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Vol. 1 No. 8

December 1985

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1985



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There is a change in the leadership of the group, and the group is now more active in the community.

## Silence over Comdex

AT&T bosses were being tight-lipped about what surprises the company would spring as the computer industry at the giant Comdex exhibition in Las Vegas.

Rumours circulating in the trade during the countdown to the show said the firm was poised to announce a number of new additions to its ST family — among them a 1-mbyte model, the 1040ST.

One report said the new machine would be offered here with a colour monitor for about £1,000, far cheaper than comparable with both the planned 560ST and existing 520ST, and feature a built-in 32kb formatted capacity disk drive.

It was also thought that At&T would preview its 32-bit evolution, the TT, based on the 32000 processor.

But sales and marketing manager Rob Harding dismissed the rumours as "pure speculation, completely unfounded".

He told Atari UK: "I have no knowledge of these products being shown at Comdex, but even if they were, it wouldn't necessarily mean we would bring them on to the market."

"We tend to use exhibitions as shop windows to show we are capable of producing certain types of products."

"Mass production doesn't necessarily follow — after all, look what happened to the 1305T".

# Half-price 800XL hits the Christmas marketplace

AT&T is poised to dominate the UK micro market this Christmas as a result of striking a multi-million pound deal with Glens.

It involves the sale of the entire stock of 800XLs — some 100,000 machines — to the High Street giant.

Now Glens are slashing the price of the 800XL package by 50 per cent, bringing the cassette version down to just £59.99 in the run up to the festive season.

The net price offer includes an 800XL, joystick, 1010 cassette recorder and five pieces of software, which would have usually retailed for a total of £103.

At the same time the 800 stores in the Glens chain — which now also includes the Currys outlets — will also be offering the 800XL with disc drive and three pieces of

software at a bargain price of £199.99, down from £300.

"They will be selling an awful lot of 800XLs in the run up to Christmas", says Rob Harding, At&T UK's marketing boss.

"In fact this will mean that this year At&T will not simply be a leader but will actually dominate the entire market".

The company has gone to considerable lengths to ensure that independent dealers are not left with stocks of 800XLs and so be unable to compete with the new High-Street prices. But At&T has retained a small stock of the machines to ensure that any outstanding Christmas orders can be filled.

However production of the

800XL will now cease, with At&T concentrating on the 1300X in its ongoing machine in the 640k market.

"We are currently looking into special packages involving the 1300X as well", Rob Harding told Atari UK, "and these will be available any day now".

Production is also to end of the 1010 cassette recorder and this will be replaced by a new 801 model.

Made in Japan, this will be powered internally from the 1300X, and will retail at the same price as the 1010 — £34.99.

At&T has also announced that it is to slash the price of its 1050 disc drive from £199 to £130.

"With what we are now offering the public, there will be nothing to prevent At&T running away with the market this year", says Rob Harding.

## RAM discs for ST

A NEW utility enabling one or more RAM discs to be set up on direct ST entries for increased speed of operation has been released by Rama Computers. The company says its 8-Kbyte package enables files to be accessed and written to between 40 and 50 times faster than with a normal disc drive.

Additional features include a Help facility and an option for decreasing floppy disc write times by up to 50 per cent. If Ram can also enable the user to gain more free RAM by configuring the operating system, says Rama. Price: £29.95.

## ROM UPDATE — AT A PRICE

THE long-awaited ROM version of the 520ST's operating system should be available here before Christmas. But it will cost ST owners about £29 for the kit to upgrade their machines.

Although the ST was originally expected to arrive on the market with a ROM system, the machines sold in the UK do now have all been disc-based.

Many people who bought these machines did so believing they would eventually be able to

make discs for ROMs ready to go at 99p or so each.

But this is not to be the case. At&T UK marketing boss Rob Harding said: "There will be a small charge to existing ST owners for the upgrade kit. I expect it to be about £25."

"I believe this to be reasonable. The disc operating system was never intended to be a stopgap until the ROM version became available."

"It has always been an

option, just as the ROMs will be an option when that becomes available any day now."

"Many existing ST owners aren't interested in running Gem programs — they are quite happy with the disc operating system in view of all the DOS software that is available".

An informed source says the 520ST ROM chips are currently completing their beta testing before going into full duplication and should be available soon.

## 1-2-3 clone released

AN enhanced Lotus 1-2-3 clone has been released in the United States for the 520ST.

Called the VIP Professional, its extras include GEM interfaces, 16 colours, multiple windows, mouse compatibility and pull down menus.

Available from VIP Technologies of Santa Barbara, California, its current \$99 price tag — claimed to be three times lower than that of its rival — is due to rise to \$149 in November.

A full manual is included in the price.

# Hacker emulator

AT&T users can now emulate hackers — the electronic burglars who break into computer systems — but without fear of being caught.

It is all thanks to a new adventure-type game called *Hacker* from Atkinson. The company claims it is a challenging simulation of what a user might experience if he were to "accidentally stumble" into a foreign system.

The aim of the game is for the user to decide how to proceed in search of information which will help save the world.

The usual instruction book and hints have been deliberately left out so once the computer has been given the *login* command the user is on his own.

Prices are £14.95 for the disc version and £9.99 for cassette.



MAIL order house Software Express is celebrating its first birthday this month, by giving presents to its customers.

Atari users who have bought goods from the firm have been sent an entry form for three free competitions offering prizes of software and hardware.

One is for the best birthday card designed by computer graphics and can be submitted either as a print out or screen photograph.

In the second competition contestants have to guess the actual day in December on which the firm's birthday falls.

The third competition involves identifying a product in the firm's catalogue with the

## BIRTHDAY BONANZA

help of a cryptic clue.

Software Express general manager Jerry Howells said: "In addition each week during the month a selected range of products will have their prices cut right down to the bone."

"And we will also have a special phone-in 'Make us an offer' service where customers will be invited to name their own prices for the goods they want."

■ The Software Express team picture above (left to right) Ken Howells, Jerry Howells, Mike Jones and Pete Fellows.

## p-System for the 520 ST

ADVICE and information about p-System for the Atari 520ST will be one of the main topics on the agenda at the eighth EURO-UK conference at Oxford Mount House, December 12 to 14.

The keynote address will be delivered by Ed Miller, whose company is currently negotiating for the rights to p-System, the multi-operating system for software developers.

Other topics include high quality code generators, low cost CAD systems, networking, and there will be presentations by software houses that have developed multi-user applications.

Delegates should arrive attending this year include Steve Myers and Ed Cummings from America, Peter from Germany, Vangel from Sweden and Symbolic from Norway.



## Tough cookie..

This new Mach II joystick for the Atari was built to withstand overseas punishment, claims Chemtek Marketing.

It also has three fire buttons. Two — the trigger and thumb buttons — are on the insulated handle. The third, for two-handed firing, is on the base. There is also an on/off fire switch.

The base can either be hand held or stuck firmly in a table using its under base suckers.

Price: £8.95.

## pForth gets the seal

THE first British package to get the new Atari Approved Software seal of approval is pForth, a multitasking system from Gigasoft Software said to provide a complete development environment for the 800.

Among many features normally only found on mini and mainframe systems is the ability to run simultaneous tasks on the machine.

Used in conjunction with a serial console card the system allows the 800 to be used as a multiuser development system or to service several incoming calls on a bulletin board simultaneously. Price: £29.95.

## TEACH-IN FOR THE ST

PUBLISHERS Newstep are producing a range of teach-yourself style books for the 520ST.

Titles have yet to be finalised but five books are due, covering subjects such as an introduction to the machine, Basic, machine code, ST logic, graphics and the advanced user.



## New link to micro

THE new letter quality 80-80 dot matrix printer from Epson features a printer interface cartridge which makes it compatible with the Atari 800 and 8088.

Based on the LX-80 launched earlier this year, the printer features a new method of connecting up to a computer. At its back, instead of the normal Centronics connector, there is a space for users to fit the PIC of their choice with a cable and plug all in one.

An optional tractor feed and cut sheet feeder for rapid processing input are available.

Printing is bi-directional in draft at 100 characters per second and 16cps second pass, in Roman NUB.

The printer incorporates built-in selection from the front panel to give choice of Pica, Elite and Roman as well as emphasis, condensed and double strike Pica.

Italic, sub/superscript, emphasised, enlarged and underlining are also available through Epson software control.

Price of the 80-80 is £249, the printer interface cartridge £50, sheet feeder £55 and tractor unit £35.





## High-tech steam trip

DISTRIBUTOR Elex Computers chose to step back into the past when introducing the latest Atari technology to 100 of its dealers from the Midlands and North.

The company hired a steam engine and old fashioned carriages (purchased and operated by the North Yorkshire Moors Railway) for a scenic trip from Pickering to Grassmarket.

Giving the journey a range of

products from Atari, including the new 8 bit 130XE and 16 bit 520ST were demonstrated.

Guests from as far south as Birmingham viewed the new range of products now available to them courtesy of Elex's recent contract with Atari's exclusive distribution rights throughout the North.

Elex sales and marketing director Roger Purnaglove said afterwards: "Both products

were very well received. The Atari machines can only offer a total package but also fill a large gap in the market at an extremely realistic price".

Atari UK sales and marketing manager Rob Harding described the novel computer demonstration as "an auspicious start to what I hope will be a long and mutually beneficial business relationship between Elex and Atari".

## Piracy fighter raps smear

THE president of an Atari user group has become the victim of high tech character assassination.

Ken Ward, leader of the Norwich User Group, says smear tactics are being used to link his name with software piracy among the Atari fraternity.

An aggressive and outspoken opponent of the video cheats, Ward believes the current campaign against him was sparked by an article he

published in a recent issue of *Nugget*, the user group's newsletter, attacking piracy.

"This article appears to have upset a certain Atari-owner and I have received a fax packet and several letters thinking me for providing contacts dealing in pirated software", he told *Atari User*.

"My name is being used on disc files containing pirated software which are being passed around the Atari community. Over the past two and a

half years I have put a lot of work into building up a respectable group and newsletter.

"We have gained a status and respect that is the envy of other groups.

"We have members all over the country and we are slowly gaining the confidence of the software industry.

"I don't intend to let a sick Atari user undermine that respect and confidence, and I am making my own enquiries to try and track down the person and get more evidence so I can take action against him.

"This particular nasty specimen is under the delusion that he is an intelligent Atariist.

"He's wrong - he's just a scumming little pirate who should be put down before he does any more damage".

## Zork on the ST

AMERICAN software developer Infocom has announced a line of 18 interactive fiction products for the Atari ST.

The range includes best sellers such as the Zork Trilogy, Hitchhiker's Guide to the Galaxy, and Wishbringer.

Prices of the Atari ST versions will range from £39.95 to \$49.95 depending on the level of difficulty.

## War game released

THE continental war game Theatre Europe from PWS has been released for the Atari 400/500 XL series.

Based around a conflict between West and the Warsaw Pact countries, Theatre Europe is a simulation of the possible outcome of World War III.

The player has the choice of sides with the computer as the opponent. Chemical or nuclear weapons may be used to the point of world destruction. Price is £29.95.

## Mind blowing

SOFTWARE house Activision has released its text/graphic adventure *Munchkin* for the Atari 800/500 XL.

The player finds himself on a deserted beach suffering from amnesia and must make a complete journey round the world to rediscover his identity.

Described as "a living computer novel", *Munchkin* costs £14.99 on disc.

## Sci-fi adventure

MOORE is Paradise, the third part of the Silicon Beam trilogy from Level 9 Computing, has been released for the Atari 486 machines.

In *Paradise*, *Secretball* and *Return to Eden* is described as a political science fiction adventure set in a future state where something has gone wrong with man's dreams and ideals and the player has to beat the system and escape to reality. Price: £29.95.

## FOUR FOR THE STs

SOFTWARE house Microsoft has licensed four programs for the Atari ST range from American publisher Microton and will be releasing them during the next month. They are an arcade game, *Machpilot*, and a board game, *Flipside*, each priced £19.95, a Ram disc emulator, *M-Disc*, and a paint sprayer, *Paintspot*, each at £29.95.



# THE 520ST. OVER QUAL

[illegible][illegible][illegible]

1. **What is the difference between a variable and a constant?**  
 A variable is a value that can change, while a constant is a value that remains the same.

2. **What is the difference between a scalar and a vector?**  
 A scalar is a single value, while a vector is a quantity that has both magnitude and direction.

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- 1. **THEORY OF SETS**
- 2. **RELATIONS**
- 3. **FUNCTIONS**
- 4. **GROUPS**
- 5. **VECTOR SPACES**
- 6. **LINEAR ALGEBRA**
- 7. **GEOMETRY**
- 8. **TRIGONOMETRY**
- 9. **CALCULUS**
- 10. **DIFFERENTIAL EQUATIONS**
- 11. **INTEGRATION**
- 12. **PROBABILITY**
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- 89. **ENVIRONMENTAL PRESSURE**
- 90. **ENVIRONMENTAL STRESS**
- 91. **ENVIRONMENTAL STRAIN**
- 92. **ENVIRONMENTAL TENSION**
- 93. **ENVIRONMENTAL TORSION**
- 94. **ENVIRONMENTAL COMPRESSION**
- 95. **ENVIRONMENTAL DEPRESSION**
- 96. **ENVIRONMENTAL INFLUENCE**
- 97. **ENVIRONMENTAL EFFECT**
- 98. **ENVIRONMENTAL IMPACT**
- 99. **ENVIRONMENTAL CONSEQUENCE**
- 100. **ENVIRONMENTAL RESULT**

[illegible]



THE Atari ST was launched to an expert computer audience eager to use the latest technology at a fraction of the price.

The thorn in the side of the launch was the conspicuous absence of software, including a large amount of the bundled packages to be included with the machine.

This is no longer the case, with a wide range of software beginning to appear. Digital

Research, responsible for the Gem operating system, has now got its act together and is producing packages to take the fullest advantage of the Gem working environment.

The first two of these are about to appear — Gem Write, which is the bundled word processor, and Gem Draw, a software package for diagrams and drawings.

Here are JEREMY WINE's impressions of them both.

WORD PROCESSING is almost certainly the most common application in business computing, even for the home user, a word processor has become an essential package to possess. Gem Write is a basic word processor which offers the essential commands for writing documents.

As a throw-in part of the ST package, I wasn't expecting too much. So how did it fare?

As a technical journalist I have probably used more word processors than I care to remember, and one outstanding feature of most packages is the amount of time it takes to become acquainted with just the rudimentary commands, let alone all the facilities.

Gem Write is almost unique in being delightfully simple to use yet powerful enough to offer sufficient facilities to provide for the average

user — whoever that may be.

It would not be an exaggeration to say that all of Gem Write's commands can be learned in the same time it would take to learn the basics of another package. This owes much to the Gem philosophy.

On loading Gem Write the user is faced with a blank window. The

# Gem Write

*Easy to get along with  
yet powerful enough  
for the average user*

cursor, a flashing bar, can be moved to any part of the screen by using the keyboard arrow keys or the mouse pointer. This doubling up on commands is present throughout the package and allows interaction between mouse and keyboard controls or just keyboard, though the former is the most likely scenario.

The typing starts from wherever the cursor is placed and text is automatically wrapped round at the end of a line.

The Edit menu offers the standard facilities of inserting, deleting and centering lines and moving, copying and deleting blocks of text. These commands, as for many others, rely on the user highlighting the text to be affected — that is, moving a block of text. This couldn't be simpler.

Using the mouse, the user need only move the cursor to the beginning of the text to be affected and drag the cursor — mouse button held down — over the desired area. This causes the text to be highlighted in inverse video — white text on a black background.

It is then only necessary to choose the desired command from the



Gem Write. (All screen bugs rectified and

pull-down menus. These commands can be carried out by using the keyboard function keys, sometimes in conjunction with the Control or Shift keys. But that's old fashioned. Well, it's there if you like it that way.

In a similar way the Font menu can be used to change the style of the text. This turned out to be quite a disappointment, as there was little choice of styles. Gem Write only allowing the text to be printed in normal, bold or italic print, plus the facility of underlining.

In comparison, Gem Draw - reviewed below - had more text variety on offer, which seemed slightly strange. It would have been no problem to provide a range of font styles, and this was certainly a weak point in this package.

All changes made to text are shown on screen, which makes a pleasant change to just seeing control codes all over the place. However these codes can be seen by the user on pressing a function key.

