986

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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.

There's the Last V8 from Mastertronic for the 8-bit range and a super deal on discs for the ST range.



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## Art and the ST

**STENO** developed by Astraminda Software for release by Microsoft next month is ST Art. This paint program will handle both graphics and text, produce an A4 printout for instant letters, 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 market.

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

## Accounts suite

A **SUITE** of integrated accounting software for the Atari ST range has been released by Systematics International Microcomputers.

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

Prices range from £250 to £450.

# 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 520STM, 1040STX and the soon-to-be-available 520STFM.

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

The £399.99 520STM 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 — 106/86M — 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 triple-disc



## Making way for new breed

version £199.99. Alternatively, Southeast-based AST has produced an ST compatible 1mbase drive for the surprisingly low price of £59.

There is still no information as to when the 520STFM 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 triple-disc monitor with a built-in 1mbase drive — the 1040STX — is available with a monochrome monitor at £799, or with an RGB colour monitor at £999.

# ATARIS IN YOUTH TRAINING DRIVE

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

One of the computers, an Atari 1300XE, 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 Parkers, said: "We have four Ataris — two 8000XLs, a 1300XE and a 520STX with disc drive — all bought by donations from friends of the club, Inter-Action — an educational charity — and local



Atari is used at the conference

police after their last property sale.

"The conference strove 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 8000XLs for use at community camps.

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

The Ataris are helping teenagers Britain's youth clubs into job springboards, according to Ed Dennis, 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

Rank	Title	Rank	Title	Rank	Title	Rank	Title
1	Superman	11	Superman	21	Superman	31	Superman
2	Superman	12	Superman	22	Superman	32	Superman
3	Superman	13	Superman	23	Superman	33	Superman
4	Superman	14	Superman	24	Superman	34	Superman
5	Superman	15	Superman	25	Superman	35	Superman
6	Superman	16	Superman	26	Superman	36	Superman
7	Superman	17	Superman	27	Superman	37	Superman
8	Superman	18	Superman	28	Superman	38	Superman
9	Superman	19	Superman	29	Superman	39	Superman
10	Superman	20	Superman	30	Superman	40	Superman

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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 reuniting the current trend of imported American software, to which end we have 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.

Andie 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 rewritten *Colossal Trilogy* - *Colossal Adventure*,

*Dungeons Adventure and Adventure Quest* - as a disc at £19.95 for the Atari ST and a triple cassette at £12.95 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 Andie 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 booklet, *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 £20,000 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 in substantial volumes".

The SMM804 costs £199.

## Single handed joystick

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

The Fantastic III 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 Galactobot 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 Galactobot II Plus as a result of the built-in quarter raps. 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 £12.99 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 Giles Puddles with 16 screens of action-packed challenges.

All cost £12.99, 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.

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

Atari ST Tricks and Tips explains basic commands to access Gem using VDMS and GEMSYS and describes resource files with examples.

Each book costs £12.99.

## Bugs menace

GEM works 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 lost-at-sea Halley's Comet.

The aim is to hit enough of the germ bugs to stop a colony reproducing and infesting the earth's surface. Price £7.99.



## 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 CSE and GCE 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' staff. 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 al-

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 largest 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 unbeatable 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 storefront

## Business is booming

MORE than 1,400,000 has been needed 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.

Ray Dohal, managing director, said: "The Atari ST range brought about increased sales".

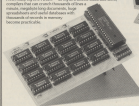


# Upgrade the 520 ST to one megabyte and add the professional look from under £100!

## MEMORY CARDS

The **AT512 520 MEMORY CARD** upgrades the standard 520 ST to **ONE MEGABYTE** of RAM, and costs under £200 inclusive of VAT. The **AT512000** goes even further, bringing the RAM to **TWO AND A HALF MEGABYTES** for less than £300 inclusive.

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## DISC DRIVES

AT512 Disc Drives are all 3.5 inch double sided, offering 720K (one megabyte, unformatted) — 1180K (the storage capacity of the standard ST drive). They are available in 3.5 and 5.25 inch formats. The drives are drive chained to the standard ST drive, using the power and data cables supplied.



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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 even further.

An organisation called *Adma - Association in Scotland To Research Into Astronautics* - is experimenting with the design of a spacecraft that could travel millions of miles, dropping down, planet to planet and will survive a close encounter with the sun.

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

flies at hypersonic speeds on 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 to fly an *Stargazer*, a mission to fly within two miles of the sun.

The Americans see *Waverider* as the most serious contender for the role of Marsprobe transporter because it can travel from Mars to Jupiter by leaving from one planet to another, harnessing the gravitational force of each in the manner of a slingshot.

A leading member of the Stargazer team, James Monweller, has been to 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 *Adma* in Scotland to the Jet Propulsion Laboratory in California.

"Wind tunnel test data and other data are constantly being utilised 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

*ADVAIR* handles with a subscription to *Microlink* have 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 globalisers, the *International Official Airlines Guide*.

Known as *OAG*, it offers the very latest data from more than 750 airlines world-wide, with details of 14 million flights.

*Microlink* subscribers can be connected within seconds via satellite to the *OAG* computer in *San Francisco*, 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 a *mid-air* time feature which takes data and sends any changes that 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 of destinations, and the user can select information either by single city entries or by using prompts on the screen.

## 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 & Edwards*, *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 castlists - being presented in the capital.

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

ites like *Glitter Spirit*, *Cats* and *Rosie* for *Four Wives*, to the new musical *Time*.

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 on 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.



NEW 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 machines. 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 £39.

Philon also plan three more titles to add to the ST library — Fast/C, priced at £129 and Fast/Portran and Fast/Cool at £249.

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. Xent 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 MGraph 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 130086 and a 520ST, I also admit to an IBM XT. Until recently the IBM was very useful because, in the course of the 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 Basic is basically DBase II, but for the 520/5040ST. You can even run DBase II files created on another machine without any alterations. It retails for £39.99, 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 16 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 a game where you are not tied down to speed and joystick ability. Word for Word is for me. Copyright and trademarks prevent the authors, May View Software, from calling it by the name I do, and that is Scrabble.

