In this delightful game you control BLOB, the Biologically-Operated Being, navigating him through 500 action-packed screens to rebuild the unstable planet's core.

Bubble Bus’ Starquake is one of the biggest-selling games for home micros, due to its incredibly-addictive gameplay and cleverly-animated graphics. It has received such accolades as Game of the Month in Computer and Video Games, and was awarded a Crash Smash.

- What reviewer Bob Chappell said about the Atari version:
  ‘Starquake is top-notch fare ... quality dripping from every byte’

<table>
<thead>
<tr>
<th>Suitable for</th>
<th>Product</th>
<th>Format</th>
<th>RRP</th>
<th>Special reader offer</th>
<th>YOU SAVE</th>
<th>Offer including subscription</th>
</tr>
</thead>
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<tr>
<td>Atari 8-bit (48k minimum)</td>
<td>Starquake</td>
<td>Tape</td>
<td>£8.95</td>
<td>£4.95</td>
<td>£4</td>
<td>FREE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disc</td>
<td>£12.95</td>
<td>£8.95</td>
<td>£6</td>
<td>FREE</td>
</tr>
</tbody>
</table>

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All the latest from the ever-changing world of the 8 bit Atari.

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View a program's token tables with our easy-to-use program.

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More information on Britain's online database for micros.

Biohymth
At a low ebb? Check your ups and downs with this super routine.

Jigsaw
Pick up the pieces with this colourful and entertaining routine.

Programmer's Challenge
We give you the program to solve the problem we set you.

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Having tape saving problems? Here's a utility to solve them.

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We look at Zybox, Thunderfox, Winter Olympiad... and more.

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Plan your route through the subterranean caverns of The Eidolon.

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Help for gamers continues with The Eidolon and Spy Hunter.

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Our resident adventurer has some hints for The Dungeon.

Birthday Bonanza
Atari XE Games system and £500 worth of software to be won.

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Your programming problems solved by our technical wizard.

Five Liners
Another set of prize-winning mini programs from our readers.

Easy Programming
We look further into simple animation techniques using Atari Basic.

Mailbag
Your chance to get your news, views, moans and name in print.

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We look at the company behind this super sports simulation.
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Cashing in on price rises

THE Atari 8 bit could be heading for a boom — courtesy of price increases which have hit the ST range.

While Atari has consistently cut production costs and pared its own margins, it has now announced that it can no longer absorb the financial difficulties caused by the world shortage of memory chips.

The shortage stems from Japanese restrictions on chip production — prompted by trade disputes with the States.

And particularly affected are dynamic random access memories (DRAMs) which are at the core of more powerful computers — and for users this translates as the higher the power, the higher the price.

In turn, this means that the 520 and 1040 STs have been hiked by a hefty £100 each. Trade sources are positive this will boost 8 bit sales.

“We expect the recent price increase on the ST to make the Atari games machines a more attractive proposition”, one leading dealer told Atari User.

“After all, you can now buy a complete Atari games system for little more than the amount of the price increase”.

Atari has been trying for some months to buy out a chip manufacturing company “so that we are not subject to the whims of third party suppliers” according to one company spokesman.

And should the venture prove successful, prices could again fall.

But in the interim, the 8 bit market seems set for a resurgence.

Silica backing for 8 bit Ataris

A MASSIVE commitment to the 8 bit games market has been made by Silica Shop with the purchase of 50,000 roms.

“Our reputation was built on the Atari 8 bit and we have no plans of dropping it in favour of the ST”, said John Hambly, Silica’s buying controller.

“We have a warehouse full of software for the machine with a tremendous selection of both old and new titles”, he said.

The announcement from Silica comes as Atari is trying to set up a dealer network of 20 shops to promote greater support for the 8 bit market.

Plans to introduce new software display shelving in selected dealers stores are at an early stage, but some retailers are treating the new initiative with a little scepticism.

Harry Nadler of Red Rat Software said: “It is a great idea if it works. Had this happened about two years ago then the Atari 8 bit computer may have had a higher profile in the market place than it has today”.

Conversion

AFTER a successful debut on the Commodore 64 and Spectrum, Nebulus — from Hewson (025 832393) — is being converted for the Atari 8 bit.

“Originality pays handsome dividends”, said managing director Andrew Hewson. “We’ve had a number of approaches for the various conversion rights”.