Graphics can be cut into the text using the Insert Graphics command

from the File menu, as can text from another document. Whereas inserted text appears in the document, graphics from Gem Draw or Gem Paint did not in my version.

It seems that an embedded command is placed at the appropriate spot in the document and as printing the picture is cut into the document. The user can specify to see the picture using the Turn Graphics On command, though I could not get this to work.

Rulers, tabs and margins can all be set from the Page menu, as can the format of the document - justification, pagination, line spacing, page length, margin, etc. The Search menu allows text to be found and replaced, the user also being able to specify which page to be shown on screen.

At the end of each physical page, not the screenpage, a page-break line is shown. The arrow keys on the keyboard allow the document to be scrolled in either direction vertically, with jumps of a page facilitated by use of the arrow and Control key. However there didn't appear to be a means of scrolling by each screen,

which was annoying.

A Shortcuts option on the Options menu acted as a help guide to the function keys, which was necessary as there is no way to remember what each function key did on the ST keyboard.

**VERDICT:** As part of the ST package Gem Write is a good word processor. If I had to buy it separately I would have more reservations, but as it stands Gem Write does its job and will suit the needs of many ST owners. I would be more than happy to use it and probably will.

My only gripe was that it did not have a word count facility - useful to us journalists, but maybe I just expect too much.

The more demanding of us may have to wait for another word processor, but as a freebie package I really can't complain.

# Gem Draw

*Not a professional CAD package, but it's fine in its line*

GEM DRAW is one of two drawing packages to be released by Digital Research, the other being a basic painting package, Gem Paint. Gem Draw is intended as a computerised drawing board, allowing the user to ink text and graphics on-screen, to create diagrams or drawings. Like all Gem packages, Gem Draw takes full advantage of the Warp windowing, icons, mouse, pointer system and the package is entirely controlled from the mouse.

The menu bar runs across the top of the screen and offers eight pull-down menus, including the Desk one. They are used in conjunction with a range of drawing tools shown vertically on the left of the window.

Options range from drawing circles, ellipses, rectangles and squares to the user drawing in his own free-hand style. Text can also be freely mixed into the drawing. But more of this later.

When first loaded Gem Draw displays a blank area within the window on which the user draws. However it is not the entire area on which the final output will be printed,

but merely a window on a much larger drawing board.

Moving the mouse pointer over the second option on the vertical menu causes Gem Draw to show a reduced version of the entire board. This is particularly useful on plans and diagrams that spill beyond the drawing area usually shown. It is also of assistance when using the Zoom facility (see later).

When anything is drawn, regardless of size or shape, a box is immediately placed around it. The boxed area defined is determined by the end of a drawing action by the user. In other words, once the user

releases the mouse button - which usually triggers the particular drawing event - the last element drawn is surrounded by a box.

At a later stage the user can then place the mouse pointer over a certain part of the picture and find out how many elements make up that area of the drawing.

Each of these boxed areas can be moved independently on the screen. This means that a drawing of say, a camera, might be made up of several component parts, each of which can be separately manipulated.

If the lens of the camera is



Gem Draw: A delight to use



A wide choice of tools available

surrounded by a boxed area the user can then remove the lens by pointing to the box and dragging the lens to another part of the drawing. In this way the user can break a drawing into its smaller component parts and fit them together at a later stage to make a complete picture.

The options for drawing ellipses, circles, rectangles and squares are activated by placing the pointer over the relevant box and clicking the mouse button. The pointer then changes shape from an arrow to a cross-hair and the option chosen is highlighted by a black background.

Executing the drawing action is then a case of holding down the left mouse button and dragging the cursor till the shape/line is the appropriate size.

Once the mouse button is released a box is shown around the drawing element completed. Before going any further, the user can at this stage use the Patterns, Line or Colour menus to complete the drawing element.

The Patterns menu displays 33 shading patterns which fill the area shown by the box. Therefore if the user has just drawn a square it can be filled in by pulling down the Patterns menu and choosing a specific pattern – brick wall, vertical lines, and so on.

Like all Gem commands, the mouse needs only to be clicked over the desired option and the shape is redrawn with the chosen pattern filling the area within the shape.

The Line menu allows the user to choose how thick a line is drawn, whether it is broken, dotted or connected, and also adds a nice touch

of placing arrows at the ends of lines – very useful if you are drawing flowcharts.

Finally there is a colour menu to choose a drawing colour, providing of course that you have a colour monitor. If using a monochrome monitor there is only a choice of black or white.

There is, of course, a File menu which offers all the usual filing utilities such as Saving and Loading pictures, and the output to a printer. The format of the page – document size, etc. – is changed using the Page menu, as is the use of grids and rulers. The size of the grid can be changed using one of six preset sizes and a ruler can be displayed horizontally along the top of the window if needed.

The Page menu offers also a Zoom facility which, as the name suggests, allows a specific area of the drawing to be shown in closer detail. This is an excellent method of touching-up and examining the finer details of a drawing.

As the zoom facility is used the picture often zooms into an area which the user does not wish to enlarge. This is where viewing the entire drawing board is useful, as the user can then see exactly what area is being magnified (shown by an outline box).

The outline box represents the window in which the user works, and this window can then be placed over the area to be magnified.

Text can be placed anywhere on the screen and the Font menu allows the user to specify different character

fonts, size, italics, and so on. It was interesting to note that the Font menu offered more choices than the equivalent option in Gem Write.

Elements of a drawing can be deleted, and undelined, using the Edit menu, which also has a Gziplopte option to make a copy of any drawing element.

Finally comes what was far less the best part of Gem Draw – the Arrange menu, which aids the user in placing objects or elements of a picture wherever the user desires.

Drawings can be specifically placed behind or in front of another drawing. The user merely has to identify the drawing element and then place it over another drawing. The facility can also align drawings on the screen, as well as centering drawings on the page.

**VERDICT:** All in all, Gem Draw was a delight to use and the Gem Write could be put to work immediately. Its uses will no doubt be varied, though it will probably appeal to less professional use.

For computer aided design applications the package does not have sufficient options to make it a professional's tool. A pity really, but I suspect this is not the intended market. Having said that, I enjoyed using the package and it is a welcome addition to my programming library.

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A MIB product from Infocom is always something to be eagerly awaited, so when I got a phone call to say that a new Infocom title had just arrived in the country I was eager to try it out.

When I found that it was written by the same guy who gave us *Planetfall*, *Severin* and *Hitchhiker's*, and that it was only available for the ST, being much too large and complex to fit into the 8 bit range, I was doubly interested.

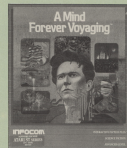
Thus, the very next day, thanks to the efficient staff at Software Express, I sat down at my desk, powered up the ST, and played the *A Mind Forever Voyaging* disc in the drive.

And I suddenly discovered that my entire life to date was nothing more than an electronic illusion created inside the massive memory banks of the Prism super-computer.

This fact is, perhaps, a little disconcerting, as I'll explain.

Early in the 21st Century, Doctor Abraham Perelman was involved in a project that would bridge the gap between computer "Expert Systems" and the workings of the human brain.

He proposed an artificial intelligence simulation which mimicked in every way the



## Into a world of illusions

learning processes of the human brain.

Thus the Prism computer was designed, and hooked into five other massive mainframe computers which would

provide the substance of the simulation fed into Prism.

It would be fed from the outside world with everything a normal child could see and hear, and its reactions to this

input would cause the projection to alter accordingly.

This process would take many years to complete, in the same way that the human learning process takes many years.

Meanwhile, a small boy was growing up in Downtown Brooklyn. He went through all of the normal growth pains of any child in middle America.

He got lost in the local supermarket, was bullied at school, wanted to become a writer.

Then, at the age of 13, Perry's father died, and the family moved into an apartment in the more seedy part of town.

At the age of 20, just as he had met and fallen in love with Jill and was thinking of settling down with her, he found himself at a rather strange job interview with a magazine editor.

They were discussing perception — how does one know that the real world is not an illusion generated by the mind?

As they talked, everything around him simply faded away, and he heard the voice of Abraham Perelman, talking for the first time directly to his creation, Perry.

Given this background, you are also informed that the world situation is grim. Crime and urban decay are rampant, and there is extreme depopulation and poverty.

Senator Richard Poyler has proposed a "Plan for Renewed National Purpose", and the intention is to use Prism to create and study the effects of this plan on a simulation of the world 70 years hence.

If this were an ordinary adventure, you would expect to play Perelman and the computer would follow your orders to gather information.

However this is no ordinary adventure — this is a state-of-the-art Infocom game, and so you actually play Prism, and must explore for yourself — reporting back to Perelman via the keyboard.

You can contact him, and

A Mind Forever Voyaging has been selected as the first game in the series of the Prism Project. It is designed and developed by the same team that has created the other games in the series. The game is a simulation of the world 70 years hence, and is a product of a major project.

**Prism Project Control Center**  
The game is a large, self-contained world. It is a simulation of the world 70 years hence, and is a product of a major project. The game is a simulation of the world 70 years hence, and is a product of a major project.

**Gameplay**  
The game is a large, self-contained world. It is a simulation of the world 70 years hence, and is a product of a major project. The game is a simulation of the world 70 years hence, and is a product of a major project.

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other members of the research team, via communications outlets around the establishment is little like the voice/visual terminals in the film 2001.

You may also communicate with any one of the five simulation control computers and give them new instructions.

You can even tie into a vast library and into the world news network.

I received my instructions from Dr. Perelman, and activated the simulation mode. After entering the relevant colour codes from the code-sheet provided in the package, I was transported from my cosy world of 2001 into a simulation of 90 years hence.

A map of Rockville circa 2001 is provided, but this doesn't really help you with anything other than major landmarks, as much development has taken place by now, and there is a lot of city to explore.

I took the underground to the other side of the city, being careful to speed my journey to play back to Perelman later, and had a meal at a rather expensive restaurant.

Curiously finding out where I lived, I then tracked down my little apartment and visited Jill and our little baby.

Those familiar with Infocom's prose will know that the events that take place are vividly described, and take on the same degree of reality that a good novel would as you lost yourself in its pages.

In contrast to many Infocom titles, however, the emphasis is not so much on problem-solving as on the control of the situation you're involved in.

You find out intriguing details of information about life in the future, meeting and chatting to people as you go.

Silly, I soon found that I had misinterpreted all the talk set by Perelman, and I reverted to communication mode to tell him what I'd discovered, and based on my information, the plan was approved.

Perhaps on a standard

cassette-based adventure, things would end there, but not with Infocom.

Perelman also told me that the information that I had provided had enabled his team to extend the simulation by a further 10 years.

It seemed rather odd to be to give me further detailed instructions, viz. being the inquisitive computer I am, I set off to see for myself....

And the world has become a shabby place, full of gloom and suspicion. The secret

police raid my house, and finally Jill.

My brother seems to be in some sort of trouble. The plot has obviously thickened, and it seems to be up to me to find out who, and when Perelman before it's too late.

Against this nightmare combination of 1984 and Brian May World, the saga continues.

I can thoroughly recommend this adventure to anyone who likes a challenge and wants to get the most

from their ST, as it is perhaps the most fascinating concept that Infocom has yet come up with.

Some are the tricky problems and funny solutions of Simon Montford's last game, The Hitch-Hiker's Guide to the Galaxy - an excellent game in its own right - and in their place is a frighteningly realistic view of a future we all hope we can prevent.

It'll let you know how I got on.

André Wilkey

## The golden touch that saves cash

If you're tired of your Atari for any length of time and you're at all interested in games, you won't have failed to notice two things. Firstly, a lot of games originate in America. Secondly, they cost a small fortune.

The two points aren't unrelated. It costs money to import software. In the past I've been sent free review copies of software from the States and been charged an arm and a leg in VAT, import duty and Post Office handling charges.

Of course more games get written in America because the Atari market is bigger over there. Not fair, is it?

Fortunately, US Gold is in business to solve this problem. Basically, Gold "buys" a game from America in the form of a licence and sell it over here at less-than-Stateside prices. That way we get American games at British prices.

The latest batch of games to be released by US Gold are **Tapper**, **Up's Down**, **Spy Hunter** and **Exorcise**.

**Tapper** is one of those games which owes its existence to the old stage act of spinning plates or sticks. The idea is that you've got four soda counters to look after. You must slide sodas along to the customers and collect the



*Tapper... keeps you going*

empties. If you miss an empty glass it crashes to the ground and that's one of your "lives" gone.

The other way you fail is by being over-careless and sliding a soda when there isn't a thirsty customer - not like any bar I've ever been in!

When you slide a soda the customer retreats and the way to complete a level is to satisfy all customers. On level 1 it's not too difficult.

Of course things get harder as you work your way up the levels, with more customers and consequently more empties. There are also bonus

rounds when you must watch carefully.

The Soda Bandit, shakes five of the six sodas onto the bar and then shuffles them around. You've got to spin the unshaken can. Success brings a big bonus, failure brings a forfeit of lives.

It's a frantic game which has you leaping about while trying to develop strategies.

It's also slightly unusual by - as a soda game in that it's essentially non-violent. The worst that happens is that glasses get broken - no worse than the average barbie.

Up's Down is a bit hard to



Up Down... same and chase

decades. It's a sort of yearning for driving games, but not in the Pole Position mold.

The road is a narrow sawtooth that scrolls down the screen and as soon as you press the joystick forward your car starts along the road.

Every so often there are flags and as you pass them they turn white. Completing the "level" involves turning all the flags white. To hinder you there are trucks going in your direction. If you hit them you disintegrate.

There are also wrecks sliding back down the screen, and if they hit you it's curtains.

Because there isn't much of the road system on screen at any one time, you don't get any warning of either the trucks or the wrecks. Also, because the road system isn't very extensive, there's often no way of dodging either trucks or wrecks.

However the car is unusual in that it can jump. Landing on your opponent's brings points, but you can also jump from one section of the road to another. You can jump off the road too, but that loses you a life.

Just to keep things moving, the whole game is timed, with different bonuses depending on how fast you complete the level.

It's one of those games which had the saying "ally game" - I'd just have one more go! It's challenging enough to be fun if you like that sort of

thing.

Spa Hunter is another driving game, but more in the River Raid genre. You are a world class spy driving for your life. The road is crowded with enemy agents bent on your destruction and they'll stop at nothing, so neither can you.

What this means in practice is another vertically scrolling screen. The game starts with the weapons track pulling over and your car sliding out of the back, armed with machine guns.

The road branches as you move forward and you've got to be careful to stay in the road. The enemy agents will soon have you crashing off so there's a fair bit of dodging as well as shooting.

Each time you enter a new

terrain the weapons track appears and you can get some more weapons. To do this you must let the track pass you and then "dock" into the back of it.

It took me a bit of time to get the hang of Spa Hunter - I kept shooting innocent motorists and getting the "No Points" message. Once I got the hang of it, though, it was fun to play.

Finally, Zaxxon is one of the all-time classics. It was one of the first games to give the impression of 3D by using a sort of diagonal scroll. "Zaxxon" in the playground is controlled by forward and backward joystick movement, with lateral movement being controlled correspondingly.

Since you're constantly moving forward, you don't have to worry about the third dimension.

However you do have to worry about the many hazards, both passive and active. On

the passive side there are all sorts of things into which you can fall, with the resulting loss of life. On the active side there are missile slots, enemy aircraft and lethal electronic barriers.

The chances are that you've seen Zaxxon in one of the many versions around. If you've ever played it, you'll know that it is a great arcade game.

So there you have them. Four games which until recently would have cost considerably more.

Without realising it, I've arranged them roughly in "violent" order, from Tapper with its broken glasses to Zaxxon with its full-scale shoot/avoid/destroy.

If you're an arcade fan, chances are one of them would suit you. As an arcade addict, I've been spoiled for choice.

Fel Coakson

## Unlocking hidden graphics talent

THERE was once a time when the average price for Atari software was about £30. Then along came Jack Tramiel. Hardware prices tumbled and in their wake software prices fell.

Nowadays, with most programs costing around £10,

anything far less than a fiver is regarded with suspicion.

So it was with some apprehension that I approached Smart Art, a graphics picture-drawing utility from P.J. Software that retails at £9.50. Could it really be any good for such a small amount?

Well, Smart Art certainly lacks the sophistication of the Atari Truarc Tablet and its accompanying graphics cartridge, but that does not tell over 10 times as much.

Included with the package is a demonstration picture - Mickey Mouse in magician's outfit - a naive reminiscence of Disney's Fantasia - which proves that it is possible with skill and practice to produce high quality graphic pictures with Smart Art.