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 US will be £39.95.

I have just finished reading the American magazines Amic and Analeg, 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:** £8.95 (Cassette),  
 £14.95 (disk)  
**Supplier:** Dardanis, Suite 214  
 Dover Terrace, Highgate  
 Road, London NW6 3PL  
 Tel: 01-482 1755

DESPITE its novel title, *The Tail of Beta Lyrae* turns out to be none other than a cloned version of *Skensdale*, 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 spaceship through a series of sectors. The happenings on screen are displayed in standard two-dimensional, cross-sectional mode. Your view is from the side.

The spaceship 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.

Like 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 tortuous. Likewise the quantity, variety and perverseness of the cave's defence systems grow with each passing sector.

The defence systems consist of two main elements. Firstly, there are obstacles which block your way but don't get 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 vehicles - rockets, lasers and plasma cannons.

Particularly nasty are the Rockhopper missiles which, as their name suggests, fly up at an angle towards the unexpected 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 oily 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 numerous are the attackers and hazards.

You may choose to have five or seven spaceships 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 spaceship.

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 level as well as shoot that other versions have included. Even so, this is the best *Skensdale* clone I've seen on any video.

Presentation, 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	4
Graphics	4
Playability	5
Value for money	4
Overall	4

# A seat on the managers' bench

**Program:** *Football Manager*  
**Price:** £9.95  
**Supplier:** Addictive Games, PO  
 Albert Road, Bournemouth  
 BH7 1BZ. Tel: 0202  
 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 gain rapidly 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 set or let your players, arrange a loan, or perhaps pay one back. Loans can range from £100,000 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 game results 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 Addictive Games have also done 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:** £9.98 (unlimited),  
 £14.98 (box)  
**Distributor:** Futureware, 143  
 Grove Inn Road, London  
 W67 1B. Tel: 01-899  
 1217.

**SIDEWINDER** 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-decreasing fuel supply by bombing fuel pads.

There are five caverns, and the fuel pads 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	5
Graphics	10
Playability	10
Value for money	10
Overall	10

## Danger, addictive

**Program:** *Boulderdash II*  
**Price:** £9.98 (unlimited),  
 £14.98 (box)  
**Distributor:** Datacube, Suite 314,  
 Grove Terrace, Highgate  
 Road, London N6 6LE. Tel:  
 01-492 1750.

If you've a taste for games that leave you red-eyed and stiff-fingered, that have you saying for the 99th consecutive time, "I'll just have one more go!", then even such an inexcusable grip that you lose track of time, then *Boulderdash II* is just your cup of biscorns.

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 thing as before, is every bit as riveting.

You control a cute little figure called Rockford who blinks 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 valleys 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, it is a word, *boulders*.

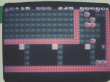
Large boulders, embedded in various parts of the strata, disintegrate literally throughout the cave system. What makes the game so much fun is that the boulders are prone to come crashing down with a noise like thunder.

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 drop 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, rearing, surferlike, amoeba, flylike and other obstacles



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

You control Rockford's movements with normal joystick manipulation. 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, 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 addicted - go buy *Boulderdash II*.

Bob Chappell

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

## Wearing well...

**Program:** Arcade Classics  
**Price:** £9.95 (14999M),  
£14.99 (499L)

**Supplier:** CD-ROM Partners  
Industrial Systems Management  
Stam, Wokingham, RG7  
4JF. Tel: 071-559 8099.

GAMES compendiums seem to be all the rage at the moment. Arcade 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 boxedset collection adds 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 must for any Atari owner. The game gives you the chance to drive a racing car at hair-raising speed around one 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.

Beware that part of the help instructions which tell you how to control the car - it's wrong. For the record, the car accelerates automatically. Joystick 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 Golf, with a 15 minute load 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 Boulderdash. You tunnel around a field dodging 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 games plots, reality and logic inevitably take a back seat.

Dig-Dug was fairly popular in its time but this conversion of a golden oldie fails to sparkle. It is similar to, but nowhere near as good as, Mr Golf. 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 held up pretty well, though.

**Bob Chappell**

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

## Desperate drive

**Program:** The Last V8  
**Price:** £19.95  
**Supplier:** Warrington 9643  
Rings, 8-70 Peel Street,  
London EC2A 4JF. Tel:  
01-777 5880

THE Last V8 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 V8. Now, in a desperate attempt to reach the remnants of mankind, you come out into the open only to discover that there is an unimagined number of beams with only minutes left before a disaster.

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

If you think Dekaraglide 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 V8.

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 slide off the road at any speed, let alone 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 scrolling 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 onscreen computer tells you how far it is to the base and how much time remains before the bomb goes off.

The Last V8 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.

**Don Holligan**

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

# Making your own mazes

THIS program was written for those of you who liked my Cavern Escape in last month's *Alter/Use*. 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.

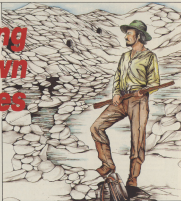
Firstly I will explain how the maze is made up. There are four basic room layouts built into the program. These are arranged in a 10 by 10 square with variable connections between them. They are numbered from 0 to 99 starting in the top left corner running in horizontal rows.