May 1988 Atari User
**X marks comms blackspot**

COMMUNICATIONS problems caused by British Telecom's new System X appear to be on the increase.

Difficulties arise when the new digital system is connected to the older analogue exchanges. To make the two compatible BT has had to attenuate the line once logged on.

One outcome of the drop in level is that modern phones are difficult in maintaining the line once logged on.

Rob Flemming of Pace Micro Technology said: "We have had a number of complaints from Atari users who are using our Nightingale modems. After a couple of trials, as well as a number of expensive mobile phone calls, BT admitted to the 'fault'."

According to Flemming, communication difficulties appear to get worse when dialling from one System X exchange to another. "Not only are outgoing lines attenuated, but incoming lines as well. Between two new exchanges the loss in signal level is dramatic," he said.

A spokesman for British Telecom told *Atari User*: "We are aware of the difficulties being caused by our modernisation program. Once System X is in use nationwide it will actually improve data transmission." The immediate problems, Atari users in a System X exchange can request British Telecom to unattenuate the line.

---

### Loading chart leader

THE latest budget title from Atlantis - League Challenge - roared straight to the top of the Gallup Chart. However, as several readers have pointed out, the loading instructions on the inlay card are incorrect - instead of holding down the Start and Option keys, it's only necessary to hold down the Start key.

---

### Drive delay rapped

**Atari UK** is letting the side down, according to Karen Sutherland, manageress of computer dealer Atari World in Manchester.

The attack comes after repeated enquiries to Atari about the availability of disc drives for its 8-bit games machines.

For despite Atari's announcement of its XF51 drive last summer, supplies still haven't reached the shops.

"I am furious about the situation," said Karen. "If a disc drive was readily available I could sell at least 30 to 40 a week. Every time I contact the people at Atari to find out when supplies will be available they just say they are waiting for a boatload to arrive from Singapore. It must be a very slow boat!"

One outcome of the shortage is that the older 1050 drive is maintaining a high second-hand value with prices in the region of £95.

An Atari spokesman said: "We are still waiting for the disc operating system to be finished, which it should be in the next couple of weeks.

---

There are nine new entries this month, including a few old games making their appearance in the chart. The first game from Zeppelin goes to number one, followed by the entry of two old favourites in second and third positions.
NEW LOW PRICE ST!

ST PRICE INCREASE
Due to the worldwide shortage of memory chips, prices of many computers have gone up. From April 1988, the Atari 520ST range is also likely to be affected. For details of any price increases, please return the coupon below for our latest literature.

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FREE STARTER KIT - Only From Silica

When you purchase any Atari ST keyboard, you will not only receive the best value for money computer, but you will also receive a FREE STARTER KIT which includes all the necessary items to get your computer up and running. This includes a complete set of instructions, software, and a keyboard. We also offer a FREE STARTER KIT with every purchase of $100 or more, including all peripherals and accessories. This is a limited offer, so don't miss out.

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Postcode: ___________

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Signed

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Address

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I START this month’s final look into the inner workings of Atari Basic with a small apology. If you read my Checksum Buster article in the April issue, as a good many of you did judging by the mail we have received, you might have been a little upset to find the message APRIL FOOL splashed all over your screen.

Sadly, re-assembling a line of text from a three digit checksum is impossible – there are many different permutations which can generate the same value. Apart from being a lesson in never trusting anyone – not even me – it does teach us quite a few useful things about how Basic works.

When you used the program, typing LIST just caused a page of jovial text with no line numbers or command words to be output. So, how can a program exist in a tokenised – or SAVE format – file if it contains nothing that could have been correctly tokenised in the first place?

The answer is that Basic only checks for the validity of a program line when you type it in or use ENTER. It therefore assumes that any tokenised file must have been error checked at the original time of entry and is now syntactically correct.

What Checksum Buster does is create a file which is correct in terms of the Individual tokens and pointers, but makes no sense as a logical program.

To understand it further, let’s take a look at the file format used by Basic when you type SAVE or CSAVE.

The bulk of it consists of the tokenised program lines themselves in the format that we have been looking at so far. The variable name table must also be saved because the tokenised version of a program holds only the variable reference numbers and is meaningless without the corresponding names.

For some reason a SAVEd file also contains the complete variable value table. I really don’t see why it couldn’t have been re-generated at LOAD time, saving a couple of hundred bytes on even the shortest of files. But if you know why drop us a line?

The only other information required by Basic is the contents of the zero page ram pointer table which is saved at the start of the file – see Figure 1.