On loading the program a cursor appears at the centre of the screen and a status display is at the bottom. Using a



Zaxxon... ultimate in mayhem

1992, 1993, 1994, 1995, 1996, 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, 26

# Solving the secret of the black box

AS I promised last month, we've more FOR...NEXT loops this time, so if you're not too sure of them perhaps you'd better find a few minutes for a bit of quick revision.

Actually Program 1 should be fairly straightforward. All it does is to print out

## A BLACK BOX

three times. The loop variable COUNTER keeps track of how many times lines 50 to 90 — the body of the loop, between the FOR and NEXT — are repeated. Since line 30 reads:

```
10 FOR COUNTER=1 TO 3
```

this will be three times. Notice that lines 50 and 60 have semi-colons to "glue" the words together. Line 70 omits this, though, as we want to move on to a new line.

```
10 REM PROGRAM 1
10 PRINT "HELLO!"
10 FOR COUNTER=1 TO 3
10 PRINT ""
10 PRINT "BLACK"
10 PRINT "BOX"
10 PRINT
10 NEXT COUNTER
```

Program 1

So why the message "A black box"? Well, the idea is to stress that it doesn't really matter what's inside the "box" formed by the FOR and NEXT, it will be done as many times as is specified in the FOR Statement.

Admittedly our knowledge of Basic isn't yet so encyclopaedic that we could think of many other things to go inside the box, but we can see the possibility.

The point is, given lines 30 and 50, whatever lies in the box between them will be done three times and you don't have to know what's inside the

## Part VIII of MIKE BIBBY's guide through the micro jungle considers the question of nested loops

box to be aware of this. There are stupid exceptions to this which we'll meet, but they involve bad programming, which, of course, you won't be interested in...

```
10 REM PROGRAM 11
10 PRINT "DOING LOOP"
10 FOR LOOP=1 TO 4
10 PRINT "DOING LOOP"
10 NEXT LOOP
```

Program 11

Now take a look at Program 12. Again, a simple loop. Nothing there to trouble you — it just prints out:

## DOING LOOP

four times. Lines 50 to 70 form the chunk of program that prints this message out four times.

The only odd thing about this

program — and Program 1, come to that — is that our line numbers haven't gone up in consecutive form. You'll see why in a minute.

Returning to Program 1, as I've stressed it doesn't matter what went inside the loop formed by lines 50 and 90 — it could be done three times.

So in a slightly whimsical manner, let's put a loop inside the loop of Program 1. We'll take the loop of Program 11 — lines 50 to 70 — and put them in place of the lines that give the "A Black Box" message in Program 1 — also lines 50 to 70 (now you see one of the reasons for the line numbers).

```
10 REM PROGRAM 12
10 PRINT "DOING LOOP"
10 FOR COUNTER=1 TO 3
10 FOR LOOP=1 TO 4
10 PRINT "DOING LOOP"
10 NEXT LOOP
10 PRINT
10 NEXT COUNTER
```

Program 12

Program 12 is the result. We now have two loops, one nested inside the other like those Russian dolls. In fact we call them nested loops. And you won't be surprised to learn that we

*Wheels within wheels  
... loops within loops*



call the loop that goes round the outside the outer loop, and the one on the inside the inner loop.

Before you run it, see if you can think through what happens. Lines 30 to 50 ensure that we do the intermediate loops three times. Of these lines, 50 to 70 form a loop printing out "Doing loop" four times, followed by a blank line (line 60).

So the outcome is that we get the message "Doing loop" 12 times in all, in three sets of four, each separated by a blank line.

To help you see what's going on more clearly, Program IV gives another version. I've changed the loop variable in lines 30 and 50 to SET to reflect the fact we're doing things in sets, and added:

```
40 PRINT "SET ";SET
```

to mark off each set. Note this line is inside the outer loop but outside the inner loop, so it only appears each time the outer loop is done. I've also altered line 60 so that the variable CLOOP is printed out as it cycles through its various values.

To get a feel for nested loops, try changing the limits of the loops in lines 30 and 50, predicting what you'll get before you run the altered program.

After your experiments restore the original Program IV, swap lines 70 and 90, then RUN the result. You should be able to work out what's going wrong. Remember, they're nested loops – the start and finish of the inner loop must fit neatly inside the start and finish of the outer.

Anyway, arrange yourself from this mess by swapping the lines back and change line 60 to:

```
50 FOR LOOP = 1 TO SET
```

then run it. You should get:

```
DOING LOOP 1
DOING LOOP 1
DOING LOOP 2
DOING LOOP 1
DOING LOOP 2
DOING LOOP 3
```

We're still doing the outer loop three times, so we still get three sets of output from the inner loop. Now though, because of the change to line 50, the number of times the inner loop is done varies, depending on the value of SET. That is, the number of

**The start and finish of the inner loop must fit neatly inside the start and finish of the outer**



```
10 RUN PROGRAM IV
20 PRINT CHR$(123)
30 FOR SET=1 TO 3
40 PRINT "SET ";SET
50 FOR CLOOP=1 TO 4
60 PRINT "DOING LOOP ";CLOOP
70 NEXT CLOOP
80 PRINT
90 NEXT SET
```

Program IV

times the inner loop's done depends on the value of the outer loop's variable!

In this case the larger in the tooth the outer loop is the more often the inner loop is done. The effect is that there's one more "Doing loop" in each successive set.

As we've already seen, we refer to the loops as outer and inner. Some people like to use these words as labels for their loops to help them keep track. Program V reinterprets Program IV in this way. Personally, I prefer more meaningful labels – it's up to you!

Program VI uses the idea of making the number of times we do the inner loop dependent on the outer loop variable to print out a triangle of asterisks.

When deciphering what's going on

```
10 RUN PROGRAM V
20 PRINT CHR$(123)
30 FOR INTER=1 TO 3
40 PRINT "INTER";INTER
50 FOR CINTER=1 TO 4
60 PRINT "DOING LOOP ";CINTER
70 NEXT CINTER
80 PRINT
90 NEXT INTER
```

Program V

with nested loops it's helpful to have a quick look at the line defining the outer loop – in this case line 30 – to get an idea of the range of its variable. Then concentrate on the inner loop – here lines 40 to 60.

The effect of this inner loop is to print out LENGTH number of asterisks on a line. Our inner loop goes from one to LENGTH and a semicolon follows the asterisk in the PRINT Statement of line 60, which forms the body of the loop. After printing the required number of asterisks, line 70 moves us on to the next line of the display.

So looked at as a black box, what's inside the outer loop lines 40 to 70 simply prints out a separate line of LENGTH asterisks.

We repeat this outer loop 10 times, with the value of LENGTH varying from one to ten. So the first time round the outer loop we get one asterisk on a line, the second time two asterisks, and so on.

I use a similar technique in Program VII to produce a triangle of letters. Here the outer loop variable, FINISH, ranges from one to LEN\$(STRING\$). Since STRING\$ is ABCDEFGH, this boils down to our familiar from one to ten.

I've chosen FINISH as a label because its value determines where

```
10 RUN PROGRAM VI
20 PRINT CHR$(123)
30 FOR LENGTH=1 TO 10
40 FOR CLENGTH=1 TO LENGTH
50 PRINT "C";
60 NEXT CLENGTH
70 PRINT
80 NEXT LENGTH
```

Program VI



```

10 REM PROGRAM VII
20 PRINT CHR$(28)
30 REM STRING=1111
40 STRING="ABCDEFGHIJ"
50 FOR I=1 TO LEN(STRING)
60 FOR LETTER=1 TO 10
70 PRINT STRING(I);LETTER;
80 NEXT LETTER
90 PRINT
100 NEXT I

```

Program VI

we end our printing of characters from `STRING` in the inner loop.

The inner loop prints out successive characters from `STRING$` by picking them out with:

`TO PRINT STRING(I);LETTER;`

as `LETTER` varies from one to `LEN(STRING)`. Remember `STRING$(1,1)` picks up the first letter of `STRING`, `STRING$(2,2)` the second, and so on.

The semicolon of line 70 ensures they all appear on the same line. Once the inner loop is complete and the line finished, line 90 moves to a fresh line of the display.

The outer loop is then repeated, `STRING` being increased by one, so that this time our inner loop will print out one extra character from `STRING$` and so on.

Actually we could accomplish all this with far less effort, as we saw from Program IV last month. However it illustrates the techniques of nested loops quite well.

Now take a look at Program VIII. Before you start looking, it hasn't got nested loops — that will come later! The idea of the program is to add together all the whole numbers (integers) between one and a number you've input, then print out the result.

For instance, if you input 5, the

program would do the sum  $1+2+3+4+5$  and print out the answer, 15.

As you can see, the numbers we add go up in steps of one, so it's a natural for a loop.

The number we're going to total up to is called `NUMBER`. Lines 30 and 40 get its value for us. Our answer is going to be stored in the appropriately named `TOTAL`, which we set to zero with line 60.

For a moment, think about how you do a sum like  $1+2+3+4$ . The answer doesn't just leap into your head all at once. You do it by adding two of the numbers, then adding the answer to the next number, then adding that new answer to the next number and so on.

In other words you think "One and two gives me three. Three and three give me six. Six and four give me ten. No more to add, that's the answer". We call it keeping a running total. This is how the micro does it, adding each new number to the answer arrived at so far.

To see how Program VIII works, assume you've input 4, so we've asked the micro to do the sum we've just worked through. The actual work of adding is done in line 80, the body of the loop. This adds the integer we're considering to the total so far. `INTEGER` goes from 1 to 4 successively. Since `TOTAL` is initially zero, the first time through the loop line 80 boils down to `TOTAL=0+1`, so our total so far is one — correct.

We don't actually do this first 0+1 step when we do it in our heads, but the micro is a very literal beast.

Next time through the loop, `INTEGER` is 2, and the current value of `TOTAL` is one so, `TOTAL=TOTAL+INTEGER`, which boils down to `TOTAL=1+2` and `TOTAL` assumes the new value three.

Next time through, `INTEGER` is three, so line 80 becomes in effect `TOTAL=3+3` and `TOTAL` adopts the value six.

The next time through — the final in this case — line 80 is equivalent to `TOTAL=6+4` and `TOTAL` becomes ten. We then drop through the loop and print the total out with line 100.

Program IX uses exactly the same technique, but this time I wrap the whole thing up in an outer loop (the "does the input" for me, giving

```

10 REM PROGRAM IX
20 PRINT CHR$(28)
30 FOR NUMBER=1 TO 10
40 TOTAL=0
50 FOR INTEGER=1 TO NUMBER
60 PRINT INTEGER;"=";
70 TOTAL=TOTAL+INTEGER
80 NEXT INTEGER
90 PRINT CHR$(13);TOTAL;
100 NEXT NUMBER

```

Program IX

endpoints for the ranges I'm totalling over from one to ten (lines 30, 100). In other words I get all the totals for:

1  
1+2  
1+2+3

and so on.

I've also gone to some trouble to improve the appearance of the output. Just before I add `INTEGER` to the running total (line 70) I print it out, together with an accompanying + sign (line 60). Thus the effect of the inner loop is that not only do we calculate `TOTAL`, but all the integers being summed appear on the same line with + signs between them.

When we drop out of the inner loop we then print out the answer. However, we need to do a bit of fiddling at first. You see, each integer is followed by a +, from line 60. After the last integer though, we don't want a +, we want =.

Well, once the cursor has printed the final + it moves on to the next space on that line of the screen (the effect of the semi-colon). All we do is to move the cursor back with the magical `CHR$(80)`, overwrite our + with an = and print `TOTAL`. Line 90 shows how it's done.

Then, of course, line 100 loops us back if we haven't done all our totals.

A final point. Before each repetition of the inner loop, in other words before we do each running total, we set `TOTAL` to zero. It's vital we set it back to scratch this way each time, otherwise we'll be adding in the previous running total to our current one. Try leaving line 40 out and running the program if you don't see what I mean.

■ That's enough for this month. Next we'll have a look at some of the fundamentals of disk — and you can be sure *deputy* play a vital part!

Program X

SEASONS greetings to all you adventurers out there! This being the time of year when you may be contemplating either the purchase or receipt of some software here's my own Atari Top Ten for Christmas.

**1** *The Witch Maker's Guide to the Galaxy*, Infocom (also only \$29.95).

As I've said before, and will keep saying until you all have them, if you do not own a disc drive then the purchase of an Infocom adventure should be the reason for going out and getting one immediately.

This is, quite simply, the best of the recent Infocom releases, being both a well-crafted adventure, and, by and large, faithful to the book—at least at the beginning—as well as depicting the characters exactly as Douglas Adams created them.

Absolutely the best adventure released this year—bar none.

**2** *Adventusland*, Adventure International (licensee or also with graphics) (\$19.95).

The original micro adventure from Scott Adams and still the best introductory one about. It probably won't keep you taxed that long, but by the time you finish it you'll be hooked, and that is the whole idea.

**3** *The Pay-Off*, Atari/Epicure Software (C9.95 disc from Atari, \$6.95 cassette from Epicure).

This flexible adventure from the Atari disc pack—and they tell me the new packs should include notches—is also available over the counter.

A bit tricky for a pure starter adventure, as there are not too many clues around at the start, but as you start to get into character the problems come thick and fast.

Now available in cassette format from the original authors, under license, for non-driving adventurers.

**4** *Colossal Adventure*, Level 9 (C9.95 cassette).

This is another for those of you without drives, the best cassette implementation of the original Crow-

ther/Woods mainframe adventure, complete with the bird and snake, matrix galore and with an extra 70 location endgame as a bonus to boot.

**5** *Zork I*, Infocom (N29.95 on disc).

If you do have a drive and have a yen to go exploring underground, then the Zork trilogy, of which this is the first and best, is number one for 1984.

Level 9 provides an accessible alternative but if you want to adventure with a drive then why

## By Brillig

settle for less. Fascinating problems and good interaction with the characters you will meet on your journey add to the fun.

**6** *The Count*, Adventure International (as *Adventureland*).

This game has a very special meaning for me as it is the first I ever completed. A typical early Adams effort with a little more lateral thinking required than *Adventusland*.

Say what you like, but the Scott Adams adventure series has a neat progression about it. You get the impression that he was learning as he wrote them, and so beginners are well advised to follow them in sequence.

This one has a beautiful twist in the

solution as well as some truly awful jokes. If you found some adventures a bit tough, or *Adventusland* a bit easy, then this is the one for you.

**7** *Lords of Time*, Level 9 (C9.95 cassette).

Written by Sam Kassner and programmed by the Austins, this game gives an authentic feel to each of the nine time zones portrayed. There is more meat in the plot than in some of the other Level 9 offerings, and I found the game thoroughly enjoyable. More for the experienced adventurer than the novice.

**8** *Savage Island*, Adventure International (as *At* other games).

*Savage* it certainly is, as this is a real roughie for Scott Adams fans, and all you get at the end of it is the password for *Savage Island II*—reward in itself for any adventure worth his salt.

**9** *Mask of the Sun*, Adventure International (N49.95 on disc).

At last a graphic adventure, I hear you say. Well this is a personal top ten and my predilection is for the purity of text and imagination than pictures.

Graphics strike me as being the



lady adventurer's way of getting into character, and in all honesty you shouldn't feel them. If graphics are your bag though, this is a fairly atmospheric adventure, although there is a bit too much driving along roads for me to go overboard.

But once you get into the lands it is really rather good.

**10 Emerald Isle, Level 9** On budget made at £8.95 as cassette.

The last of the non-graphic Level 9 efforts, and as a big sprawling game it actually works, with a neatly constructed plot, a good dose of humour and plenty of problems to solve.

\*\*\*

So that is what *Bullseye* is slipping into various Christmas stockings this year. Next year promises to be an exciting one, with the ST perhaps helping to break the mould of Atari adventuring.

Certainly the Infocom range is there already, and Talent is covering the QL adventures *Wear and Tear*. It would be good to see some

more new faces on the adventure scene to break the Scott Adams/Infocom/Level 9 stranglehold.

To that end Egnose Software is releasing *Doors House*, a ghostly tale about a theatre terrified by the Phantom. You play the hero in a complex quest to save your career, plucked from chorus line obscurity, before it has even begun. Available on disc at £9.95 and cassette at £5.95 it looks a worthy follow up to *The Pay-Off*.