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 1100 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 filename, for example MAZE.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 lines. Save out the new program under a different filename, and **VIOLA** 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 doors and entrances in neighbouring 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 **refuge** 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 REM *****CavernEscape*****
11 *****CavernEscape*****
12 *****CavernEscape*****
```

```
100 GOSUB 5000
110 GOSUB 5000
120 GOSUB 500
130 GOSUB 500
140 GOSUB 500
150 GOSUB 400
160 GOTO 330
```

```
170 REM *****CavernMap*****
180 FOR I=0 TO 40000 AND 0
190 POSITION 0,0
200 GOTO 2500
```

```
210 IF 0 THEN 2500
220 GOTO 2
230 IF 0 THEN 2500
240 GOTO 2
250 RETURN
```

```
260 REM *****CavernRoom*****
270 LOCATE 0,0
280 POSITION 0,0
290 POSITION 0,0
300 GOTO 3500
```

```
310 IF 0 THEN 3500
320 GOTO 3
330 IF 0 THEN 3500
340 GOTO 3
350 IF 0 THEN 3500
360 GOTO 3
```

```
370 IF 0 THEN 3500
380 GOTO 3
390 IF 0 THEN 3500
400 GOTO 3
410 GOTO 3
```

```
420 REM *****CavernRoom*****
430 POSITION 0,0
440 POSITION 0,0
450 GOTO 4500
```

```
460 IF 0 THEN 4500
470 IF 0 THEN 4500
480 IF 0 THEN 4500
490 IF 0 THEN 4500
```

```
500 IF 0 THEN 4500
510 IF 0 THEN 4500
520 IF 0 THEN 4500
530 IF 0 THEN 4500
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540 IF 0 THEN 4500
550 IF 0 THEN 4500
560 IF 0 THEN 4500
570 IF 0 THEN 4500
```

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580 IF 0 THEN 4500
590 IF 0 THEN 4500
600 IF 0 THEN 4500
610 IF 0 THEN 4500
```

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620 IF 0 THEN 4500
630 IF 0 THEN 4500
640 IF 0 THEN 4500
650 IF 0 THEN 4500
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660 IF 0 THEN 4500
670 IF 0 THEN 4500
680 IF 0 THEN 4500
690 IF 0 THEN 4500
```

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700 IF 0 THEN 4500
710 IF 0 THEN 4500
720 IF 0 THEN 4500
730 IF 0 THEN 4500
```

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740 IF 0 THEN 4500
750 IF 0 THEN 4500
760 IF 0 THEN 4500
770 IF 0 THEN 4500
```

```
780 IF 0 THEN 4500
790 IF 0 THEN 4500
800 IF 0 THEN 4500
810 IF 0 THEN 4500
```

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820 IF 0 THEN 4500
830 IF 0 THEN 4500
840 IF 0 THEN 4500
850 IF 0 THEN 4500
```

```
860 IF 0 THEN 4500
870 IF 0 THEN 4500
880 IF 0 THEN 4500
890 IF 0 THEN 4500
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900 IF 0 THEN 4500
910 IF 0 THEN 4500
920 IF 0 THEN 4500
930 IF 0 THEN 4500
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940 IF 0 THEN 4500
950 IF 0 THEN 4500
960 IF 0 THEN 4500
970 IF 0 THEN 4500
```

```
980 IF 0 THEN 4500
990 IF 0 THEN 4500
1000 IF 0 THEN 4500
1010 IF 0 THEN 4500
```

```
1020 IF 0 THEN 4500
1030 IF 0 THEN 4500
1040 IF 0 THEN 4500
1050 IF 0 THEN 4500
```

```
1060 IF 0 THEN 4500
1070 IF 0 THEN 4500
1080 IF 0 THEN 4500
1090 IF 0 THEN 4500
```

```
1100 IF 0 THEN 4500
1110 IF 0 THEN 4500
1120 IF 0 THEN 4500
1130 IF 0 THEN 4500
```

```
1140 IF 0 THEN 4500
1150 IF 0 THEN 4500
1160 IF 0 THEN 4500
1170 IF 0 THEN 4500
```

```
1180 IF 0 THEN 4500
1190 IF 0 THEN 4500
1200 IF 0 THEN 4500
1210 IF 0 THEN 4500
```

```
1220 IF 0 THEN 4500
1230 IF 0 THEN 4500
1240 IF 0 THEN 4500
1250 IF 0 THEN 4500
```

```
1260 IF 0 THEN 4500
1270 IF 0 THEN 4500
1280 IF 0 THEN 4500
1290 IF 0 THEN 4500
```





# 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. If, 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

128 64 32 16 8 4 2 1	Binary	Bit-mapped number	
	0 0 1 0 1 0 0 0	32+8	=40
	1 0 0 1 0 0 1 0	128+16+2	=146
	1 1 0 1 0 1 1 0	128+64+16+4+2	=214
	1 1 1 1 1 1 1 0	128+64+32+16+8+4+2	=254
	1 1 1 0 1 1 1 0	128+64+32+8+4+2	=238
	1 1 1 1 1 1 1 0	128+64+32+16+8+4+2	=254
	1 1 1 0 1 1 1 0	128+64+32+8+4+2	=238
	1 0 1 1 1 0 1 0	128+32+16+8+2	=186
	1 0 1 0 1 0 1 0	128+32+8+2	=170
	0 0 1 1 1 0 0 0	32+16+8	=56
	0 0 0 1 0 0 0 0	16	=16