One problem with saving this address pointer table is that it is only applicable to the current system set-up. If, for example, you decide to move from a cassette system to a disc one, the value of LOMEM will be much higher due to the presence of Dos.

Since the first entry in the zero page table is LOMEM itself the first two

bytes in a SAVE format file will always be zero – calculated from LOMEM minus LOMEM. Similarly, the second two bytes – which represent the address of the variable name table – will always be 256 because this table is 256 bytes from LOMEM.

These seven offset values take up the first 14 bytes of the file, and are followed by the variable name, value and statement tables containing all the actual program lines.

The first element of the file is the current statement line – numbered 32768 – which contains whatever command Basic was currently processing.

Normally the last thing being worked on before a file is written is the SAVE command itself, and this is what you would usually expect to be found here.

This file format is shown in Figure II, but you might like to see it in action for yourself by typing in the listing. As written it will only work on disc files because there is no facility for random access within a tape file. However, cassette users might like to try modifying it to read a complete file into memory and examine it from there.

Type it in and check it with GET IT RIGHT! before running it. Be especially careful with lines 6400 to 6520 which contain a machine code routine.

After you type RUN, the program will check which version of Basic you are using and read the various rom-based text tables into the pseudo string arrays CMDS and OOPS. These will later be used to display the correct text for each available token.

Once this is complete you will be asked to enter a filename. Use the full name – such as D2:FILE.BAS – of the Basic SAVEd file you want to view. The first 14 bytes will then be read in and the rest of the file scanned to obtain the correct NOTE and POINT

---

**Figure 1:** Basic's zero page pointer table

<table>
<thead>
<tr>
<th>Address</th>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>128/129</td>
<td>LOMEM</td>
<td>Lowest memory address accessible after Dos.</td>
</tr>
<tr>
<td>130/131</td>
<td>VNTP</td>
<td>Variable name table pointer (start address of VNT)</td>
</tr>
<tr>
<td>132/133</td>
<td>VNTD</td>
<td>Variable name table dummy (end address of VNT)</td>
</tr>
<tr>
<td>134/135</td>
<td>VVTP</td>
<td>Variable value table pointer (contents of variables)</td>
</tr>
<tr>
<td>136/137</td>
<td>STMTAB</td>
<td>Statement table (start address of tokenised program)</td>
</tr>
<tr>
<td>138/139</td>
<td>STMCUR</td>
<td>Current statement (address of final tokenised command line)</td>
</tr>
<tr>
<td>140/141</td>
<td>STARP</td>
<td>String/array pointer (address of string/array contents)</td>
</tr>
<tr>
<td>142/143</td>
<td>RUNSTK</td>
<td>Runtime stack (internal GOSUB/ FOR...NEXT addresses)</td>
</tr>
<tr>
<td>144/145</td>
<td>MEMTOP</td>
<td>End of current Basic program space</td>
</tr>
</tbody>
</table>

(All addresses stored as two bytes, in standard 6502 low-high format)
values for each of the file segments we are interested in – the variable name, value and statement tables.

You will then be shown the information obtained from the first 14 bytes and be asked if you wish to view the variable name table or a program line. At this point you may also toggle between printer output and screen display by pressing the spacebar, or press the Escape key to select a new filename.

The variable listing will show the full name and reference number for each variable in the table, including those which may no longer be in use in the main body of the program. You will also see what type it is and the data stored in the variable value table.

Numbers are shown in an expanded BCD layout, although you could change lines 1190 to 1270 to print them in normal numeric form if you wish.

The program listing will look very different to the form you are used to seeing from the LIST command. Individual statements on a single program line are shown separately, with an overall header for each and with each statement being numbered.

I’ve also omitted much of the normal expansion of string and numeric constants – so all numbers will be shown as nn and all strings will be shown as $SS$.

Equally, lines containing standard ASCII text – such as REM and DATA – will be shown as $SS$ + EOL in place of the text itself. Variables will be displayed at Var0, Var1, Var2 and so on.

Implied commands will be shown inside square brackets – such as the implied LET on a line like:

```
100 NUMBER = 100
```

which would be shown as:

```
[LET] Var0 = 100
```

These changes have been made to help you see the structure of the program without being distracted by the finer details. After all, if you’d wanted to see a normal listing, all you needed to do was type LIST.