\*\*\*

This month's glitch was spotted by Geoffrey McHugh in *Level 9's Adventure Quest*. In the Orc's tower on the mountain there is a rope. Now where there is a rope there is somewhere to tie it. Say "Tie Rope" and guess what you will find hanging from the staccato when you get to

the Abominable Snowman's cave!

"Mark Williams has the problem in *Hulk*, from Adventure International, of ending up dead whenever he finds himself in close proximity to the Natter Energy Egg. The Hulk can go to work on an egg if he takes his doctor's advice. It is not the Nightmare problem you think, Mark!

Merry Christmas and an Adventurous New Year to you all!



**ADRIAN'S New Year Resolution** is to try to be a bit more relevant of graphics in adventures. Here are a few resolutions I'd like to see from some of our favourite adventure writing friends:

**Level 9:** More story, less puzzling and a sensible error message. "Winn Winn Bad" cannot be seen as an intelligent advance on "Able Bally Bloop".

**Infocom:** Follow up *Hitch Hiker's* and don't put graphics in any game they ever release.

**Adventure International:** Actually release *Questprobe II - The Fantastic Four*, and to make it a game of an adventure rather than an adventure of games.

**Brian Howard:** To find a compass in one of his Christmas crackers, and use it in his next adventure.

# NEWSLETTER

## Special interests groups

MANY MicroLink subscribers have been in touch to say they want to organize closed user groups within the service to promote their special interests.

Systems manager Colin Rogerson says MicroLink is only too happy to help out where possible, and invites interested parties to phone him on 065-629-9758 for details.

In order to assess the depth of interest in specific C.U.G.s, he suggests that service providers to form a group should advertise the fact in the Contents or Communications sections of the InternetPac facility.

"We have messages on the InternetPac now from people who want to form closed user groups for Commodore 64, Apple, 80880 machines, and Telecom Gold subscribers," says Rogerson.

"The response to them will indicate the demand for such facilities and help us in planning to provide them".

## Now Who's Who goes electronic

A WORLD first in electronic publishing, the Who's Who of the microcomputing scene in Britain, is now being made available on MicroLink.

It has been such a success since it was launched on CreditLink, our value service, that it is now being moved to extend it to MicroLink.

Constantly updated by our team of researchers, it contains comprehensive details of all the top personalities

in the world of microcomputing. And they have dug up some little-known facts to help make the electronic per person come alive.

For instance, the Who's Who reveals that one leading name has the middle names of Murray, once worked as a computer on Fractional Wireless and spends by reading poetry. He is none other than Sir Clive Sinclair.

**YOUR  
chance  
to join  
MicroLink  
- turn to  
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## Oman connection

WORLD is helping to make MicroLink the fastest growing international electronic communications system in the remarkable way its Service is spreading around the world.

From the Sultanate of Oman, chartered airplane S.A.G. Rajan wants to say how he has heard all sorts of good things about MicroLink, and would be pleased to become a subscriber. Rajan, general manager of the Oman Industrial Gas Company, is the boss of many subsidiaries in the Middle East.

## Many yen for MicroLink...

ONE of the growing number of Japanese users of MicroLink, journalist Yukichi Ishikawa of 4 x 4 magazine, mailed from Tokyo to say how it has been saving him a lot of Yen lately.

This is because he discovered that it is cheaper to send a letter to his contacts in Japan via MicroLink than it is to use the Japanese telex service. It means his messages have to travel from Tokyo to the MicroLink computer in London and then back to Tokyo!

Yet there is no appreciable delay in getting

his message through - an essential requirement for a busy journalist leading against deadlines.

With the aid of Yukichi, MicroLink has now purchased the hardware cables. He has regular telex correspondence with a contact in the Chinese capital Peking using MicroLink.

However Yukichi's active use of MicroLink is likely to be rewarded by one of his neighbours - one of Japan's leading financial institutions, the Bank of Tokyo, recently became a subscriber.

**EVER** since we asked for readers' opinions on the subject of check-sum programs we have had a steady stream of letters. Almost without exception these have been suggesting that we use such a program in conjunction with our listings in order to assist in debugging.

In response to this demand I have written Get It Right! The idea is that you use this utility to produce a list of numbers from your program. You then compare these numbers with the list we'll print at the end of each program in the magazine.

If the check-sums differ for any lines then they are the lines where you've entered something slightly differently.

Of course a different REM line shouldn't affect the running of the program. If program lines are in fact it should be a simple task to edit or re-enter the lines and repeat the process until your check-sums agree with the printed ones.

Once you have typed in the program you wish to check, save it to disc or cassette so you've got a permanent copy in case anything goes wrong.

Now make a list copy of the program using LIST "C" (for cassette



By  
**RICHARD  
VANNER**

or LIST "D" filename" (for disc access). It is this version of the program that will be used.

Load Get It Right! and position the tape at the start of the program to be checked — or make sure the correct disc is in the drive. Now run it and the file will start loading.

Note that Get It Right! assumes the listed program file is called TEST, but you can easily alter this by changing line 1000. Cassette users will find their version of line 1000 in the REM

statement in line 999.

Get It Right! will take each program line, calculate the check-sum, and print it to the screen. If it's a short program the whole check-sum table will fit on the screen. However for larger ones use Control-I to stop the table scrolling off the screen until you've compared your values with the printed values.

All that remains is for you to type in Get It Right! and you should have no more debugging problems. We've even printed the check-sums for the program itself... er, haven't there a logical problem there somewhere?

Ohwell, just make sure you Get It Right!

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1. 1990年12月1日以前，在北京市区范围内，凡从事过个体工商业经营活动，且符合下列条件的，可认定为个体工商户：

1998. 27 pages. Number 1 in the series. ISBN 0-965-1111-1-1. \$10.00. Available from: [www.rockwell.com](http://www.rockwell.com).

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1746-47	1,700.00	1,700.00
1745-46	1,700.00	1,700.00
1744-45	1,700.00	1,700.00
1743-44	1,700.00	1,700.00
1742-43	1,700.00	1,700.00
1741-42	1,700.00	1,700.00
1740-41	1,700.00	1,700.00
1739-40	1,700.00	1,700.00
1738-39	1,700.00	1,700.00
1737-38	1,700.00	1,700.00
1736-37	1,700.00	1,700.00
1735-36	1,700.00	1,700.00
1734-35	1,700.00	1,700.00
1733-34	1,700.00	1,700.00
1732-33	1,700.00	1,700.00
1731-32	1,700.00	1,700.00
1730-31	1,700.00	1,700.00
1729-30	1,700.00	1,700.00
1728-29	1,700.00	1,700.00
1727-28	1,700.00	1,700.00
1726-27	1,700.00	1,700.00
1725-26	1,700.00	1,700.00
1724-25	1,700.00	1,700.00
1723-24	1,700.00	1,700.00
1722-23	1,700.00	1,700.00
1721-22	1,700.00	1,700.00
1720-21	1,700.00	1,700.00
1719-20	1,700.00	1,700.00
1718-19	1,700.00	1,700.00
1717-18	1,700.00	1,700.00
1716-17	1,700.00	1,700.00
1715-16	1,700.00	1,700.00
1714-15	1,700.00	1,700.00
1713-14	1,700.00	1,700.00
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1706-07	1,700.00	1,700.00
1705-06	1,700.00	1,700.00
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**Question**  
 When I take my mother's medicine (Nasol) I feel hot, sometimes we  
 breathe  
 When I take my mother's medicine (Nasol) I feel hot, sometimes we  
 breathe  
 When I take my mother's medicine (Nasol) I feel hot, sometimes we  
 breathe

[illegible]

Item	Unit Price	Quantity	Total Price
<b>Item 1</b>			
Item 1 Description	1.0000	1.0000	1.0000
Item 2 Description	2.0000	2.0000	2.0000
Item 3 Description	3.0000	3.0000	3.0000
Item 4 Description	4.0000	4.0000	4.0000
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Item 6 Description	6.0000	6.0000	6.0000
Item 7 Description	7.0000	7.0000	7.0000
Item 8 Description	8.0000	8.0000	8.0000
Item 9 Description	9.0000	9.0000	9.0000
Item 10 Description	10.0000	10.0000	10.0000
Item 11 Description	11.0000	11.0000	11.0000
Item 12 Description	12.0000	12.0000	12.0000
Item 13 Description	13.0000	13.0000	13.0000
Item 14 Description	14.0000	14.0000	14.0000
Item 15 Description	15.0000	15.0000	15.0000
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Item 69 Description	69.0000	69.0000	69.0000
Item 70 Description	70.0000	70.0000	70.0000
Item 71 Description	71.0000	71.0000	71.0000

Source: *U.S. Census Bureau, Current Population Reports, 1990, 1995, 2000, 2005, 2010, 2015, 2020, 2025, 2030, 2035, 2040, 2045, 2050, 2055, 2060, 2065, 2070, 2075, 2080, 2085, 2090, 2095, 2100, 2105, 2110, 2115, 2120, 2125, 2130, 2135, 2140, 2145, 2150, 2155, 2160, 2165, 2170, 2175, 2180, 2185, 2190, 2195, 2200, 2205, 2210, 2215, 2220, 2225, 2230, 2235, 2240, 2245, 2250, 2255, 2260, 2265, 2270, 2275, 2280, 2285, 2290, 2295, 2300, 2305, 2310, 2315, 2320, 2325, 2330, 2335, 2340, 2345, 2350, 2355, 2360, 2365, 2370, 2375, 2380, 2385, 2390, 2395, 2400, 2405, 2410, 2415, 2420, 2425, 2430, 2435, 2440, 2445, 2450, 2455, 2460, 2465, 2470, 2475, 2480, 2485, 2490, 2495, 2500, 2505, 2510, 2515, 2520, 2525, 2530, 2535, 2540, 2545, 2550, 2555, 2560, 2565, 2570, 2575, 2580, 2585, 2590, 2595, 2600, 2605, 2610, 2615, 2620, 2625, 2630, 2635, 2640, 2645, 2650, 2655, 2660, 2665, 2670, 2675, 2680, 2685, 2690, 2695, 2700, 2705, 2710, 2715, 2720, 2725, 2730, 2735, 2740, 2745, 2750, 2755, 2760, 2765, 2770, 2775, 2780, 2785, 2790, 2795, 2800, 2805, 2810, 2815, 2820, 2825, 2830, 2835, 2840, 2845, 2850, 2855, 2860, 2865, 2870, 2875, 2880, 2885, 2890, 2895, 2900, 2905, 2910, 2915, 2920, 2925, 2930, 2935, 2940, 2945, 2950, 2955, 2960, 2965, 2970, 2975, 2980, 2985, 2990, 2995, 3000, 3005, 3010, 3015, 3020, 3025, 3030, 3035, 3040, 3045, 3050, 3055, 3060, 3065, 3070, 3075, 3080, 3085, 3090, 3095, 3100, 3105, 3110, 3115, 3120, 3125, 3130, 3135, 3140, 3145, 3150, 3155, 3160, 3165, 3170, 3175, 3180, 3185, 3190, 3195, 3200, 3205, 3210, 3215, 3220, 3225, 3230, 3235, 3240, 3245, 3250, 3255, 3260, 3265, 3270, 3275, 3280, 3285, 3290, 3295, 3300, 3305, 3310, 3315, 3320, 3325, 3330, 3335, 3340, 3345, 3350, 3355, 3360, 3365, 3370, 3375, 3380, 3385, 3390, 3395, 3400, 3405, 3410, 3415, 3420, 3425, 3430, 3435, 3440, 3445, 3450, 3455, 3460, 3465, 3470, 3475, 3480, 3485, 3490, 3495, 3500, 3505, 3510, 3515, 3520, 3525, 3530, 3535, 3540, 3545, 3550, 3555, 3560, 3565, 3570, 3575, 3580, 3585, 3590, 3595, 3600, 3605, 3610, 3615, 3620, 3625, 3630, 3635, 3640, 3645, 3650, 3655, 3660, 3665, 3670, 3675, 3680, 3685, 3690, 3695, 3700, 3705, 3710, 3715, 3720, 3725, 3730, 3735, 3740, 3745, 3750, 3755, 3760, 3765, 3770, 3775, 3780, 3785, 3790, 3795, 3800, 3805, 3810, 3815, 3820, 3825, 3830, 3835, 3840, 3845, 3850, 3855, 3860, 3865, 3870, 3875, 3880, 3885, 3890, 3895, 3900, 3905, 3910, 3915, 3920, 3925, 3930, 3935, 3940, 3945, 3950, 3955, 3960, 3965, 3970, 3975, 3980, 3985, 3990, 3995, 4000, 4005, 4010, 4015, 4020, 4025, 4030, 4035, 4040, 4045, 4050, 4055, 4060, 4065, 4070, 4075, 4080, 4085, 4090, 4095, 4100, 4105, 4110, 4115, 4120, 4125, 4130, 4135, 4140, 4145, 4150, 4155, 4160, 4165, 4170, 4175, 4180, 4185, 4190, 4195, 4200, 4205, 4210, 4215, 4220, 4225, 4230, 4235, 4240, 4245, 4250, 4255, 4260, 4265, 4270, 4275, 4280, 4285, 4290, 4295, 4300, 4305, 4310, 4315, 4320, 4325, 4330, 4335, 4340, 4345, 4350, 4355, 4360, 4365, 4370, 4375, 4380, 4385, 4390, 4395, 4400, 4405, 4410, 4415, 4420, 4425, 4430, 4435, 4440, 4445, 4450, 4455, 4460, 4465, 4470, 4475, 4480, 4485, 4490, 4495, 4500, 4505, 4510, 4515, 4520, 4525, 4530, 4535, 4540, 4545, 4550, 4555, 4560, 4565, 4570, 4575, 4580, 4585, 4590, 4595, 4600, 4605, 4610, 4615, 4620, 4625, 4630, 4635, 4640, 4645, 4650, 4655, 4660, 4665, 4670, 4675, 4680, 4685, 4690, 4695, 4700, 4705, 4710, 4715, 4720, 4725, 4730, 4735, 4740, 4745, 4750, 4755, 4760, 4765, 4770, 4775, 4780, 4785, 4790, 4795, 4800, 4805, 4810, 4815, 4820, 4825, 4830, 4835, 4840, 4845, 4850, 4855, 4860, 4865, 4870, 4875, 4880, 4885, 4890, 4895, 4900, 4905, 4910, 4915, 4920, 4925, 4930, 4935, 4940, 4945, 4950, 4955, 4960, 4965, 4970, 4975, 4980, 4985, 4990, 4995, 5000, 5005, 5010, 5015, 5020, 5025, 5030, 5035, 5040, 5045, 5050, 5055, 5060, 5065, 5070, 5075, 5080, 5085, 5090, 5095, 5100, 5105, 5110, 5115, 5120, 5125, 5130, 5135, 5140, 5145, 5150, 5155, 5160, 5165, 5170, 5175, 5180, 5185, 5190, 5195, 5200, 5205, 5210, 5215, 5220, 5225, 5230, 5235, 5240, 5245, 5250, 5255, 5260, 5265, 5270, 5275, 5280, 5285, 5290, 5295, 5300, 5305, 5310, 5315, 5320, 5325, 5330, 5335, 5340, 5345, 5350, 5355, 5360, 5365, 5370, 5375, 5380, 5385*

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**Dave Russell  
concludes his  
series on Atari  
graphics with  
a look at  
the rest of  
the modes  
you access  
from Basic**



**IN this, the last article in the series, I'd like to take a brief look at the remaining modes which XL and XE owners can access from Basic - 12, 13, 14 and 15.**

Early Atari 400 and 800 models were capable of displaying these modes, but they required the building of a custom display list. Since that's a topic better suited to Mike Rouse's series, I'll confine myself to using the modes from Basic.

Modes 12 and 13 are very similar in behaviour and only really differ from each other in pixel size. Both are split screen modes, with Mode 12 having 40 columns x 20 rows and Mode 13 having 40 columns x 10 rows. Both have a four-line Mode 0 text window.

If you type GRAPHICS 12 and press Return you'll be presented with a largely black screen. The familiar blue text window and the Ready prompt should be at the bottom.

In many books on the Atari's graphics you'll read that text is difficult to display in Modes 12 and 13. You can demonstrate this to yourself by typing PRINT TAB(ATAB) USER and pressing Return.

With a knowledge of what it's

supposed to say on the screen, you might be able to decipher it. No prizes for legibility though. For this reason books that don't say these modes are difficult usually choose to ignore them completely. It makes you wonder why some books list them as text modes, doesn't it?