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, as 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 B 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 BASIC 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 REM *****DESIGNER*****
20 REM *****DESIGNER *****
30 REM *****DESIGNER *****
40 REM *****DESIGNER *****
50 REM *****DESIGNER *****
60 GOTO 1000
70 REM REM NAME LAST NAME
80 REM FIRSTNAME
90 IF SCREENON AND SCREENON THEN GO
  TO SCREENON, FLAG=POSITION 0,117 "ON"
  GOTO 1000000000000000
100 IF SCREENON AND SCREENON, FLAG=1
  AND SCREENON, FLAG=POSITION 0,117 "OFF"
  GOTO 1000000000000000
110 SCREENON=0: FLAG=1: GOTO 1000000000000000
120 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
130
140 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
150
160 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
170
180 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
190
200 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
210
220 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
230
240 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
250
260 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
270
280 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
290
300 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
310
320 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
330
340 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
350
360 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
370
380 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
390
400 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
410
420 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
430
440 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
450
460 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
470
480 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
490
500 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
510
520 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
530
540 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
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560 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
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580 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
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700 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
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720 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
730
740 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
750
760 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
770
780 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
790
800 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
810
820 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
830
840 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
850
860 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
870
880 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
890
900 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
910
920 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
930
940 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
950
960 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
970
980 IF KEYIN THEN FLAG=1: FLAG=1: GOTO 1000000000000000
990
1000 REM *****DESIGNER *****

```







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 port pin-outs

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(0), or PEEK 6032.

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, as long as they can handle at least 1 milliamp per line.

The signal lines can easily be turned into output switches. POKE 54018, 58 – POKE 54018, 255 – POKE 54018, 60 – to set up both ports for output, then PEEK a number between 0 and 255 into 54018. 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 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 604 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

milliamp 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 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 626 (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

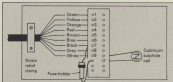


Figure 2. Parallel/Serial

# Gadgets

on/off lines, while variable resistors connected to pins 6 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 run the extension lead using joysticks and paddles in the usual way. If all is well unplug it, cut off the end you don't need and carefully strip about 3in 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 sulphide cell on 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 "THE LIGHT-SENSITIVE GADGET"

20 POSITION 8,0:GOTO 100:PRINT " "

30 GOTO 40

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 GOTO 3:PRINT "THE LIGHT-SENSITIVE GADGET"

and you get a light-activated number which is guaranteed 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 634 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. Random 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 as output switches and how you can get them to control high power appliances.

## Parts list

Joystick extension lead (Tandy 236-8828 or similar).

Cadmium sulphide cell — CDR12 or equivalent. (Maplin type H81DL, Tandy 236-116A or similar).

80mm quick blow fuse and holder. 12 way 5 amp moulded terminal block (Maplin HPC18, Tandy 81-2008 or from most electrical shops).

Baseboard (about 8in x 12in preferably 12mm or 15mm ply). Total cost around £8.50.



## MILES BETTER SOFTWARE

221 Cannon Road, Chesham, Bucks, HP11 2DG. Tel: (05435) 79899



WORLD				Cass.	Disk	Index	Cass.	Disk	Index	Cass.	Disk	Index	Cass.	Disk	Index
World War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 2		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 3		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 4		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 5		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 6		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 7		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 8		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 9		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 10		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 11		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 12		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 13		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 14		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 15		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 16		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 17		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 18		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 19		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 20		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 21		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 22		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 23		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 24		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 25		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 26		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 27		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 28		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 29		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 30		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 31		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 32		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 33		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 34		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 35		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 36		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 37		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 38		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 39		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 40		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 41		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 42		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 43		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 44		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 45		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 46		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 47		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 48		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 49		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 50		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 51		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 52		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 53		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 54		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 55		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 56		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 57		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 58		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 59		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 60		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 61		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
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World War 69		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 70		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 71		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 72		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 73		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
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World War 75		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 76		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 77		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 78		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 79		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 80		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 81		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 82		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 83		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 84		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 85		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 86		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 87		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 88		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 89		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 90		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 91		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
World War 92		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99	World at War		1.99	12.99
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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
2000 VAR N
3000 N=1: FOR N TO 1000: NEXT N
4000 ENDPROC
```

Note the use of VAR N in line 2010 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=0: FOR N TO 100
2000 PROC DELAY
3000 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:

```
1000 REPEAT PROC DOSOMETHING UNTIL P=1
```

This will execute the procedure DOSOMETHING repeatedly until P is set equal to 1. It is a cleaner 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:

```
1000 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) have 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
2000 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 8080 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 ties up variables P and D and also

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```

9000 DEFPROC GET UP MUSIC:RESTORE MUSIC LIST
9010 ENTER MUSIC: ATTN 1
9020 ENDPROC
9030 ENTRY MUSIC
9040 READ P:IF P=0 THEN RESTORE MUSIC LIST:GOTO 9040 ENDIF
9050 SOUND 8,P,10,0
9060 READ A:ATTN 2
9070 EXIT
9080 LABEL MUSIC LIST
9090 DATA 2,2,1,0,0,2,0,1
9100 DATA 1,10,11,12,13,2
9110 DATA 14,14,19,21,20,4
9120 DATA 0:END END OF LIST

```

Program 1: Music demo

requires the exclusive use of the READ . . . DATA mechanism, so the main program must use the READ or RESTORE keywords.

Note also that line 9080 uses ATTN 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 ATASCII 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 2 for example will cause the value 2 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 Atasi 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=USR154338.1.2.31 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 11 and 12 for examples of compiler programs which process arguments.

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

```

1000 IF B01 THEN PROC ERROR ENDIF: REM WHEN NUMBER OF ARGUMENTS
1010 PROC COPY
1020 PROC MODIFY
1030 BASIC 154338: REM RETURN HI-BYTE TO BASIC
1040 DEFPROC COPY
1050 VAR B,0
1060 B=256+256: REM MAKE OF REM CHARACTER SET
1070 FOR S TO B-1:DO+128:PROC B,0: INC B: NEXT S: REM COPY TO RAM
1080 ENDPROC
1090 DEFPROC MODIFY
1100 VAR C,A,0
1110 RESTORE WORKARE
1120 REPORT:REM C: REM READ CODE OF CHARACTER TO MODIFY
1130 IF C<128 THEN
1140 B=0+B-1:FOR S TO B-1:DO+128:PROC S,1:NEXT S: REM RESTORE THIS CHARACTER
1150 ENDIF
1160 UNTIL C=0
1170 ENDPROC
1180 REM DATA FOR REM CHARACTER SET FOLLOW
1190 DATA 1,255,129,129,129,129,129,129,129,129,129,129,129,129,129,129
1200 REM INSERT YOUR OWN DATA HERE...
1210 DATA 255
1220 DEFPROC ERROR
1230 PRINT 255:PRINT "CHARACTER NOT IN - BAD ARGUMENTS":PRINT
1240 BASIC 154338: REM RETURN OLD CHARACTER SET HI-BYTE
1250 ENDPROC: REM NOT REALLY NECESSARY!