If you try out this program on the Basic file created by last month’s Checksum Buster you’ll start to see how the seemingly impossible was created. All the lines of text were stored in the variable name table, with the final character of each in reverse video to fool Basic into thinking they are just long variable names.

So you’ve discovered that a complete program can’t be made from its checksums, but you might have learnt more about the way that Basic functions and also that the tokenising system is not quite as rigid as it first looked.

There is a well known saying which applies very well to computers, and especially to Basic: it is impossible to make anything completely foolproof because fools are so ingenious.

### PROGRAM BREAKDOWN

<table>
<thead>
<tr>
<th>Bytes</th>
<th>Contents</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/1</td>
<td>0</td>
<td>File format flag (zero)</td>
</tr>
<tr>
<td>2/3</td>
<td>256</td>
<td>Displacement of the variable name table from the beginning of part two, plus 256</td>
</tr>
<tr>
<td>4/5</td>
<td>DVNTE</td>
<td>Displacement to the end of the variable name table from the beginning of part two, plus 256</td>
</tr>
<tr>
<td>6/7</td>
<td>DVVT</td>
<td>Displacement of the variable value table from the beginning of part two, plus 256</td>
</tr>
<tr>
<td>8/9</td>
<td>DST</td>
<td>Displacement of the statement table from the beginning of part two, plus 256</td>
</tr>
<tr>
<td>10/11</td>
<td>DSTC</td>
<td>Displacement of the current statement line from the beginning of part two, plus 256</td>
</tr>
<tr>
<td>12/13</td>
<td>DEND</td>
<td>Displacement to the end of the file from the beginning of part two, plus 256</td>
</tr>
</tbody>
</table>

### Part I: These values will be added to LOMEM to form the zero page ram table.

### Part II: Starts at byte 14 of the file
10 REM TOKENISED BASIC PROGRAM VIEWER
20 REM BY ANDRE WILLEY
50 REM (C) ATARI USER
40 REM
50 REM SYS(38),NL$(38),BUFF$(256),
50 spaces(256),m$$(300),G$$(1000),GET$(46)
60BUFF$(1)="BUFF$(256)=B thoroughly"
70BUFF$(2)=BUFF$(256)
80 GET$(46)="GET$(46)
90 GRAPHICS 0: POKE 82,0: POKE 752,1:1
100 ? "PLEASE WAIT 20 SECS -- CREATING TA
110 BLES: G$$(600)=G$$(100)
120 POKE 82,0: GRAPHICS 0: SETCOLOR 4,9,4
130."" TOKENISED BASIC PROGRAM VIEWER"
140 1:1 Copyright (C) Atari User, May 1988: RETURN
150 REM == INPUT NEW FILE **
160 REM == GET SUB FILE **
170 REM == READ FILE **
180 REM == CLOSE FILE **
190 REM == OPEN FILE **
200 REM == PRINT FILE **
210 REM == SHOW VARIABLE DETAILS **
220 REM == PRINT FILE **
230 REM == END OF VARIABLE TABLE**
240 REM == END OF FILE**
250 REM == END OF FILE**
260 REM == PRINT IN FILE**
270 REM == END OF FILE**
280 REM == END OF FILE**
290 REM == END OF FILE**
300 REM == END OF FILE**
310 REM == END OF FILE**
320 REM == END OF FILE**
330 REM == END OF FILE**
340 REM == END OF FILE**
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980 REM == END OF FILE**
990 REM == END OF FILE**

Bulletin Board update

The MicroLink Bulletin Board has just had a spring clean, and a backlog of 9,000 old messages removed. But at the rate at which it’s being used, it won’t take more than a couple of months to replace them.

The Bulletin Board is an area where anyone can leave a public message, start or join in a discussion on any topic or just ask for help.

The range of subjects covered is huge and always changing; cars are bought and sold, philosophy, pop music and poaching argued about and the reasons why somebody’s software doesn’t seem to work are revealed.

There are even the occasional trivia quizzes (well, do YOU know how many electric trams are still running in the UK?).

There’s nothing quite like it outside the world of computers, but be warned. It can be very addictive.

Preparing for Prime time

EVERYONE upgrades their hardware occasionally, and MicroLink is no exception. But it’s not an Amstrad PC1640 they’re getting.

For some time now, the rate at which people are joining has put a bit of a strain on the old Prime 850 computer, and many users would agree that sluggish is perhaps a mild way to describe MicroLink at peak times.