Now, thanks to G. Thornton of Hoddle, in Hampshire, we're able to bring you a method of putting legible text on a Mode 12 or Mode 13 screen.

Type in Program 1 and run it. Voila! Instant Mode 12 text without redrawing characters.

I've adapted Mr Thornton's original listing in order to encourage

experimentation. With each of the SETCOLOR commands on a separate line it's easy to REMove them either individually or in combination and observe the effect.

Just use the cursor and control keys to move up to the line, insert four spaces and type REM after the line number. When run the program will ignore the rest of the line.

To restore the line use the cursor and control keys to delete the REM. This method allows you to insert and delete lines repeatedly without having to re-type them.

Modes 14 and 15 both have the same resolution of 160 columns x 160 rows and both have a four line text window. Mode 14 allows two colours and Mode 15 allows five.

This makes Mode 15 useful because it has reasonable resolution and four colours while requiring the same amount of memory as Mode 8.

As with previous map modes we've considered, the COLOR command selects the colour to be used and SETCOLOR can be used to alter the contents of the colour registers.

In fact you can think of Mode 14 as Mode 6 but with 160 x 160 instead of 160 x 80 resolution, and Mode 15

```

10 GRAPHICS 12
20 SETCOLOR 0,11,7
30 SETCOLOR 1,4,4
40 SETCOLOR 2,4,4
50 SETCOLOR 3,11,7
60 SETCOLOR 4,4,4
70 PRINT "MODE 12 NORMAL TEXT"
80 PRINT "MODE 12 in Color (see text)"
90 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
1000
110 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
1200

```

Program 1



[illegible]

The program results have shown that

As I said, I've done the easy bit and stopped at Mode 5. If you want to improve the program I suggest you extend it to include Modes 6 to 10.

With a bit of luck you might discover an unusual effect, just as Mr. Thomson did. If you do make a discovery, don't forget the guys in the Atari User office — they'd love to hear from you.

[illegible]

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[illegible]

THIS game is based on the well-known television game Countdown on Channel 4, which has nine rounds of three different kinds.

First comes the word game, in which you pick nine letters, either C (consonant) or V (vowel), which are then chosen at random by the computer.

The computer will pick the most commonly used letters in preference and each time a letter is used it reduces the chances of it occurring again.

After all nine letters are picked the computer will start a 30 second countdown during which time you must find the longest word you can make from those nine letters. Each letter can be used only once.

At the end of the 30 seconds the computer will ask for the length of your word. It will then ask for your name.

You have only a limited time to answer and if you delay too long the computer will show its annoyance with a tone and tell you that your taking too long. You must quickly move a few.

After having typed in your word and pressed Return, the computer will check the word for validity of length and letters used.

It cannot check if the word is a real word – but you wouldn't cheat, would you?

Most enjoy the numbers game. Here you will be asked for the number of high numbers you want. Try two initially. It will then choose, at random, six numbers, four of which will be between 1 and 10. The two

# COMPUTER COUNTDOWN

High numbers will be 25, 50, 75 or 100

The computer will then generate a random number between 100 and 1,000 as a target number. As you might guess, the object is to get as near to this number as you can using each number only once and the four functions:  $+$ ,  $-$ ,  $\times$ ,  $/$ .

Again a countdown will be presented. After it the program will ask for your number and you again have a limited time to enter it.

If your number is within 50 of the target number the computer will want to check it. This is done calculator style using the numbers, the above four functions, and equals.

Any other key, including Return, will erase that line. As well as the six numbers given originally you can use the numbers calculated once each. Here is an example:

	50	100	5	1	3	10
	Target Number 500					
	Your Number 500					
100	+	5	=	500		
500	+	50	=	550		
10	+	2	=	20		
20	+	1	=	10		
500	+	10	=	510		

If you try to use a number twice or a non-existent number the computer will tell you of an error and give you no points.

The final round is the conundrum. Here a nine letter word is jumbled up and you have 10 seconds to unscramble the word and enter the correct original.

Any round can be terminated early by pressing the key which you would expect to press at the end of the round, for example the length of the word as the first figure in your calculated number.

The object of the game is to score as many points as possible.

For those of you who write your own programs I wasted at least two hours in writing this game due to a bug in the old Basic cartridge.

Having originally designed the game on an 8000, with version 3 Basic, I come across a bug.

After saving a program several times your version B Basic will occasionally scramble your Basic program and lose it completely. This is due to the fact that the B version kindly adds 16 bytes to your program when you save it.

1. *Indicate the correct answer by writing the letter of the correct choice in the space provided.*



100

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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100

1.000	1.00000	1.00000	1.00000	1.00000	1.00000
1.001	1.00100	1.00100	1.00100	1.00100	1.00100
1.002	1.00200	1.00200	1.00200	1.00200	1.00200
1.003	1.00300	1.00300	1.00300	1.00300	1.00300
1.004	1.00400	1.00400	1.00400	1.00400	1.00400
1.005	1.00500	1.00500	1.00500	1.00500	1.00500
1.006	1.00600	1.00600	1.00600	1.00600	1.00600
1.007	1.00700	1.00700	1.00700	1.00700	1.00700
1.008	1.00800	1.00800	1.00800	1.00800	1.00800
1.009	1.00900	1.00900	1.00900	1.00900	1.00900
1.010	1.01000	1.01000	1.01000	1.01000	1.01000
1.011	1.01100	1.01100	1.01100	1.01100	1.01100
1.012	1.01200	1.01200	1.01200	1.01200	1.01200
1.013	1.01300	1.01300	1.01300	1.01300	1.01300
1.014	1.01400	1.01400	1.01400	1.01400	1.01400
1.015	1.01500	1.01500	1.01500	1.01500	1.01500
1.016	1.01600	1.01600	1.01600	1.01600	1.01600
1.017	1.01700	1.01700	1.01700	1.01700	1.01700
1.018	1.01800	1.01800	1.01800	1.01800	1.01800
1.019	1.01900	1.01900	1.01900	1.01900	1.01900
1.020	1.02000	1.02000	1.02000	1.02000	1.02000
1.021	1.02100	1.02100	1.02100	1.02100	1.02100
1.022	1.02200	1.02200	1.02200	1.02200	1.02200
1.023	1.02300	1.02300	1.02300	1.02300	1.02300
1.024	1.02400	1.02400	1.02400	1.02400	1.02400
1.025	1.02500	1.02500	1.02500	1.02500	1.02500
1.026	1.02600	1.02600	1.02600	1.02600	1.02600
1.027	1.02700	1.02700	1.02700	1.02700	1.02700
1.028	1.02800	1.02800	1.02800	1.02800	1.02800
1.029	1.02900	1.02900	1.02900	1.02900	1.02900
1.030	1.03000	1.03000	1.03000	1.03000	1.03000
1.031	1.03100	1.03100	1.03100	1.03100	1.03100
1.032	1.03200	1.03200	1.03200	1.03200	1.03200
1.033	1.03300	1.03300	1.03300	1.03300	1.03300
1.034	1.03400	1.03400	1.03400	1.03400	1.03400
1.035	1.03500	1.03500	1.03500	1.03500	1.03500
1.036	1.03600	1.03600	1.03600	1.03600	1.03600
1.037	1.03700	1.03700	1.03700	1.03700	1.03700
1.038	1.03800	1.03800	1.03800	1.03800	1.03800
1.039	1.03900	1.03900	1.03900	1.03900	1.03900
1.040	1.04000	1.04000	1.04000	1.04000	1.04000
1.041	1.04100	1.04100	1.04100	1.04100	1.04100
1.042	1.04200	1.04200	1.04200	1.04200	1.04200
1.043	1.04300	1.04300	1.04300	1.04300	1.04300
1.044	1.04400	1.04400	1.04400	1.04400	1.04400
1.045	1.04500	1.04500	1.04500	1.04500	1.04500
1.046	1.04600	1.04600	1.04600	1.04600	1.04600
1.047	1.04700	1.04700	1.04700	1.04700	1.04700
1.048	1.04800	1.04800	1.04800	1.04800	1.04800
1.049	1.04900	1.04900	1.04900	1.04900	1.04900
1.050	1.05000	1.05000	1.05000	1.05000	1.05000
1.051	1.05100	1.05100	1.05100	1.05100	1.05100
1.052	1.05200	1.05200	1.05200	1.05200	1.05200
1.053	1.05300	1.05300	1.05300	1.05300	1.05300

[illegible]

The `PRINT` in line 240 which prints the value of `B` just out of view behind the text window for some reason obscures this and allows the program to function normally. I hope this saves someone else a lot of wasted time.

### PROGRAM MAP

20-48	Loop.
100-145	Multiplication routine.
150-180	Wait for answer.
200-235	Check for valid numbers.
300-320	Check number routine.
400-560	Sound routine.
1000-1020	Letters game.
2000-2050	Numbers game.
3000-3200	Chemistry game.
4000-4050	Score page.
5000-5100	Initiation.

MAIN VARIABLES	
I and J	FOR ... NEXT variables.
AA	Used to name parts, in computer checker and toyman used in letters game.
COINTE	Results concerning for a lottery choice.
WOWWA	Makes variety for random choice.
ROUND	Randomized play.
CB	Original word in computerized.
BB	Mixed-up word in computerized.
A,B,C,D	Used in calculator routine.

```

1000 END SUBROUTINE
1010 SET MAXVAL=0 DO WHILE (N<=NMAX)
1020 IF (X(N)>MAXVAL) MAXVAL=X(N)
1030 IF (X(N)<MINVAL) MINVAL=X(N)
1040 N=N+1
1050 END DO
1060 PRINT "MAXIMUM VALUE IS", MAXVAL
1070 PRINT "MINIMUM VALUE IS", MINVAL
1080 END
1090
1100 SUBROUTINE SORT (N)
1110 DIMENSION A(N)
1120 DO I=1,N-1
1130   DO J=I+1,N
1140     IF (A(I)>A(J)) THEN
1150       TEMP=A(I)
1160       A(I)=A(J)
1170       A(J)=TEMP
1180     END IF
1190   END DO
1200 END DO
1210
1220 SUBROUTINE PRINT (N)
1230 DIMENSION A(N)
1240 DO I=1,N
1250   PRINT *,A(I)
1260 END DO
1270
1280 SUBROUTINE STOP (N)
1290 DIMENSION A(N)
1300 DO I=1,N
1310   A(I)=0
1320 END DO
1330
1340 SUBROUTINE START (N)
1350 DIMENSION A(N)
1360 DO I=1,N
1370   A(I)=1
1380 END DO
1390
1400 SUBROUTINE END (N)
1410 DIMENSION A(N)
1420 DO I=1,N
1430   A(I)=1
1440 END DO
1450
1460 SUBROUTINE END (N)
1470 DIMENSION A(N)
1480 DO I=1,N
1490   A(I)=1
1500 END DO
1510
1520 SUBROUTINE END (N)
1530 DIMENSION A(N)
1540 DO I=1,N
1550   A(I)=1
1560 END DO
1570
1580 SUBROUTINE END (N)
1590 DIMENSION A(N)
1600 DO I=1,N
1610   A(I)=1
1620 END DO
1630
1640 SUBROUTINE END (N)
1650 DIMENSION A(N)
1660 DO I=1,N
1670   A(I)=1
1680 END DO
1690
1700 SUBROUTINE END (N)
1710 DIMENSION A(N)
1720 DO I=1,N
1730   A(I)=1
1740 END DO
1750
1760 SUBROUTINE END (N)
1770 DIMENSION A(N)
1780 DO I=1,N
1790   A(I)=1
1800 END DO
1810
1820 SUBROUTINE END (N)
1830 DIMENSION A(N)
1840 DO I=1,N
1850   A(I)=1
1860 END DO
1870
1880 SUBROUTINE END (N)
1890 DIMENSION A(N)
1900 DO I=1,N
1910   A(I)=1
1920 END DO
1930
1940 SUBROUTINE END (N)
1950 DIMENSION A(N)
1960 DO I=1,N
1970   A(I)=1
1980 END DO
1990
2000 SUBROUTINE END (N)
2010 DIMENSION A(N)
2020 DO I=1,N
2030   A(I)=1
2040 END DO
2050
2060 SUBROUTINE END (N)
2070 DIMENSION A(N)
2080 DO I=1,N
2090   A(I)=1
2100 END DO
2110
2120 SUBROUTINE END (N)
2130 DIMENSION A(N)
2140 DO I=1,N
2150   A(I)=1
2160 END DO
2170
2180 SUBROUTINE END (N)
2190 DIMENSION A(N)
2200 DO I=1,N
2210   A(I)=1
2220 END DO
2230
2240 SUBROUTINE END (N)
2250 DIMENSION A(N)
2260 DO I=1,N
2270   A(I)=1
2280 END DO
2290
2300 SUBROUTINE END (N)
2310 DIMENSION A(N)
2320 DO I=1,N
2330   A(I)=1
2340 END DO
2350
2360 SUBROUTINE END (N)
2370 DIMENSION A(N)
2380 DO I=1,N
2390   A(I)=1
2400 END DO
2410
2420 SUBROUTINE END (N)
2430 DIMENSION A(N)
2440 DO I=1,N
2450   A(I)=1
2460 END DO
2470
2480 SUBROUTINE END (N)
2490 DIMENSION A(N)
2500 DO I=1,N
2510   A(I)=1
2520 END DO
2530
2540 SUBROUTINE END (N)
2550 DIMENSION A(N)
2560 DO I=1,N
2570   A(I)=1
2580 END DO
2590
2600 SUBROUTINE END (N)
2610 DIMENSION A(N)
2620 DO I=1,N
2630   A(I)=1
2640 END DO
2650
2660 SUBROUTINE END (N)
2670 DIMENSION A(N)
2680 DO I=1,N
2690   A(I)=1
2700 END DO
2710
2720 SUBROUTINE END (N)
2730 DIMENSION A(N)
2740 DO I=1,N
2750   A(I)=1
2760 END DO
2770
2780 SUBROUTINE END (N)
2790 DIMENSION A(N)
2800 DO I=1,N
2810   A(I)=1
2820 END DO
2830
2840 SUBROUTINE END (N)
2850 DIMENSION A(N)
2860 DO I=1,N
2870   A(I)=1
2880 END DO
2890
2900 SUBROUTINE END (N)
2910 DIMENSION A(N)
2920 DO I=1,N
2930   A(I)=1
2940 END DO
2950
2960 SUBROUTINE END (N)
2970 DIMENSION A(N)
2980 DO I=1,N
2990   A(I)=1
3000 END DO
3010
3020 SUBROUTINE END (N)
3030 DIMENSION A(N)
3040 DO I=1,N
3050   A(I)=1
3060 END DO
3070
3080 SUBROUTINE END (N)
3090 DIMENSION A(N)
3100 DO I=1,N
3110   A(I)=1
3120 END DO
3130
3140 SUBROUTINE END (N)
3150 DIMENSION A(N)
3160 DO I=1,N
3170   A(I)=1
3180 END DO
3190
3200 SUBROUTINE END (N)
3210 DIMENSION A(N)
3220 DO I=1,N
3230   A(I)=1
3240 END DO
3250
3260 SUBROUTINE END (N)
3270 DIMENSION A(N)
3280 DO I=1,N
3290   A(I)=1
3300 END DO
3310
3320 SUBROUTINE END (N)
3330 DIMENSION A(N)
3340 DO I=1,N
3350   A(I)=1
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3380 SUBROUTINE END (N)
3390 DIMENSION A(N)
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3410   A(I)=1
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4070   A(I)=1
4080 END DO
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4100 SUBROUTINE END (N)
4110 DIMENSION A(N)
4120 DO I=1,N
4130   A(I)=1
4140 END DO
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4160 SUBROUTINE END (N)
4170 DIMENSION A(N)
4180 DO I=1,N
4190   A(I)=1
4200 END DO
4210
4220 SUBROUTINE END (N)
4230 DIMENSION A(N)
4240 DO I=1,N
4250   A(I)=1
4260 END DO
4270
4280 SUBROUTINE END (N)
4290 DIMENSION A(N)
4300 DO I=1,N
4310   A(I)=1
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4350 DIMENSION A(N)
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5090   A(I)=1
5100 END DO
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5120 SUBROUTINE END (N)
5130 DIMENSION A(N)
5140 DO I=1,N
5150   A(I)=1
5160 END DO
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5180 SUBROUTINE END (N)
5190 DIMENSION A(N)
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5210   A(I)=1
5220 END DO
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5240 SUBROUTINE END (N)
5250 DIMENSION A(N)
5260 DO I=1,N
5270   A(I)=1
5280 END DO
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5330   A(I)=1
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5390   A(I)=1
5400 END DO
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5420 SUBROUTINE END (N)
5430 DIMENSION A(N)
5440 DO I=1,N
5450   A(I)=1
5460 END DO
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5480 SUBROUTINE END (N
```

[illegible]

## Game

[illegible][illegible][illegible]

## Tired of

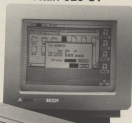
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# Going out in a blaze of graphics glory

THIS month's article, the last in the series, takes a look at some non-standard graphics modes and rounds off with a non-standard display.