```

Program 12: Do not type in ASM statements as they eat too much memory in a 16K 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 SOMEHOW
1010 CODE
1020 NOP
1030 NOP
1040 ENDCODE
1050 ENDPROC
```

Notice 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=USR14336,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 1/10th 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 "Wokey Wokey!" will be displayed on the screen. Although just a toy program really, it does demonstrate the ability of GENTRY routines to work concurrently with Atari Basic.

To call the routines try `X=USR14336,10000`. The computer

will reply READY. You can carry on typing but after 10000 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.

```
1000 DEFPROC PRINT N
1010 VAR C,I,J,K
1020 LENS 0
1030 N=N+1
1040 REPEAT
1050 C=N/10+0.5/10+0/10
1060 IF C=0 THEN C=0 ENDT
1070 IF C10 THEN PRINT C+";" ENDT
1080 UNTIL C=0
1090 ENDPROC
```

```
1000 READ N: REM SET TIMER TO LENS
1010 ENTER Ticks/after 1: REM SET TIMER ROUTINE 0000
1020 BASE: REM BACK TO BASIC
```

```
1030 ENTER Ticks
1040 DO: REM COUNT 0 DOWN TO LENS IS IN THE ARGUMENT GIVEN BY THE USER
1050 IF C=0 THEN ENTER ALARM 0000: REM IF TIME UP THEN ALERT USER
1060 AFTER 1: REM CALL MESSAGE AFTER 1 JIFFY
1070 EXIT: REM RESUME INTERRUPTED PROGRAM
```

```
1080 ENTER ALARM
1090 C=0:W=0:W=0:W=0:W=0:W=0
1100 PROC PRINT N: REM DISPLAY MESSAGE
1110 SOUND 8,24,10,0: REM MAKE A NOISE
1120 ENTER WAIT:after 10: REM CALL WAIT TO STOP NOISE AFTER 10 JIFFIES
1130 EXIT
```

```
1140 ENTER WAIT
1150 SOUND 8,8,0,0: REM SILENCE CHANNEL 0
1160 C=0:W=0:W=0:W=0:W=0:W=0
1170 PROC PRINT N: REM BLANK OUT MESSAGE
1180 ENTER ALARM:after 10: REM FLASH MESSAGE AGAIN AFTER 10 JIFFIES
1190 EXIT
```

```
1200 DEFPROC PRINT N
1210 VAR T,C,I,J,K
1220 LENS 0
1230 C=N/10+0.5/10+0/10
1240 REPEAT
1250 IF C=0 THEN C=0.5/10+0/10 THEN REPEAT OVERSHOOT ENDT
1260 C=N/10+0.5/10
1270 IF C10 THEN C=C/PROC CONVERT C/PROC C,C,10: REM
1280 ENDT
1290 UNTIL C=0
1300 LABEL OVERSHOOT
1310 ENDPROC
```

```
1320 DEFPROC CONVERT C
1330 IF C10 THEN C=C/10+0.5/10: REM ENDT
1340 IF C10 THEN C=C/10: REM ENDT
1350 LABEL DONE
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-note Compiler Library listing in the April issue. Put simply, it will not function correctly if you have an XL or XL computer, although it works fine on the old 400/600 machines.

To correct the program so that it will work on both types of machine, plug in your **Assembler/Editor** cartridge and **ENTER** the original assembly from tape or disc.

Now add the new lines (right) and LIST it back on to your tape or disc. Lines 3 and 70 remove the references to the old BOUTCH and GET routines. While lines 810 to 830 allow the program to find out which sort of computer it is running on, in order to jump to the relevant BOUTCH or GET subroutine.

```

0000  RD COMPILER LIBRARY WITH ALIVE MAGG
0001  IF TEST = 0000
0002  THEN ADDS FOR ALIVE "CONTR" & "GT"
0003  ELSE CONTIN FOR
0004  CALL 104 00000
0005  CALL 000 000
0006  CALL 000 000
0007  CALL 000 000
0008  CALL 000 000
0009  CALL 000 000
0010  CALL 000 000
0011  CALL 000 000
0012  CALL 000 000
0013  CALL 000 000
0014  CALL 000 000
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0086  CALL 000 000
0087  CALL 000 000
0088  CALL 000 000
0089  CALL 000 000
0090  CALL 000 000
0091  CALL 000 000
0092  CALL 000 000
0093  CALL 000 000
0094  CALL 000 000
0095  CALL 000 000
0096  CALL 000 000
0097  CALL 000 000
0098  CALL 000 000
0099  CALL 000 000
0100  CALL 000 000

```

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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 assure you 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 that 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 are 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 Brent of Rotherham who asks why the keyboard looks up in mid-game and he has to switch off and reload. 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 Pac-off* from Atari/Bignose. 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 kennel?

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 back goes to Sharon Bissell of Chester who is stuck in *Mander's Quest*. She wants to get past the pagoda and the camellias 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 Pac-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 — isn't it after you the way — but on arriving at the Bank found that his handiwork had been repaired.

Someone get a nice lot of wackadoodle 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 forgot to stitch your shirt. 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 Belloc the necromancer to do your best. The



most charitable thing that you can say about Belloc 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.

Asketed 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

aggressive 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 score 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 sorcerer'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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CAN you give me some guidance on how to put more than one DLI on the screen at once? I never were interested in interrupt until before I read Mike Rivera's article in the September Atari User.

A few months ago I ordered a Revision C Basic cartridge from Steve Shop. When I plugged it in, assumed it was a C ROM, by pressing location 40004. This returned 234 — a C ROM, but my 80081 still continued to lock up.

I am quite frustrated as to what I do next. If someone would help me, I'd eat my pocket. — **David Macleone, Edinburg.**

■ 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 54383 (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 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-dry white wine to go with your meal.