Now work is underway to install a Prime 9955— not only has it got a longer name but it’s faster and better able to cope with the increased demand.

There’s a lot of things to be done before the switchover can happen, software has to be changed and the digital detritus collected on the old computer in its years of dealing with us humans has to be cleared up.

Exactly how much better the new service will be isn’t clear, although technical people tend to use words like “massively” and get quite excited.

“We’re all eager to find out…”

The MicroLink User’s Manual

ONE of the projects that MUG is coordinating is the production of the MicroLink User’s Manual. Designed to complement the information given to every MicroLink subscriber on old fashioned paper, the manual sets out to be an online way of describing the many facilities available on MicroLink from the point of view of the people who use them.

At first, MicroLink can appear to offer a bewildering selection of things to try, and even for experienced users the different options can be confusing. And there’s always a way to do things faster, or at less cost.

Of course, the information to help people do this has always existed. But it’s been hard to find, and until now there hasn’t really been any way for users to share their discoveries in such a way that others will be able to make use of them. The MicroLink User’s Manual sets out to remedy this problem.

At the moment MUG is collating the information. Sometimes the amount of data collected by users can be staggering— one subscriber mailed in over 200k of hints and tips saved up over years. Of course, we’re just as happy to hear from anyone with one good idea.

All the data will be indexed and made available, the exact design is still being discussed, but like anything else MUG does, it will be free to use.

User groups are good news

THE MicroLink Users’ Group came about as a result of various subscribers asking whether there was any organisation run to help users.

User groups in any area are usually good news; they form a focus for ideas, opinion and self-help and give the users a collective voice.

The flexibility provided by MicroLink and Telecom Gold make MUG particularly useful. There are no printing costs for newsletters and there’s almost instant access to everyone in the group through the mail system.

MUGs been going for about a month now, and we’ve already formed a team of people who have volunteered to answer queries and help anyone with MicroLink-related problems.

It’s a small world…

…but full of Telecom Gold computers, it seems. The UK Telecom Gold system, of which MicroLink is the most active part, is just one sector of a global network called Dialcom.

While MicroLink is System 72, and other UK computers are in the range 70 to 90, there are Dialcom computers almost everywhere. And like international telephone exchanges, they’ve all got their own numbers.

MUGger Adrian Mars is trying to find out just which computers are where. This might seem an eccentric, if harmless, hobby, but such information as is available on MicroLink is difficult to find and (apparently) out of date.

And it could be the first step to organising an international group of Dialcom users, which really would be a first and another step towards the electronic community of tomorrow.

If you know anything about the Dialcom network numbering scheme, then Adrian (MARS.ADRIAN on the mail system) and MUG would be glad to hear from you…
PAGE 6 has been supporting Atari computers for 5 years – coverage now includes both 8-bit and ST. Get the latest copy from your local newsagent or by subscribing.

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HAVE A
Nice DAY

GREGORY BENHAM
provides a routine
to plot the ups and
downs of your life

THIS easy-to-use program is based on
a simple theory put forward by
research scientists that the physical,
mental and emotional states of the
human body are constantly
undergoing three fluctuating cycles.

These are very similar to each other
but differ in their frequency. Physical,
emotional and mental states have 23,
28 and 33 day periods respectively, so
they are not usually in phase with each other.

They are said to be activated on the
day we are born and controlled by a

kind of built-in biological clock. The
listing here represents these changing
moods by sketching standard
sinusoidal waves in graphical form
for any month since a person's birth date.

The critical periods for us are at the
highest and lowest peaks on the
curves, when our moods will be
responsive very strong and weak.
When all three peaks coincide we are therefore to be regarded as on the ball
and buzzing or, in the second case,
better off staying in bed all day.

Since these cycles apply to everyone it therefore means that the
three biocycles are running parallel,
but individually with those of
other people with the same constant phase
lag depending on the difference
between their birth dates.

Biorythm calculates this difference
for each of the three categories and
calculates the combined average to
give a figure as a percentage for how
any two people's overall mood status
compares, and hence determines their
compatibility.

The three main screen displays are
all different display lists stored in page
of memory enhanced by a customised
character set used throughout.
If you study lines 3000 to 3360 you will see
a number of techniques used to
make keyboard input easy yet idiot-proof.

When entering dates you must use the
format DD/MM/YYYY: For example, 01/05/1988 or 1/5/1988 – the
slash sign must separate the numbers.
If you make a mistake the computer
will either prompt you to re-enter the
date or refuse to accept the input.
You can erase any entry using the Delete
key.