Right at the beginning I said 18 modes were available to the Atari user, but this can be stretched by a further 12 modes when you include text windows where available.

In reality things are not this simple. These 30 modes are only those directly available using the operating system on XL and XE models only.

Graphics modes 12-15 are available on the 400 and 800 but only by creating your own display list as demonstrated in the second article in the series.

In reality it is possible to get many more modes than this — would you believe over 100 different graphics modes?

Firstly there is another Atari mode which is not supported directly by any of the current machines. This is Atari Mode 3, which can be obtained easily by creating your own display list.

It is essentially similar to Graphics 0 but with one difference — it allows true descenders. That is, the tail in the small 'y' comes properly below the rest of the letter.

This is because it interprets the data for the character differently. A normal character is 8 pixels wide by 8 lines deep. In Atari Mode 3 it is 10 lines deep and the two bottom scan lines appear blank. In addition some characters, notably lower case 'y' as well as a few others, are displayed with the first two bytes of the character appearing at the bottom of the character (see figures 1 to 5).

As you might imagine, the standard character set would not be suitable for this mode. You really

## MIKE ROWE concludes his series on how to produce brighter displays

need a custom set.

In the example in Demo 1 I have used the internal set for brevity. However I have offset the character set one byte lower and moved the lower case set's last bytes to the first bytes. This gives a workable version of the character set.

In addition, to show the true lower case, I have redefined some of the characters to give true descenders.

Secondly several useful modes are based on Graphics 8, 10, 11. As Dave Russell mentioned last month, the first Atari produced did not have Graphics 9-11.

Before late 1979 the computer had a chip called GTIA, which provided Graphics 0 to 8 only. After this they fitted the GTIA chip allowing

the three new modes.

In fact the display list is exactly the same for these modes as it is for Graphics 8.

The secret of the difference lies in memory location 6029. Numbers from 0 to 15 are poked here in the use of player-missile graphics to decide priority — that is, which player shows in front or behind what.

However numbers from 84 up — bits 6 and 7 — will enable the GTIA modes.

If in Graphics 8 you POKE 6029,84 (bit 6) you get Graphics 9. POKE 6029,128 (bit 7) gives Graphics 10, and POKE 6029,192 (bits 6 and 7) gives Graphics 11.

Leading on logically from this, the same could be done in any mode. This gives a theoretical maximum of 52 full screen modes and a further 52 modes with text windows. That is a staggering 104 graphics modes.

Don't get too excited. This is indeed possible, but most of them are quite useless, some are identical to others and all the text windows are illegible.

The last point can be circum-



Figure 1: Normal capital letter



Figure 3: Capital letter in Atari 3



Figure 9: Normal lower case



Figure 10: Lower case in Atari 3



## Display List

[illegible][illegible][illegible]

項目	2010年12月31日	2009年12月31日	2008年12月31日
現金及現金等價物	1,000,000	1,000,000	1,000,000
應收賬款	1,000,000	1,000,000	1,000,000
應付賬款	1,000,000	1,000,000	1,000,000
其他應收款	1,000,000	1,000,000	1,000,000
其他應付款	1,000,000	1,000,000	1,000,000
總計	5,000,000	5,000,000	5,000,000

100

monographs and will be about 100 in total.

Probably these new modes are definitely stable and significantly different. These are shown in Devore II and in:

Game II is a 7 colour (80x96 mode) which takes only 4k of memory. Essentially it is a cross between Graphics 7 and Graphics 10. For some reason you can only get seven out of the eight colours of Graphics 10. Notice also that the colour registers used are not 0-7 as



**Figure 10.1** *Illustration of the relationship between the number of units produced and the total cost of production.*

[illegible][illegible][illegible][illegible][illegible]

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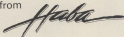
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character. This new mode is more like Graphics 12 (Anti-ali) in that the eight bits give a horizontal resolution of four per character – that is, each pixel of the character is controlled by two bits allowing control over the colour of each pixel. The character is therefore built out as in Figure 10.

In Graphics 12 this gives four colours (five with inverse) but in addition to the other method of colour selection mentioned before seven colours become available in the new mode. Therefore a custom character set is essential.

Due to the peculiarities of this mode, normal capital letters do not show up. Lower case and inverse will print the character in different colours as will printing characters 0-31 and 96-127 normally and in inverse. This is not straightforward in the way it occurs, and is best discovered by experiment. See Table 1.

All the GT1A modes interpret character set data like this and this is why the text windows are flexible. A

text window is easily obtained, however, by using a Display List Interrupt to change back from the GTIA mode at the text window. This is shown in Demo 14, but the principle will work with any GTIA mode.

Some of the examples above may be difficult to grasp at first, especially III, but if studied carefully they are reasonably straightforward. Feel free to experiment with the programs to discover more.

Finally, to illustrate the power of the display list, I'd like to answer a

[illegible]

problem posed by Simon Crawley. He wants a display comprising one row of Mode 2, 112 rows of Mode 15 and about seven of Mode 0.

Although quite possible this is far from the easiest combination of screen modes. Firstly he has based his screen on an 8k mode – Graphics

You may remember I mentioned any screen display crossing a 4k boundary needs a new load memory, such instruction in the display list where the 4k boundary is crossed.

In the E6 modes this therefore means that the list of mode numbers is interrupted half way down by three numbers.

The first is the mode number – say 14 for Basic mode 15 – + \$4. This tells the operating system that the next two numbers are the low and high bytes of the speed/memory after this point, that is it points to the next 4k block of screen memory.

If you now interact with the display, let alone via the screen,

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[illegible]

PLEASE PRINT IN INK (PLEASE SEE THE INSTRUCTIONS FOR PAGE 1)

**K.E.C.M.**

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## Display List

Members may well no longer remain consecutive. At this point,

The second problem lies in the decision to have a Graphics 2 line at the top of the display. This obviously causes problems as above. However, in addition this mode requires only 20 bytes of memory per line. Graphics 1b requires 40 bytes per line.

As the OS expects 40 bytes per line everything below the Graphics 2 line will be offset by half the screen. Also the second 4k block of screen memory will be 20 bytes out of alignment with the first 4k of screen memory.

So much for the problem. Now the solution!

Well there are many solutions really but I think the easiest and probably shortest is shown in Demo 4.

Here I have considered each of the three modes as individual screens. I started with a Graphics 15 full screen display, changed the top line to Graphics 2 and kept a track of the location of the start of screen memory for this line in L01 and H01.

I then inserted a new load memory scan instruction (LMS) and offset the screen memory for this by 120 bytes. This is to avoid the necessity for moving the location of the later LMS which is there to cope with the 4k boundary which is crossed by Graphics 16.

I again kept track of the start of this block of screen memory in LMS and HL2. Finally after the requisite number of Graphics 15 lines I again inserted an LMS for the eight Graphics 0 lines. The display list is ended straight after this.

Now we have the display needed to treat each part as a separate screen or possibly as a part of a window. This means as well as poking the mode of the area of screen we are using into location \$2, we must also poke the start of memory for that block of screen into \$3, and \$4.

The easiest way to do this is as a set of subroutines to be called. This will also mean that each block starts at location 0.0, thus avoiding printing to position 117.4 which could otherwise occur. The OS would not allow this in *Graphics 2*.

Phew — glad I got that off my chest. I think I'll take a break now and finish that rum I'm writing.

[illegible]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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[illegible]

Year	1990	1991	1992	1993	1994	1995
1990	10.0	10.0	10.0	10.0	10.0	10.0
1991	10.0	10.0	10.0	10.0	10.0	10.0
1992	10.0	10.0	10.0	10.0	10.0	10.0
1993	10.0	10.0	10.0	10.0	10.0	10.0
1994	10.0	10.0	10.0	10.0	10.0	10.0
1995	10.0	10.0	10.0	10.0	10.0	10.0

[illegible][illegible]

年份	1995	1996	1997	1998	1999	2000
1. 国内生产总值	59355.6	67884.6	74462.6	82067.5	89403.5	99355.6
2. 第一产业增加值	5169.1	5540.1	5840.1	6140.1	6440.1	6740.1
3. 第二产业增加值	25169.1	28169.1	31169.1	34169.1	37169.1	40169.1
4. 第三产业增加值	29017.4	36775.4	40383.4	46758.3	51794.3	55475.5
5. 人均国内生产总值	4584.0	5584.0	6084.0	6584.0	7084.0	7584.0
6. 人均第一产业增加值	416.9	454.0	484.0	514.0	544.0	574.0
7. 人均第二产业增加值	2016.9	2316.9	2616.9	2916.9	3216.9	3516.9
8. 人均第三产业增加值	2146.2	2617.5	2938.5	3347.0	3727.1	4087.1
9. 人均国内生产总值	4584.0	5584.0	6084.0	6584.0	7084.0	7584.0
10. 人均第一产业增加值	416.9	454.0	484.0	514.0	544.0	574.0
11. 人均第二产业增加值	2016.9	2316.9	2616.9	2916.9	3216.9	3516.9
12. 人均第三产业增加值	2146.2	2617.5	2938.5	3347.0	3727.1	4087.1

[illegible]



# The light and soul of the party!



WITH the party season once again imminent, there should be plenty of call for STEPHEN PRINCE's *Dance* program. With it, your Atari will be the light and soul of the party.

It will display a pattern on the screen which will beat (pulsed) in time with music played into the Atari via the 1010 tape recorder.

To use the program simply ROM it, press RESET, RUN again, place your chosen cassette in the tape recorder and press PLAY.

Note that we've printed two different versions of the program, the first a set display and the second random.

It makes use of these memory locations: 53778, 53781, 53867, 53823, 53820, 53888, 53871, 53887, 53803, 53813, 53836, 53851, 53867, 53883, 53998, 54011 which come in gaps of 16, that is 53778 + 16 = 53794.

These locations react differently, depending upon certain things. If you switch on and type

in:

```
10 GRAPHICS 0
20 FORT 54018,82
30 A=PEEK(53778) - or any of
the above locations
40 T A
50 GOTO 30
```

and then press a key, the value at location 53778 will be 123. If you play sound into the mixer, the value will also be 100 and 105. Normally the value will be 127.

If you then press Reset and run the program the values found in the location will be 255 when there is sound of a strong enough level, 261 when a key is pressed and 255 normally.

When you want to use the program press RUN, then Reset. Place a music cassette in the recorder and press Play.

FORT 54018,82 will disable the tape recorder.

Locations 798, 799, 710, 711 are used to control the colours. The following values give the following colours:

0-15	black/white
16-29	red/gold
30-43	orange
44-57	red/orange
58-71	pink/purple
72-85	purple-purple/blue
86-99	purple-purple/blue
100-113	blue
114-127	blue-blue/white
128-141	tearpuce
142-155	green/blue
156-169	green
170-183	yellow/green
184-197	orange/green
198-211	orange-orange/white
212-225	orange-green/white
226-239	orange white
240-254	orange white

## PROGRAM 1 STRUCTURE (SET DISPLAY)

10-30	ROM statements containing program name, author and magazine.
50	ROM statement.
60	Select Graphics 1 mode.
70	Select hard margin/palette to 2.
80	Removes cursor.
100-110	Enable play on data recorder.
100-110	Print Graphics 1 characters.
100-110	Print Graphics 1 characters.
100-110	Set character and text window colour to black.
100-110	Change colour by PEEKing location and then POKing locations 798, 799, 710, 711.
100-110	Stop colour code.
100-110	GOTO colour changes.

## PROGRAM 2 STRUCTURE (RANDOM DISPLAY)

10-30	ROM statements containing program name, author and magazine.
50	ROM statement.
60	Select Graphics 1 mode.
70	Select hard margin/palette to 2.
80	Removes cursor.
100-110	Enable play on data recorder.
100-110	Print statements.
100-110	Variables for printing random Graphics 1 characters.
100-110	Set if PEEK(54018,82) would produce a blank space.
100-110	Print random characters.
100-110	Set if POKing variable.
100-110	Set if enough characters have been printed.
100-110	GOTO random (144) code variable.
100-110	Set character and text window colour to black.
100-110	Change colour by PEEKing location and then POKing locations 798, 799, 710, 711.
100-110	Stop colour code.
100-110	GOTO colour changes.





# Those special characters



RECENTLY we've had several enquiries about how to produce the "special" characters which sometimes appear in our listings. It's because of this uncertainty that we prefer authors not to use such characters.

However, we recognise that sometimes it's the simplest way and occasionally it's the only way of doing something. For this reason we're printing the two tables below. These show how to produce the special characters from the keyboard.

We've drawn a box around the characters so that you can see their position more clearly. These boxes won't appear either on-screen or in the listings we print.

The Control and Shift keys are used by holding them down while you press another key. For example, if you read CTRL A, you hold down the CTRL/CONTROL on XL machines key and press A.







































The ESC key is like a normal key, simply press it. For example, if you read ESC DELETE, you press and release the ESC key and then press and release the DELETE key.






































The Reverse Video Mode key has been abbreviated to REV. On early machines this key bore the Atari logo , while on XL machines it has a  design on it. If this key is pressed and released once, all subsequent input will appear in reverse (or inverted) on the screen. You turn Reverse Video Mode off by pressing the key again.

For example, if you read REV CTRL P the sequence of operations would be:

1. Press and release REV key to turn on Reverse Video Mode.
2. Hold down CTRL key and press and release P key.
3. Release CTRL key.
4. Press and release REV key to turn off Reverse Video Mode.

It's easy to make mistakes with the special characters, which is why we prefer not to use them. If you do use them, take extra care.

NORMAL VIDEO			
FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL .		CTRL 5
	CTRL 6		CTRL 7
	CTRL 8		CTRL 8
	CTRL C		CTRL 9
	CTRL D		CTRL 0
	CTRL E		CTRL 0
	CTRL F		CTRL 9
	CTRL G		CTRL 2
	CTRL H		ESC ESC
	CTRL I		ESC CTRL -
	CTRL J		ESC CTRL +
	CTRL K		ESC CTRL +
	CTRL L		ESC CTRL +
	CTRL M		CTRL -
	CTRL N		CTRL 1
	CTRL O		SHIFT C
	CTRL P		ESC SHIFT CLAM
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB

REVERSE VIDEO			
FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	REV CTRL .		REV CTRL 5
	REV CTRL 6		REV CTRL 7
	REV CTRL 8		REV CTRL 8
	REV CTRL C		REV CTRL 9
	REV CTRL D		REV CTRL 0
	REV CTRL E		REV CTRL 0
	REV CTRL F		REV CTRL 9
	REV CTRL G		REV CTRL 2
	REV CTRL H		ESC SHIFT DELETE
	REV CTRL I		ESC SHIFT INSERT
	REV CTRL J		ESC CTRL TAB
	REV CTRL K		ESC SHIFT TAB
	REV CTRL L		REV CTRL -
	REV CTRL M		REV CTRL 1
	REV CTRL N		REV SHIFT C
	REV CTRL O		ESC CTRL 2
	REV CTRL P		ESC CTRL DELETE
	REV CTRL Q		ESC CTRL INSERT
	REV CTRL R		



HAVE you ever felt left out in the cold when it comes to Basic programming on your Atari, especially when you compare it to the Amstrad and BBC Micro models?

Well there's no need to hang your head in shame any longer. With the aid of Optimized Systems Software's Basic XL you too can turbocharge your Atari.

Basic XL is an alternative Basic to the one you were supplied with by Atari, either in ROM form for the 400/800 series, or built in on the XL/XE series.

Since Atari Basic was written by OSS in the first place, you can be sure that Basic XL is fully compatible with any programs you already have. But more about that later.

As supplied, Basic XL comes as a bright orange ROM cartridge, complemented by a beautifully-produced A5 yellow ring binder containing more than 300 pages of information about the software.