## Protocol standard

I MONITOR If you or one of your readers could help me, I need to transfer data from an Atari 8000L to an IBM PC. To do this, I require two communications programs, one for the Atari called *Atari/PC Talk*, and one for the IBM called *PC Talk* 80.

I have PC Talk 80, but so far I have been unable to locate *Atari/PC Talk* and the instructions that go with it.

I would be most grateful for

# MULTIPLE DLIs -AND GOLDFISH IN DIRE DANGER

any advice you can give me. — **Luigi Alexander, Heston, Surrey.**

■ *Atari/PC* is a protocol standard, not a program. Many communications packages for the 8000L give you either *Atari/PC* or its close twin *Standard* 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 888 interface module for RS-232 you could do a lot worse than getting Microware's *DataTari* cable and terminal software package.

## File end dilemma

AS a user of an Atari 8000L and 1050 after drive I have come across a problem for which I can find no answer either in Atari User or my user manuals.

I am experimenting with the commands to open channels to the disc drive in order to write data to a named file — OPEN #1,0,"DISKANK1" to write data to the file and OPEN #1,0,"DISKANK2" 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 *Bankfile* 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 *Bankfile* using OPEN #1,0,"DISKANK1" which is all OK, but as soon as the end of the file is reached or 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 "it's the file end" or 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. Melt, Mottack, Derbyshire.**

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

```
IF TEMP=ERROR
GOTO 1 LINE 1000 IF
IN ERROR OCCURS
```

To send the program to a new line when the error occurs, you could then check PEEK(128) to find the error number.

If it is 128 (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 set gracefully via a range record, with a next TRAP to handle any errors in the file.

## Bring on Brataccas

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

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

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

time 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 avoided words as *luser* machines, so please has 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 8000L and have recently obtained a DLI 4000 assembler module, which seems to work perfectly except for two things.

The command *SAVE OBJ* which saves object code does not appear to be operating properly.

The command *ASSEMB* appears to work properly. However when I try to load the saved object code from Basic, which according to page 65 of the manual I 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 this particular assembler cartridge is fully compatible with the 8000L2? — **Dominic S. Smith, Aintree, Lancashire.**

■ Your problems are all related to the fact that neither Atari Basic nor the cartridge system fully support the normal library load format of an object file.

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

First 3 bytes: \$\$\$ \$\$\$ flag

Next 3 bytes: First Address

1000 1000 1000

Figure 2: Systemic (anti) discrimination  
towards Black/BIPOC communities

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

```

80 REM ***** END OF SUBROUTINE *****
90 RETURN
100 PRINT "OK, NO MORE COMMENTS!"
110 GOTO 10
120 REM ***** END OF PROGRAM *****
130 END

```

You may then COTD line 80 again, with an End-Of-File (EOT) signal. Be careful not to write your matching code programs using any areas of memory that Basic uses. Page 8 is an ideal source to use.

## Auto-line feed tip

15 The Fujitsu 4405 colour TFT monitor consists of giving medium colour resolution at the 112

The EPOCH comes with a high resolution monochrome monitor as standard. If a high resolution (HRC) EPOCH colour monitor were connected to the ET would it give high resolution colour, high resolution monochrome or a medium resolution colour?

I have an *Alt* and an *IT* and want to use both with my laser printer. The trouble is that although the *IT* gives an automatic line feed and carriage return output the *Alt* does not.

I agree that to remedy this I simply have to change the appropriate file switch on the Linux. But obviously this is a great pain as it means taking the entire system to do so.

Gradually, all I want to know is how can I change a life, a world, a nation, a religion.

**ATARI** Mailbag  
**USER**

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

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

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

Lastly is the Juki 5520 colour printer very good, worth the cost and compatible with all drivers.

Also is Alkal planning any  
fast lane cancer printers? By the  
way I mean at least 10 inches  
across. If so then shoot me  
a line? - A.R. Bishop,  
Channah, Florida.

■ The Ispen 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 OFF, whichever computer you are using, and adapt your 8 bit computer cable to short pin 14 to ground (pin 14).

This will connect the features every time they make a plugpoint.

### Monitor cable

I WJLF very interested in your review of the *Spring 2002 WJLF* color number in the January issue of April 2002.

This reviewer prompted me to write to Samy (NY) for information regarding a notice for sale with steel members but my latest three beam members with the kind of total capacity within, no doubt are the best parallels with those large comparisons — including Alari (NY).

should be able enough to supply the information / service.

I assumed that the prospect of selling such an expensive piece of equipment would guarantee a reply. I was wrong! — S. Phillips, Loughborough, Leics.

- The cable you require is a standard Apple 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 privately, would be a DIN plug at the Atari and with two phone type plugs — or a DIN and a phone — at the monitor end. Connect them as follows:

DeMiguel: 10.1002/for

DCM pila 20: Pila 20: 20 pila  
 DCM pila 10: Pila 10: 10 pila  
 DCM pila 5: Pila 5: 5 pila  
 DCM pila 2: Pila 2: 2 pila  
 DCM pila 1: Pila 1: 1 pila

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

"We think this will address all of your problems, and we have placed it in for a very good machine indeed."

## Train cancelled

1994) and 2003-04, with a 1.6% increase and have tried to preserve the Alouette Falls

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Answer: I keep getting ERADN 147 on line 250 and ERADN 3 on line 250. How do I put this right? — R. Finkbeiner, Channahon, Illinois

■ Unfortunately the 10th meeting doesn't have enough members for this session.

### Manuals required

7. DWK as Alan Ford and TONY  
recovered. The information sup-  
plied with both said that I  
should have a marriage I did not  
expect either.

Could you please tell me  
where I could buy the 400 and  
1000 models?

Also I wish to have my 400 upgraded to 40i. Could you please recommend a relative upgrade and its cost. - Jacob Morgan, North Kildworth, Johannesburg

■ **Try Atrial:** the long regular Atrial stimulus. Use this function.