The program contains many useful
routines which add to the overall
presentation: A flashing cursor, a totally
re-defined character set and display
lists have been used wherever possible
to enhance the graphic screens.

N.B. I cannot be held responsible if
you run the program and find out that
you are not compatible with your wife.

```
10 REM **************
20 REM * Biorythms *
30 REM * By Greg Benham *
40 REM * (C) Atari User *
50 REM *****************
100 REM DISC1984:DISC1985
110 DIM SIM(28), SIM(29), SIM(27), SIM(27)
120 SIM(27), SIM(28), SIM(29), SIM(29)
130 SIM(28), SIM(27), SIM(29), SIM(28)
140 SIM(29), SIM(28), SIM(27), SIM(28)
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500 SIM(26), SIM(26), SIM(26), SIM(26)
```

May 1988 Atari User 15
OVER the years many programs have been written that load 62 sector uncompressed picture files and then allow you to alter them. However, none of them has ever let you to simulate a jigsaw puzzle.

Jigsaw is a program which does just that. When it is first run you are presented with the title page—shown in Figure I—that tells you how to alter the colours of the picture once it has been loaded.

Next you are prompted to place a disc containing Atari Artist picture files into a drive. Press any key will give you a directory of the disc—only files with the extension .JIG will be displayed.

You are prompted for the number of pieces—8, 32 or 128—you want the jigsaw to consist of and once the picture is loaded you press Return for the computer to juggle the pieces.

A square cursor appears on the screen above the top left-hand piece and it can be moved using a joystick plugged into port one.

Place the cursor over the initial piece to swap and press fire. Now move it to the piece you wish to swap and press fire again. If you have moved to the correct place within the jigsaw you'll hear a beep.

When the whole puzzle has been completed correctly the computer displays a short message and returns you to the disc directory section of the program.

That's all there is to it—so have fun making jigsaws with your favourite pictures.

### ALAN BATES presents a highly entertaining routine for jigsaw fans

#### Keys

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>Select colour</td>
</tr>
<tr>
<td>C</td>
<td>Changes the selected colour</td>
</tr>
<tr>
<td>- ,</td>
<td>Change a colour's luminance</td>
</tr>
</tbody>
</table>

**Figure I: Colour selection options**

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May 1988 Atari User 19
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(or a Spectrum or a Commodore or an Amstrad or an IBM...or ANY other computer).

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MicroLink electronic mail and much, much more!
I HAVE kept the program to solve the gambling problem simple. When run, an evening at the roulette table just flies by. Line 100 defines how much money you have in your pot, with line 110 setting the size of the initial bet. If you like, you can put input statements in both those lines to vary the amounts when run. We can keep track of the largest bet we have placed with the variable Lbet.

Next we read in all the red numbers from the DATA statements into the array REDI). The casino might close before we are through so the total number of spins of the wheel possible is tracked in the variable TSP. Similarly the number of spins actually used is recorded in SPIN. A logic variable BUST indicates if we have enough money to cover our bet and line 210 sets up the victory pot—the amount we have when we decide to give up for the night.

So now we enter the casino and start our first cycle of bets. Line 330 generates the random number as a result of spinning the roulette wheel. Lines 340 to 370 see if we have won and then we must take the appropriate action if we have won or lost. If we have won we add our winnings to our pot and end the current cycle of bets on doubling. If we have lost we need to double our bet if we have enough money—if not we are bust.

Then if the casino is still open we can place our bet again. After a winning cycle of bets we decide whether to call it a night or carry on.

So there you have it. You can see whether you will win. I made an adjustment to the program to run it continuously—keeping a count of how many nights I won and lost. I kept a record of 1,000 spins of the wheel and won 531 times.

However, before you rush off to win a fortune consider a few more points. First of all most casinos have house rules which limit the maximum and minimum bets and some tables limit the number of times you can double your bet. In addition you will have to subtract your entrance fee and any drinks you buy from your winnings. Some casinos might not get through as many as 200 spins a night, so you will have to change that.

Finally, it is rather a slow and boring way to make money. It's much better to hone your programming skill and make that pay.

So are you ready for next month’s Programmers’ Challenge?
Missing in Oxide

Load and save errors?
LEN GOLDING gives answers to prayers with a verify utility

The Atari cassette system is beautifully designed and always works perfectly every time. And if you believe that you'll believe anything.