The manual is split into two parts. The first section, and also the largest, is a comprehensive tutorial on how to program in Basic for the complete novice upwards. The second half of the manual details each of the commands available with Basic XL.

When you think of the appalling documentation supplied with the XL machines, the manual supplied by OSS is welcome news indeed.

As for the ROM cartridge, it's really a wolf in sheep's clothing.

Basic XL is a full blown 18k ROM, but because of clever software and hardware engineering inside the cartridge, your Atari only uses 8k of RAM when installed. In other words, you get the benefits of 18k Basic, taking up no more memory than the standard Atari 8k Basic.

Truly a case of squeezing a quart into a pint pot.

So what's special about Basic XL? Well you get 45 extra commands not included in Atari Basic for a start. If you're a disc user I feel there's been more a time you've cursed not being able to find out what files are on your disc without having to go into the DOS menu.

With Basic XL all the commands to list a directory, lock and unlock files, rename files and delete files from disc

# Basic XL A WOLF IN SHEEP'S CLOTHING?

**STEPHEN DONOGHUE** puts  
an extended Basic language  
package through its paces

are all there at your fingertips.

The ability to do those on their own is worth the purchase of the cartridge in itself.

Still not convinced? Read on. Basic XL doesn't give a hoot about how you type in your commands. It will quite happily accept lower case, inverse video, or any combination of typing style that suits you, all without

intended for ease of reading.

Program logic is more constrained. Besides IF . . . THEN statements, we also have IF . . . ELSE . . . GOTO, and WHILE . . . EN WHILE statements to play with.

The string statements, LEFT\$, RIGHT\$, MID\$, are supported, as well as the normal Atari sub-string commands.

String arrays are supported, and if you intend to use a string variable in your program and its length will not exceed 40 characters, there is no need to DIMension it beforehand.

Player/missile commands direct from Basic are there to be explored.

I'd never bothered with player graphics before, mainly due to the enormous amount of work needed to create the shape, place it in memory, then animate it.

With no prior knowledge of player/missile graphics, I picked up

**‘ . . . you too can  
turbocharge your  
Atari ’**

steering your lines of Basic program out of syntax errors.

When you list your programs, Basic XL has converted the text into several video with variables beginning with capital letters, and the remaining letters in lower case. Not only that, but all FOR . . . NEXT loops are

the manual and within 15 minutes I had a spaceship whizzing around the screen under joystick control. It's that easy.

While we're on the subject of joysticks, besides the normal STICK command, we also have HSTICK and VSTICK. These commands sense only the horizontal and vertical motions of the joystick respectively, and help simplify controlling movement.

How many times have you written or had use of a program that requests

user input, and wish that initiating ? would disappear, or better still, replace it with something more useful? Once again, Basic XL has the answer.

Using one of the 13 SET commands, you can have any character you like as the prompt to an INPUT statement, or if you desire, no character at all.

Other SET commands allow you to disable the Break key, set TAB stops for the screen, in Print statements, choose how your program looks when it is LISTed, and decide whether you wish just error numbers to appear when you make a mistake, or to have printed a short message explaining the error as well.

One other command that proves useful is MOVE which can copy blocks of memory at machine code speed.

If you've ever re-defined a character set, you know that every character has to be moved byte by byte from ROM into RAM where you can then alter the characters to suit your needs.

I wrote a program to compare the two methods and Basic XL was about 57 times faster than its Atari counterpart.

For program development you can have automatic line numbering, line re-numbering and block deletion of lines.

If your program has a bug in it you can use the TRACE command which lets you see at which line number the

program is currently. If that's not enough, you can also list to the screen or printer every variable and string variable used in your program, and what lines they were referenced on with the LVAR command.

My favourites, and the one I've kept until last, is the FAST command. As it's name implies, that's just what it does.

Make FAST the first line of your program, and things really begin to move. In general, Basic XL runs about 20 per cent faster than Atari Basic when running standard benchmark programs.

But that doesn't tell the whole story. If you understand anything about the way Basic works you'll know that it is an interpreted language. By that I mean it has to translate into machine code each and every line of your program at run time.

Not only that, every time a GOTO or GOSUB statement is executed, in order to find the target line referenced Basic must read all the line numbers from the beginning of the program to find out where it has to go.

This is one of the main reasons that Basic is so slow, and also why Basic programmers keep all their frequently called subroutines at the beginning of

subroutines.

By the time the program was debugged and fully functional it was nearly 20k long.

As an afterthought, I decided to add another subroutine which made a nice presentation screen for the beginning of the program. Having nowhere else to put it, this subroutine

**Basic XL is about 57 times faster than its Atari counterpart**

was at the very end of the program, and was the first one called.

By use of the FAST command the opening screen appeared almost instantly and ran smoothly as I designed it to be.

As an experiment I timed the opening subroutine to see how long it would take to execute with the FAST command removed from Basic XL. The difference was very noticeable - Basic XL took 20 times longer to execute the subroutine.

In other words, without this unique command my program could not run as I intended without a major rewrite.

That covers some of the new commands of Basic XL. There are a whole lot more I haven't even attempted to describe, but are just as much fun to use.

Furthermore, if OSS's DOS XL is used in conjunction with Basic XL, some very interesting, and useful, new features come into play. But that's another story.

So is Basic XL worth buying? At a price of £75 or so, it's almost the cost of an Atari 8000X.

However you do get a powerful Basic which is more friendly and if you're new to the programming game, the accompanying manual is an immense help.

As for compatibility, 95 per cent of your programs will still run - but faster.

Don't forget, Basic XL was made to be compatible with Atari Basic, not the other way around.

With all these wonderful new commands at your disposal, who wants to use old fashioned Atari Basic anyway?

# DATABYTE

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The **GAD** is the most powerful, most versatile graphics design program available for the Atari Home Computers. Its simplicity of use makes it a joy for people of all ages to play with. It has more than **30 different commands**. An incredible **528 different colours** can be used in art and pictures. A three stage Zoom feature allows one the ability to do very detailed and intricate work.

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delivery is guaranteed!

Everyone knows that "fast class" mail is far from perfect. The Consumer's Association reported in June that two out of every five first class letters fail to be delivered the day after they are posted.

So if you have an urgent letter that just HAS to be delivered tomorrow, what do you do?

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And how much does this ultra-fast service cost? From just £1.25 to send a letter of up to 360 words in any address in the UK (and an extra £1.20 to any address in the USA). You can also have it accompanied by a coloured greeting card (chosen from 16 different varieties) for another 60p.

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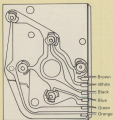
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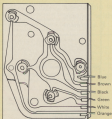
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the electronic mail  
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Hart Green, Newcastle NE7 5NP



The original wiring

# Left-handed? Then stop right here...



The left-handed wiring

**HAVE** you noticed how many "lefties" there are these days? No, I don't mean the sort that the Tory party roll against, I mean left-handed people.

Joystick manufacturers seem largely to ignore the problems which face left-handed users of right-handed joysticks, and the Atari joystick is no exception.

The normal playing position puts the firing button on the left and the player moves the joystick with the right hand.

This means that lefties have to use their stronger hand to push the button and their weaker hand to move the stick.

This is great if you're playing a left-handed person in competition, but not so great if you happen to be that left-handed person.

If you have an Atari joystick, it can easily be converted for left-handed use as follows:

Open the joystick by removing the four screws from the bottom and pulling the top off. In the base you'll find a printed circuit board with six wires attached.

In fact there are two types of board - the type we've shown here with all six wires on one side, and another type with three wires on each side. In fact, it doesn't matter which type you have because they follow the same colour coding.

Make the wiring changes by unclipping the wires from the circuit board and clipping them into the new positions. They should just pull off and push on the board with no problem.

When you've got the wires in the new positions, screw the whole thing back together and ignore the word "Top" that's embossed into the case.

Simply hold the joystick so that the firing button is on the right-hand side and move the stick in the normal way.

There you have it - a left-handed joystick.

It will improve your performance and cause no end of confusion for your right-handed chums!

# Business package can roll out the £s

**ALICIA** I bought what was described as a business package consisting of an 80001 computer, a 1000 disc drive, a 1007 printer, Visiwriter and AtariWriter.

At the time it seemed an excellent bargain, and it turned out to be very good value, particularly the printer.

However there was one snag.

The AtariWriter program came in a disc, the reverse side of which printed the manual.

This contained no mention of the international characters, which include the English pound sign, which is essential for business purposes.

I learned that the cartridge version of this program includes various commands which produce all the international characters. For example Ctrl-OS produces the pound sign, but this does not work with the disc.

Is the disc version an inferior program, or does it have commands for the pound sign and other international characters available but not published? — **G.D. Dabney, Mansfield.**

■ The disc version of AtariWriter does have the features you mentioned, but in order to use a pound sign, which is Ctrl-OS followed by 8, as you say, you must first set the printer to use the international character set.

This is the printer's

equivalent of PORS 750,204 for the screen.

To do this use Ctrl-OS, followed by 27, then Ctrl-OS and 23.

Once you have done this you can print any of the international characters listed in the book.

These codes apply equally to the cartridge and disc versions of AtariWriter, and are the equivalent to LPR-ting the key sequence: ESC ESC W.

## Missing some games

I OWN an 80001, but before that I had the 2600 VCS and some of the games, for example *Intermaster* by Activision, were good games but are not available for the home computer.

Why is this and after all why did I sell Atari (that) which is also a good game.

Is there some problem with getting them on cassette, disc or another cartridge? — **E. Lloyd, Brighton.**

■ Not all games from all

companies are brought out for all computers. The only way to get companies to bring out titles for the Atari is to make them know you want them.

You can do that in two ways. Firstly write to them, and get your friends to do the same, telling them how many copies they'd sell if they did release it.

The second, more general, point is this. When they do release a game you like, buy it, don't accept a copy of it.

The last thing a company is prepared to do is specially commission a game to be written costing tens of thousands of pounds then find it slipped off left, right and centre.

## Help in the manual

IT WAS with much interest that I read the letter by R.B. Moss, in September's Mailbag. I too had suffered the same problem with my printer and Home Piling Manager.

My printer is a Star Microdot 55-10, and I found upon further reading of the

manual that it has the capability of 7 or 8 dot operation (more software control).

So a simple LPR-ting statement sets up the printer. Then Home Piling Manager and no more weird characters.

The 55-10 is Star's replacement for their 55mm FDX, one that many other owners will find hard to if they have access to the American magazine *Atari* are missing.

I would enter one plea to Star Microdot. As they now produce the 55-10C a Commodore compatible version of the 55-10, how about and/or compatible version? That is, one that requires no separate interface.

It's too late for me, but I am sure it would boost their sales to Atari owners.

Finally, thanks to Atari User and R.B. Moss for the letter which prompted me to read my printer manual again. I have found several useful tips in Mailbag. — **Bruce Allen, Burton-on-Trent.**

## Check it again

I WROTE to you a couple of days ago regarding the Atari *Master* game, and my difficulty in getting it to work properly.

Well, timing decided to take the advice you always give to other readers, I checked my typing by typing "1234 56 — 1234 56 etc" through the complete program, and found nothing wrong.

So I did the same again. Nothing. After doing this four (4) times, I eventually found a letter O where there should have been a number 0. And

# Interfacing to a printer

I HAVE recently bought an Atari 80001, and wish to interface it to other equipment, in particular a Pandyline printer 101.

However I cannot find any reference to the pin configurations of either the serial or parallel ports in either the Atari manual or any books available locally in the shops.

I would be grateful if you could publish this information for the benefit of myself and other users interested in the

more technical side of Atari computing. — **G.J. Durkin, Huddersfield.**

■ In order to interface a serial printer to the Atari you will need an RS-232 interface. The best is Atari's 850 module, but these are now very difficult to obtain.

If you find one — buy it! Alternatively a number of companies are bringing out their own modules, but we have not yet seen one on sale.

If you are very technically

inclined, you could try to design your own interface via the joystick ports.

However unless you are an experienced machine code programmer with a fairly good knowledge of electronics, our advice is: Don't even think about it.

Atari magazine Vol. 3/8 to 3/12) carried a series of articles about developing a serial interface for the PDI bus connector at the back of the XL computers.

now the game runs perfectly.

As I said in my earlier letter, I have earned my DOSX, only two weeks before taking the plunge I thought you had to be some kind of idiot not to use a computer.

All I can say now to all those other users or potential purchasers of Atari equipment is go ahead and do it, don't buy games, lose them yourself from Atari User, join your local group, but most of all, if you make a mistake, CHUCK YOUR PRYING!

Look for silly mistakes, not obvious ones. It will all be worth while in the end, I have just finished typing in *Arkanoid* 1987 from the August Atari User and, although I don't really like the game—probably because I keep getting killed as a spy—I typed it with 90 errors.

I don't expect to do this every time, but at least I know that all that typing is so very worth while. — **Peter Hunter, Norwich.**

## Math pack lock-up

I HAVE found on a few occasions that while entering a program into my DOSX, the computer will go faulty.

It doesn't print any characters on the screen and does not carry out any instruction I give it.

However when I press **Reset** the computer prints **READY** and lets me type things in, but as soon as I press the **Return** key I can't input anything again. — **Richard E. Newbould, Harrogate.**

\*\*\*

I HAVE tried to program the *Arkanoid* from your first issue on my DOSX. When I reach the end of line 4,800 the computer no longer responds to any key pressed, apart from **Reset**.

This of course, clears the screen but then after typing **LIST** or **RUN** the same thing occurs. The keyboard gives no response to any combination of keys pressed.

This problem is most trou-

bling as there is no error from correct and it results in the loss of many hours typing. — **D.J. Sharrett, Wetherhampton.**

■ I suspect although you both have a computer with the infamous math pack lock-up.

This is due to a small problem with wiring on the Atari 6502 chip, no matter, and can be easily fixed by replacing that chip with one of the newer versions.

Contact your dealer and if it's still under guarantee this should replace the computer.

If anyone gets a similar problem with an old Atari 6502B the solution is even easier. The problem is your case is a bug in the Basic cartridge.

If you replace this with a Revision C cartridge you'll get no more lock-ups.

## Moving pictures

WHEN I got my DOSX, I only had a black and white TV to use it on.

Every so often I had to re-tune the channel because of the picture moving about. I thought it was my TV and took no notice.

Recently I bought a new colour TV and the picture still keeps moving. It is most annoying. Could you please tell me why it does this. — **Matthew Kemp, Farnborough.**

■ You could have a faulty installation in your computer, or the TV tuner could be at fault.

Generally the cheaper TVs

don't lock on to a signal as well as the more expensive ones.

Also, the computer signal could well be drifting as it gets warm.

Perhaps you should consider taking your computer back to your dealer, or better still contacting Atari's Service Department in Slough.

## User group sought

I'VE been trying to make contact with a user group. I've written to *Essexbridge Computer Club* at Welton-on-Down and the City of London Office in Washington, Surrey, enclosing an ad but have received no reply from either.

I can only think that both groups no longer exist. I phoned Atari's office, but they could suggest no other groups, so perhaps you or other readers may know of a local group. — **P.D. Little, Cancellation.**

■ You've tried the only two addresses we have in that area. Perhaps one of our readers has up-to-date information.

## Special interests

I AM starting a special interest group for Atari computer users which will concentrate on matters other than games—music, robotics, computer art and other specialist interests.

The idea is to promote the

more serious applications of Atari home computers.

The group will initially offer two main services, a newsletter/magazine and a central service.

Members wishing to produce an article for publication will not have it refused on the grounds that it is of a too specialist nature. The central service is for members who wish to exchange ideas with other members.

If the basis of the ideas for the layout and programme of the group appeals to your readers I think there is scope to me enclosing a list for an application form. — **G. Leader, 163 Richmond Road, Leytonstone, London E11 4BT.**

\*\*\*

COULD you please tell me the closest club to Kilmarock. — **Gordon McIlveney, Kilmarock.**

■ There is a Glasgow group. Contact Mr Fletcher c/o 1148 27 Castleridge Drive, Milton, Glasgow. As far as we know, that's the nearest to you.

## Plea from Poland

I REQUEST an Atari 800XG cassette starter pack and the *Atari User* magazine in Canada last month.

The pack contains the *Pole Position* game, which appears to be defective.

When I started about after 15 seconds loading sound I hear "beep" and the cursor always jumps. I can see "I" in the right bottom corner at the same time. The tape is rolling but I

## DOS disc directory reader

HERE is a short program which will print in handy for any Atari owners who use a disc drive and Basic.