If you can't get Angel'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 8000i from Diason, as the last price I heard of an 800i laptop for 8000i was about £30.

Once you have done this, you could sell off your old 430 and recorder, since the new machine comes with its own recorder.

That rare  
1200 XL

**ANSWERS** Although your jacket looks like W.A. Gurneys, I have a couple members of an elite particular breed of 2 breed of hounds.

Several models had references to the Apple F20081, and one had a picture. It was in the XL brown and white style but with silver keys across the top of the keyboard and several keys numbered F1, F2 and along with the Esc, Option

The cartridge slot was on the side of the machine, which was said to be 84% accurate.





## Stress analysis

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

- The maximum number of variables available in one program is too small.
- The maximum number of expressions in one line is also restrictive.
- Can you help possibly with a short BSL program which modifies the basic limitations?

The first point means I have to stop a program and make two or three separate ones - a time-consuming and disappointing 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 display.

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 final 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 control an Atari 1300XL up its 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, Harrogate, Cheshire.

■ Len Godding will be covering this in his series on gadgets which begins in this issue.

## International characters

*WITH reference to your reply to G.D. Dubourg of Marseilles in your December 1988 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-0] 27 [CTRL-0] 23 but you then have to turn it off again before the end of the line with [CTRL-0] 27 [CTRL-0] 24. 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 VDS. — 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 add 48 as write on left hand side (see code (see how code)).

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

Now you take line one by one and convert on the two to dec. convert. On 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.



How to dec. convertor

	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

How table

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6																
7																
8																
9																
A																
B																
C																
D																
E																
F																

get it at the beginning of the text line.

I have read that one could put (CTRL-0) 27 (CTRL-0) 23 into the print formatting block at the beginning of a file but certainly using *StarWriter* and a 1027 printer this does not work because every line starts with a 0.

I have taken the liberty of enclosing a copy of instructions for obtaining the PC2 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 Miss) Delaney — Maurice R. Pearson, Wick, Cumbria.

When I want to write an International Character, say E, I have to type (CTRL-0) 27 (CTRL-0) 23 to turn on the International Character Set and then (CTRL-0) 27 "E" where "E" is a number found in the back of the 1027 manual and appears an International character!

I then turn off the ICE by typing (CTRL-0) 27 (CTRL-0) 24.

So the E is written by typing (CTRL-0) 27 (CTRL-0) 23 (CTRL-0) 27 (CTRL-0) 27 (CTRL-0) 24 with no spaces between.

It is written by typing (CTRL-0) 27 (CTRL-0) 23 (CTRL-0) 24 with no spaces.

## Accent on accents

I HAVE an 80085 which I use with a 1020 dot-matrix, a 1027 printer and an *StarWriter* also. I find when printing lengthy reports occasionally the 1027 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 Helpdesk and was told that if I waited 45 minutes all should be well, so it was just the 1027 re-loading. I tried that, and it-and-bah! they were right: The 1027 started off again 45 minutes later and completed the job.

My first query is this: As the

1027 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 1027 prints a small 0 in the second in the left hand margin. This appears reports incorporating German or French words. Is there any way of printing out the set without this appearance?

Incidentally, representations on the magazine, I look forward to receiving this much as I do my *Starwatch* User Group's *Piggot*. I wish they were both weekly. — Bill Skilling, Wells-Next-the-Sea, Norfolk.

■ Well, what I have heard of is being called re-loading, although we do know of the problem you refer to. It is basically a threshold to the types of printer which used to get very hot when used for long periods.

The 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 *StarWriter* 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-0) 27 (CTRL-0) 23 to turn it on, and (CTRL-0) 27 (CTRL-0) 24 to turn it back off again.

## Database problem

PLEASE explain in very simple terms how to set my Home *Form Manager* on a 10085 using the extra memory.

I have an 80085 and unless I can use the extra RAM I can't see any advantage in having the 10085. — J. Hopkins, Walsby, Cumbria.

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

## Testing RAM

COULD you please let me know if the 32k expansion RAM I have for my 80085 is faulty or does 22k + 10k add up to 32k on the 80085? I only get 40 memory blocks when using the memory test.

Many games using 48k RAM like *Conquest Chess 3.0*, *F-15*, *Snake Eagle* and *Space Shuttle* are OK, *Star Flight* being the exception. Could I get this problem with *Memore* any other *Navigator*?

Has anyone else had this problem with RAM add-on's? — P.J. Tappender, Wilton-on-Avon, Essex.

■ When you go from Basic to the self-test, Basic is still using up 5k 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 80085 or a 10085, so don't worry about it. By the way, *Memore* should work fine on your upgraded 80085, as, indeed, should *Star Flight*.

## Saving pictures

AFTER typing in the Canvas program from the *Canvas* 1985 *Amal User* I produced a very good picture of which I was 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 GO, F5 + 32.

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

But after the computer was switched 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 Fink, Canewdon, Essex.

■ 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 10+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 fastest way to save the picture is by a machine code routine, but a simple Basic version is as follows:

To SAVE the picture is showing:

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1000 GOTO 1005:GOTO 1005 TO 1005
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1007 GOTO 1005:GOTO 1005 TO 1005
1008 GOTO 1005:GOTO 1005 TO 1005
1009 GOTO 1005:GOTO 1005 TO 1005
1010 GOTO 1005:GOTO 1005 TO 1005
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1357 GOTO 1005:GOTO 1005 TO 1005
1358 GOTO 1005:GOTO 1005 TO 1005
1359 GOTO
```

*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 desk covers for the winners 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.

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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.*

# ATARI USER

## READER SURVEY

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Age group  
☐ Under 15 ☐ 16-20 ☐ 40-49  
☐ 50-59 ☐ 30-39 ☐ Over 50

How long have you been reading **Atari User**?

☐ 0-3 months ☐ 3-6 months  
☐ 6 months-1 year ☐ 12+ since issue 1

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

☐ every issue ☐ 1 in 3  
☐ 1 in 2 ☐ less regularly

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

☒ arcade  
☐ strategy/leg chess, draughts  
☐ adventure  
☐ simulation

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

☐ MSX2000 ☐ Nightingale  
☐ MSX2000 ☐ Voyager  
☐ MSX2000 V22  
☐ other \_\_\_\_\_

Which of the following band rates do you use?

☐ 800/800 ☐ 1200/1200  
☐ 1200/16

If you own a printer, is it

☐ dot matrix ☐ poster  
☐ thermal ☐ other \_\_\_\_\_  
☐ daisy-wheel

Please state manufacturer/type

**ATARI 1020**

If you have a disc drive, is it

☐ 510 ☐ 1050

☐ other \_\_\_\_\_

Which pieces of hardware are you likely to buy over the next 6 months?

☐ printer ☐ digitiser  
☐ disc drive ☐ MIDI interface  
☐ monitor ☐ plotter  
☐ modem ☐ localtalk  
☐ wireless monitor ☐ 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 issues:

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**?

☐ newsagent ☐ subscription  
☐ computer dealer

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

☐ 1 ☐ 3  
☒ 2 ☐ more than 3

Which other magazines do you read?

☐ Amiga ☐ Monitor  
☐ 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)

Issue	1	2	3	4	5	6	7	8	9
Beginner's Basic	1	1	2	3	4	5	6	7	8
Beginner's Manuals	1	1	2	3	4	5	6	7	8
Competition	1	1	2	3	4	5	6	7	8
Utilities/Scripts	1	1	2	3	4	5	6	7	8
Adventures/Columns	1	1	2	3	4	5	6	7	8
Software reviews	1	1	2	3	4	5	6	7	8
Hardware reviews	1	1	2	3	4	5	6	7	8
Book reviews	1	1	2	3	4	5	6	7	8
Mailbag	1	1	2	3	4	5	6	7	8
Amiga Scene	1	1	2	3	4	5	6	7	8

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### Atari 8-bit computer owners

Which computer do you own?

☐ 400 ☐ 1300XL  
☐ 800 ☐ 1300SE  
☐ 600XL  
☐ 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 Writer ☐ Amstrad Editor  
☐ Pageplus ☐ Mac/80  
☐ Wordpage ☐ Action 1  
☐ SuperScript ☐ VisiCalc  
☐ Logo ☐ Symantec  
☐ Basic 8.0/8.1 ☐ Swift +  
☐ Microsoft Basic

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" disk drive ☐ hard disc  
☐ 1 mg drive ☐ printer  
☐ other \_\_\_\_\_

Do you have **SEMITOS**?

☐ on disk ☐ in ROM

What kind of monitor do you use?

☐ colour ☐ monitor/TV  
☐ 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 \_\_\_\_\_





## These back issues are still available

**May 1983 issue:** Profile of Jack Tramiel, president of the new machines, Atari Special Advertising Alphabet Train, Power utility, Software reviews, Security, the 68000 Microscope, Atari Insights - Bit Wise, Beginners and Graphics.

**June issue:** Reviews of the 130XE, Subediting, Advertising, Random access, Software reviews, Frog Jump, Miscellaneous, Atari Insights - Bit Wise, Beginners and Graphics, special 32 page feature on Communications.

**July issue:** Examination, Book Buy, 1000-E's, 1315 Communications, Advertising, Display List Tutorial, Software reviews, Power Functions, Trainers Mark, Random Sounds, Miscellaneous, Insights - Bit Wise, Beginners and Graphics.

**August issue:** Analysis of 130XE's program performance, reviews, Basic Gamble, Assembly, Turbo Turbo program, first look at Logo, Reader 1995, Don 2.5 upgrade offer, Display List Tutorial, Microscope, Software reviews, Insights - Bit Wise, Beginners and Graphics.

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**February issue:** Machine code games Pt 2, C program games in Logo, Finding colour utility, Pagepointer manipulator, Bridge program, Random management techniques, Intermix driver code, Reviewer games, ST problems page, Advertising, Software reviews.

**March issue:** Machine code games Pt 3, Knight's tour program, Compiler Pt 1, Beginner's review, Checkmate for only games, Book reviews, Advertising, Software reviews, PLUS Atari ST User 8 Special review, 386 Micro and Colour apps, Atari Pt 1, Making the most of the ST.

**April issue:** Sound applications, Compiler Pt 2, Using number 12 and 13, Reviewer's review, Games, also directory printing utility, Advertising, Software reviews, PLUS Atari ST User 8 Reviewer 121 articles it must be the first page, Making the most of the ST, and all the rest too.

**May issue:** Sam Tramiel Interview, Compiler-Design main game, Compiler Pt 3, Player Models Graphics Pt 1, Atari's Spelling Program, Advertising, Software reviews, PLUS Atari ST User 8 Atari News review, The Press and Atari (Software reviews), ST Graphics Pt 2, Super-Soft Power (Review) program, Making the most of your ST, and the latest 130E and ST news from the States.

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**DECEMBER: Consideration** More version of the famous TV game. **Get It Right!** Just Use's own machine code program. **Drawn Run** or London on your Atari. **List Utility** Make listing easier. **Display List** Demonstration programs. **Print Codes** of the month - **Just's Programs** machine code entertainment.

**JANUARY 1986: Beller** Help Mr. Murphy rescue Esmeralda. **Get It Right!** Just Use's own machine program. **Atari Address** The game to accompany the machine code entry. **Linker** Make listing programs easy. **Data** Play the more or another player at the strategy game. **Shogun** 1000 games/player machine. **Print Codes** of the month - **Scramble Letters** machine code game.



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**MARCH: House Play** Knight's tour program. **Basic Compiler** Program to accompany the new series. **Atari Attacks** First part of monthly listing. **Print Codes** of the month. **Randomize to the Core** - memory keep your head and help Windows feel fit!

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