How often have you typed in a long program and CSAVEd it, only to find later that there's a fault on the tape? A cassette file can be tested in only one way — by trying to load it. But this destroys the original program in memory, so if the file happens to be faulty you've lost all your hard work.

All kinds of things can go wrong.

The connecting plug may have worked loose, especially since terminals are fitted to only five of the 13 pins. There may be dead spots on the tape — perhaps from too much re-recording — and some tapes designed to record music are inherently unreliable when used for computer data.

The cassette unit itself can develop hardware faults — keys get stuck, heads get dirty or drift out of alignment and drive caps tend to develop flat spots — especially if you leave the recorder for long periods with Play locked down.

On some older computers there's a bug in the operating system which interferes with the cassette handler routine — the usual fix for this is to do an LPRINT before saving anything to cassette, and ignore the ERROR 138.

There's even the possibility of pilot error — you might have forgotten to plug the recorder in or, on 410 models, left the power supply disconnected, or neglected to press both Play and Record.

The cassette handler has no way of knowing what, if anything, is plugged into the serial port — you could attach an electric toothbrush, for all it cares.

Whatever the cause, the result is likely to be ERROR 143, described in the manuals as a Dataerror checksum error and in more colourful language by users who have to endure it.

This little autobook program provides an answer. It simulates the CLOAD or LOAD "C:" or ENTER "C:" commands, without disturbing the contents of memory. You will hear the beeps and whistles from the TV speaker, just as though the file was loading as usual, and any problems are therefore easy to detect.

But if a fault occurs your original Basic program will still be there in memory, so you can keep on trying until you produce a perfect copy.

Making the autobook cassette file is very easy — Program 1 does it all for you. Lines 20 to 140 are identical to

Listing 1: Autobook creator

10 REM Program 1: Creates an Autobook cassette file containing the Verify routine.
20 BFR=PEEK(106)+24*256:REM reserve a safe area at the top of RAM as a temporary buffer.
30 FOR I=0 TO 46:READ D$:POKE 1536+I,D$:NEXT I:REM Load the new SAVE routine into page 6.
50 DATA 50,205,157,68,5,165,204,157,6
60 DATA 50,205,157,68,5,165,204,157,6
70 REM Load the program temporarily in the reserved buffer space
80 X=0:RESTORE 150
90 READ D$:IF D$=1 THEN 120
100 POKE BFR,X,156:GOSUB 1:GOTO 90
110 REM Now read the data from the temporary buffer into an Autobook cassette file
120 OPEN 1,A,128,1:
130 X=USR(1536,BFR,PEEK(BFR+1)*128)
those used in several previous cassette autoboost routines we explained in our articles in Atari User, so you may already have a file with them on. The DATA at lines 40 to 60 holds the autoboost creator code and lines 150 onwards contain the Verify routine itself.

Type in Program I and — with fingers crossed — CSAVE a copy. Insert a blank, fully rewound cassette and run the program. After a few seconds you will hear the familiar double beep. Now follow the usual CSAVE procedure and the machine code routine will be written to cassette in autoboot format. From now on you'll use this new tape, so Program I shouldn't be needed any more. But keep it in case you've made any typing errors and need to change it later.

Before you can use the Verify routine however, it has to be loaded into memory. Re-wind the tape with the autoboot program on it, switch power then switch on again while holding down the Start key. When the single beep sounds, proceed as for CLOAD and the autoboot program will install itself before Basic takes control, changing the screen border colour to prove it.

Incidentally, if you don't like the border colours, replace the 148 at line 160 with 0 and make a new autoboot tape. You can always double-check that the routine is installed, by typing PRINT PEeki(1821) — the result should be 104.

You can now carry on programming just as though the new routine wasn't there. When you've finished use the usual CSFAIL SAVE "C:1" or LIST "C:1" commands, and your program will be saved to tape.

Now's the time to check that it's a good copy. If the file was made using CSAVE, then type X=USR(1821). This simulates CLOAD, with its short inter-record gaps. If you used SAVE "C:1" or LIST "C:1", then type X=USR(1821,1). This simulates the routine with long inter-record gaps, to simulate LOAD "C:1" or ENTER "C:1".