It reads the directory from a DOS disc and prints all the filenames in the sixteen 12 on each line.

DOS stands for input/output control block. — **Chris Parson, Lichworth.**

30 DIM A(100)

30 OPEN M1:FOR #1=1 TO 100

10 READ DIRECTORY

30 READ #1:INPUT M1:FOR #1=1 TO 100

NAME FROM M1:5 C=1 TO 52: IF C=52

END C=1

40 T=0:PRINT "1:1000 2:10000"

50 GOTO 30

60 CLOSE M1:CLOSE M1

70 END



don't hear a loading sound. After another 20 seconds the loading sound is heard once again.

Other software, and the Atari Games, which is on the other side of the cassette, works very well.

I am a beginner in video, so I'm very interested in your exciting magazine Atari User.

Would you like to advertise if there is any possibility of getting other copies, because in Poland there isn't any Atari permit or magazine. — **Witold, Gliniszyn, Poland.**

■ You will probably find that the game is still loading quite slowly. The pause is simple while the computer checks that the memory is OK to run the game, then the rest of the game loads into memory.

Leave it for about ten minutes after the "I" appears, and you should be doing.

Many magazines and software/hardware items are available by mail-order to anywhere in the world. Why not try Silos Shop or Software Express, or one of our other advertisers?

You could also contact some of your own computer stores in Poland, and complain about the lack of Atari products!

## Alternative inputs

COMPUTERS can produce visual and printed output, so wouldn't it be nice if they could accept visual input and even spoken input?

I would like to develop software to allow my 80081 to "see", "hear", speak and read and hope that you can provide the name of a company which makes visual and audio digitisers, voice synthesisers and optical character readers, compatible with the Atari. — **W. Williams, Leigh-on-Sea.**

■ The sort of items you ask about are available for many machines, but software is up to you. I'm afraid you also will be talking of thousands of pounds worth of equipment.

The best way to connect

such units to an Atari are via the RS-232 port on the 850 module. Alternatively, use the joystick ports as simple parallel or tristate input/output ports to custom designed devices.

Try contacting any company advertising such devices for other machines to see if they would be RS-232 compatible.

## Board open for calls

I AM writing to you on behalf of the Birmingham Atari Group, which has recently opened up a new Bulletin Board, the Central Birmingham Atari Bulletin Board

which data to a file.

Our engineering program could be run on several occasions before the secondary program was required.

The hardware I evolved with the computer and also drive give me fast in information on writing data to and reading data from disc and disk programs.

Please could you advise me whether or not this can be done and also recommend a reference book on the subject. — **M.C. Powell, Bristol.**

■ You're right. The hardboards provided with the 80081 are, shall we say, a little lightweight. The program which you outline is, of course, very simple to write given the

target to ask for the updated version, which has some extra information regarding the XL range.

## Lost in the maze

I HAD a nigger about the game in the September Atari User. Mike Blumh — I can't get it to work.

I got "Error 8 at line 8000", I looked this up in my manual to find that it is an input statement error — "the user attempted to input a non-numeric value into a numeric variable".

Can you help me clear this up? — **P.B. Hunt, Leigh-on-Sea.**

■ Check your listings! If you can't stand to check it again, see the cassette offer on Page 61.

## Program provided

I WOULD like to write a small action program that will have a basic program which will be a menu to load more basic programs.

I hope to be able to host straight in to my Atari 800. I have a 1050 also drive. — **A.J. Loom, Leigh-on-Sea.**

■ The DOS 3.5 disc has a program on it which does what you want! See the order form at the back of this magazine to send off for your copy if you haven't yet got one.

## Copying programs

I OWN an Atari 800 and have 85, disc drive. I don't mind buying software but when I do mind is the chance of a copy of that costing £75. Hard copied cash down the drain.

Any respectable disc drive owner would make a back up of each program and I would if I could, but the programs are protected.

So could you possibly

## ATARI Mailbag USER

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

The address to write to is:  
**Mailbag Editor  
 Atari User  
 Europa House  
 68 Chichester Road  
 Hove, Sussex  
 BN2 7NF**

Service. Our phone number is 021-430 2781.

The latest runs 24 hours a day, closed only on a Thursday, reopening again on Friday at 7.000 hours. — **Mike Coleman, Wykop, Wroclaw, Poland.**

## Lightweight handbook

I BOUGHT an Atari 800, and a 1050 disc drive in the hope of writing programs that would be able to use data stored on disc by another program which accepted Atari/2 data, made certain checks on it and then write the

right information.

Basic uses the normal INPUT and PRINT commands, but you will also need to know how to use GPR, probably with both normal and random access files.

The best book for this sort of information is "Your Atari Computer", from Osborne/McGraw Hill.

This covers Basic from first steps right up to some complex graphics facilities and complex I/O control, which is what you want.

It doesn't come cheap — about £15 — but it's worth every penny.

If you can't get one from your local stores by one of our mail order advertisers, don't

review some copying programs?

**Also, I am considering buying a printer, as a printer review would be useful. — Marvin Margul, Hartlepool.**

■ You have raised one of the most debated points in the software industry. Because of the danger of misuse and impending legislation, we will not be publishing any reviews or adverts of products designed primarily for copying software.

You have raised a valid point regarding personal backups of software, but until the public can be trusted not to pirate software by copying it illegally for their friends, such protection will not only remain, but become more complex.

There are devices which can copy protected software—none of which will fit an Intel 801— but due to the possibility of misuse, they are not generally imported into the country.

If you accidentally damage a disk or cassette which is protected, the company who made the program should provide you with a replacement at nominal cost providing you send them the faulty disc and a copy of your receipt.

## Running Hexer on 16k

**COULD** you please tell me whether your *Hexer* program and the subsequent random number program will run on an Atari 400 or 100?

I have used a number of times, only for the program to crash after painting very few random numbers.

I would also like to know if the listings printed in your *Software* magazine—*Word Run* and *Pong Jump*—are suitable for my wife from Atari's point of view. I have had problems with character shifting.

Another thing I would like to know is if my computer can be upgraded with more memory, and if so, how high can I go?

Congratulations on a very good magazine, only one suggestion I would make,

## Substitute for string arrays

I've written a database program for my PT2004A which involves string arrays and I would like to convert it for use on my 80080.

The problem is, how to get string arrays in Basic. The format would be in a similar manner to this, but with a different approach:

```
10 DIM A$(1000)
20 INPUT A$(COUNT)
30 LET COUNT = COUNT+1
40 GOTO 20
— David Brockman, Northwich.
```

■ Atari Basic does not have string arrays as such, but it does have "long strings", and "sub-strings" which can be used to the same end.

A long string is simply a string set up for thousands of characters long—like the whole of an array.

A sub-string is a portion of any string, accessed by using two numbers in brackets after the string name.

For example, A\$(10,40) would mean a smaller string

than A\$, containing everything from character 10 to character 40 of A\$.

These two features can be put together to write our own string array routine.

Let's say we want to DIM a simulated string array for up to MAX items, each of up to SIZE characters long.

Let's use ITEM to indicate which element we're talking about (B\$ will be a temporary holding string).

First, you must DIM the string array:

```
DIM A$(MAX*SIZE),
      SIZE(1)
```

Then, fill it with spaces:

```
A$(1)="" : A$(MAX)=""
"SIZE"="A$ " : A$(1)=A$
```

To set element ITEM in our "array", use:

```
INPUT B$
A$(ITEM-1)*SIZE+1,ITEM*SIZE=B$
```

To read element ITEM back again, use:

```
B$=A$(ITEM-1)*SIZE+1,ITEM*SIZE
```

Thus, your example (assuming up to 40 characters per item) becomes:

```
10 DIM A$(1000*40), 40(40)
20 A$(1)= "" : A$(1000*40)= "" : A$(1)=A$
30 INPUT B$: A$(COUNT-1)*40+1,
COUNT*40=B$
40 LET COUNT=COUNT+1
50 GOTO 30
```

This is a little more complex than the Ti version, but it does the job. Basic-ML, Microsoft Basic, etc., all have string array operations built in, so this technique becomes redundant when using any of these languages. — *Andre Willey.*

**However:** How about telling us your built-in parallel machine how much memory is needed for our listing? — *G. Swickard, Newcastle upon Tyne.*

■ Most listings we print are for machines less than 10k, in fact. Hexer will run on a 16k machine, but its default address of 54000 will not be usable, since that is actually beyond your machine's RAM

capacity. Try using 53000 instead.

Since the random numbers program is simulated at 54000, it will not run on a 16k machine as printed, and would need to be modified byte-by-byte by a machine code programmer in order to work.

Just changing the start address won't make it run, unfortunately.

You can upgrade a 400 to a

512 400, but you may find it difficult to get the upgrade board these days. Try the major mail order companies, or a local Atari specialist.

Firing is internal, and requires soldering on to the computer's motherboard, so should not be attempted by the novice.

## Memory update

I HAVE a 6000E, and wish to upgrade the memory. Where can I get one, and how much will it cost for a 6000E pack to upgrade to 400?

Where can I get one, and what price a local company is as fully as possible the PCMC format?

How do you refresh a program loaded to cassette using LIST "C"? I have tried everything and just keep getting "ERR:R 21"

— *Ian Brockner, Poole, Dorset.*

■ On the first two points, try Silica Shop or try ringing some of our advertisers—they can't include everything in their ads.

The book you might like to investigate is "Mapping the Atari" by Ian Chadwick at a cost of around £15.

To refresh a LISTed program, try ENTER "C"

## Monitor

At the October issue of Atari User you published a letter from Jeff Gorman of Commodore who was complaining that after he had purchased an 8000E from Silica Shop and joined their user's club he received no information or news about how them and neither did his brother.

In the reply to this letter, you stated that the Atari Owner's Monitor is only published quarterly.

I would like to clarify some points here. First, Monitor is a magazine published by the List Atari Computer Owners Club every quarter and has no association with Silica Shop.

The Club is an independent organisation and as of 1979

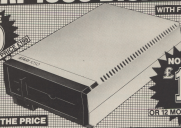
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### COMPUTER OWNERS

Are you the owner of a home computer? Many computer-owning households are unaware of the many services available to them and how they can benefit from them. Only a small percentage of home computer owners have taken advantage of the services available to them. Some services are provided by the state or local government, while others are provided by the computer industry. Some of the services available are:

- **Computer training:** Many computer owners are unaware of the many training courses available to them. Some are provided by the state or local government, while others are provided by the computer industry.
- **Computer software:** Many computer owners are unaware of the many software programs available to them. Some are provided by the state or local government, while others are provided by the computer industry.
- **Computer hardware:** Many computer owners are unaware of the many hardware components available to them. Some are provided by the state or local government, while others are provided by the computer industry.

If you are a computer owner, you should take advantage of the services available to you. Contact your local government or the computer industry for more information.

**Abstract**

The most common reason why people do not take action is that they are afraid of the consequences. The most common reason why people do not take action is that they are afraid of the consequences. The most common reason why people do not take action is that they are afraid of the consequences.

Early 1968 - Post-Late

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But the 1990s have been a time of change for the U.S. economy. The stock market has boomed, and many companies have grown rapidly. This has led to a new era of economic growth. The U.S. economy is now in a period of rapid expansion. This is a good sign for the future of the U.S. economy. The U.S. economy is now in a period of rapid expansion. This is a good sign for the future of the U.S. economy.

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65+	8	5	12	5

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Source: *Journal of the American Statistical Association*, 1997, 92, 1037-1046.

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UK with nearly 2,000 members.

The club run by Silvio Stroz is something different and, as far as I know, there isn't have a publication called Monitor.

The author of the reply was obviously under a misapprehension in believing that the UK Atari Computer Owners Club was the one referred to by Mr Dunstan.

I could not like to think that your readers, who may well have heard of Monitor magazine, are now under the impression that the club gives a slow or bad service to its members.

In fact we try very hard to keep our members well informed and up to date with Atari events. — **Ray Smith, Editor, Monitor, Rayleigh, Essex.**

## DIY interface

I AM an Atari 800 owner interested in DIY interfacing.

There seems to be a host of addresses of those offering such schematic diagrams and kits for all computers except Atari.

Please could you publish the address of any such list within your journal's pages this time. — **Roger Shiner, Upton.**

■ You want to contact Atari Corp. in Slough. They publish a book called The Technical User Notes, which includes circuit diagrams, a full operating system listing, and the OS User Guide.

All present this covers the 400/800 range, but most of the information and all of the regarding use of ports, etc., is applicable to the 130XE range.

## Birmingham board

ABOUT two weeks ago we sent you a letter asking you if you would give our new Bulletin Board a mention in your magazine. We were most disappointed when it did not appear in your latest edition.

We are the Birmingham User Group, of which there is now 100 members, all Atari owners, and with your help we

# Back into the Dark Ages?

ATARI are certainly providing computers with 'Power without the price' but what is happening on the software front?

Last year *400 Start* were advertising *Xplore in the Snow* at £14.99 for several months pre-Christmas in Your Computer You Know, that magazine we use to read before Atari User.

would like to see our British Board take off.

Here are the details again: *General Birmingham Atari Bulletin Board* CB4005 running at 300 baud 24 hours a day, closed Thursday. Speak Mike Coleman. Would it also be possible for you to include each month a list of bulletin boards? We are sure many readers would like to see this. — **M.J. Coleman, Birmingham.**

## The clubs' club

I AM understanding to set up a national Atari club for all users clubs. Basically, we hope to register all national user groups, compiling a newsletter for re-distribution to user groups of news and events throughout Britain.

I would be most grateful if you could let your readers know of this optional service, and if all user groups could submit their latest newsletter to us, together with an ad, we'll see how busy committed we all are about our Atari. — **Paul Colthorne, 28 Tudor Road, Bank Ferry, Birmingham, West Midlands, B42 5PH.**

## Missing mode

ATARI User gets better with every issue, although it is not without it's faults.

In particular Mike Rowe's article on graphics modes fails

I made several attempts to buy it from Mike Rowe, who insisted the price was £40.

Now approximately 12 months later having seen *2000AD* advertise this title at £14.99 (Issue No 4), I took heart and placed Software Express (refers to *2000AD*) I was told the price was £17 for 16 add pounds but ... well ... I could have a

mode gives a 40 column 30 row text display with true descenders.

True, you have to write your own display list to use this mode, but that is true of four other modes on an 800 Atari.

I think it is a great shame that this mode is so little used as it does give an exceptionally good text display.

As far as I know *Speedy* 2.0 is the only program that uses this mode, although many character replacement utilities alter the mode and often a script character set for use with it.

As for the best to hide the features of their computers, but please don't follow suit. — **Chris Rose, Balfour, London.**

■ Mike Rowe covers Atari Mode 3 and some other exotic modes in this month's article, the last in his series.

## Sharing

MY brother has an 800XE with 1000 disk drive. I have a *Speedy* device which runs under CP/M.

Can we share our software between the two machines with some device?

If not I may be inclined to buy another 800XE and also drive providing copies can be made from the disc. Please advise.

I shall also appreciate any information regarding a better combination to obtain the desired results. — **J.M. Ali, Ahmedli, Kuwait.**

■ No, you can't use the same

CBM 84 version for £14.99!

Unless good, reasonably priced software is available for this Christmas the impact of the Atari revival will be lost and a new dark age will descend upon us as we all struggle with our insatiable voracity! — **C.N.J. Sumner, Preston, Cumbria.**

■ Oh no — not the microdrive cartridge!

software on both machines. As we've indicated previously, only Atari software will run on Atari computers.

Your suggestion of getting an 80000/1000 seems the best alternative though you might consider the new 10000/1000 pack. You'll get twice the memory for very little extra cost.

You can copy any software which you've typed on your brother's machine, as has been given to you by other Atari owners, but you obviously won't be able to run commercial games.

Quite apart from the fact that it is illegal, they will probably be heavily copy protected.

## POKE list

I HAVE been an Atari computer owner for about a year now and I must say I am very happy with most of the things my 800XE does. The only downfall I can see is the so called Atari Reference Guide.

The thing I must want to know at the moment is a full list of the POKE statements and their functions.

Could you tell me of a book that contains these or will you be printing a listing in a future issue?

I found the *POKE* statements in the May edition very useful, but there must be a lot more. — **R. Thompson, Leeds.**

■ You should get a copy of the revised edition of 'Mapping the Atari' by Ian Chadwick and published by Computer Works.



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