In all cases the file is loaded 128 bytes at a time into the cassette buffer. A top-notch Verify routine would check each byte against the Basic program in memory. However, this would make the code much more complex, and greatly increase the autoboot loading time. Apart from which, it's extremely rare for just one or two bytes to be corrupted — if the file will load at all, it's almost certain to be a good copy.

To keep things simple and minimise typing, we've taken the soft option — our routine simply reads the file and does nothing with it. During the reading process you will hear the usual sounds from your TV speaker, so any problems are easy to detect and any fault will produce an extra loud beep. When the test is either successfully completed or aborted the cassette motor is switched off and control passes straight back to Basic, which prints the usual READY message.

If you're desperate to discover what type of error occurred, you can find out by typing PEEK (1922). An error-free file will leave 136 here, but any fault will insert its own identity number — usually 143.

Once you have a cassette copy which tests out successfully, you should be safe to try loading it back into your micro's memory using CLOAD, LOAD "C:1" or ENTER "C:1" as appropriate. The Verify routine does not need to be in memory for this operation, though it can be if you wish. And that's all there is to checking that you've made a good copy of your program on your tape.

If you're into machine code you might like to take a look at the source listing. If nothing else, it will remind you what a cassette autoboot file looks like. The header starts with 0, then contains the file length in 128-byte sectors, followed by the load address and initialisation address.

On power-up, and before Basic takes control, the operating system does a JSR to the sixth byte after LOADADR. This puts it at COLeUT where the cassette motor is turned off and the Carry flag cleared to indicate a successful boot.

The RTS at line 300 returns control to the operating system, which then does a JSR to the initialisation address. This resets MEMLO and changes the screen border colour to let you know that the routine is installed. Pressing Reset repeats the JSR to INIT, re-instating the new MEMLO and border colour values.

The RTS at line 380 hands control to Basic, leaving the rest of the machine code routine safely tucked away and ready for your USR command.

The USR routine itself starts at line 410 with a PLA to check whether or not a parameter was inserted. If not, it assumes that the file to be checked uses short IRGs. If any parameter was passed then long IRGs are selected. The specified mode is programmed by storing either $80 or $90 into the second auxiliary byte of IOCB #7.

We chose this IOCB since it's the one used by the operating system for most external I/O transactions. Lines 630 to 750 load the file, 128 bytes at a time, into the area reserved for cassette IO — CASBUFF. So long as no error occurs, the 6502 processor's Sign flag remains at zero until the end-of-file. Consequently line 750 will loop back for another chunk of data. When the reading process stops for any reason the Sign flag is set, so the routine drops through to ENDST with the error number automatically stored in the 6502's Y register.

If it's error $98 - end of file — everything is alright, so we exit via CLOSE without beeping the speaker. If the error number is anything other than $88, lines 810 and 820 simulate the pressing of Control+$2 on the keyboard, and this produces a beep. The error number is copied into EARRHOLD at address $782 — decimal 1922 — in case you need to inspect it when Basic gets control again.

The last few instructions from 840 to 890 close the IOCB and ensure that there will be no continued whistling from the speaker when cassette IO is finished. Control is then handed back to Basic by the final RTS.

18 CASBUFF=$37D 29 OPEN=5EC
50 CLOSE=556 50 CLOSE=580
59 COLOR=828 68 EOL=54B
78 GETHCH=507 88 ICAK=534A
99 ICAK=534B 99 ICAK=594
100 ICAK=534 100 ICAK=534
128 TIFFN=542 130 IODE=570
140 LOADADR=570 150 REMLO=52E7
160 OPEN=5D5 170 PACTL=53B2
180 SKCTL=520F 190 **LOADAD
200 ;
210 THEN 00
220 .BYTE 0
230 .BYTE FINISH=LOADADR+127/128
240 .WORD LOADADR

Turn to Page 24 ▶
Utility

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A HEAVILY armed enemy transporter ship is carrying Disilicate energy crystals for the approaching Phalon mothership.

Once these have been installed in the deadly Phalon war machine they will turn it into the most powerful destructive force in the Universe. Capable of destroying entire solar systems in minutes, it must be stopped.

You have been chosen to represent the Federation forces. The new Thunderfox - an ultra-sleek and incredibly manoeuvrable space fighter - has been given to you in a last ditch attempt to destroy this evil threat to mankind.

All you have to do is locate the crystals and destroy them to stop the war machine from being finished. They are situated inside the transporter and are guarded by the crystal guardian: obvious if you think about it.

Your way into the transporter is restricted by two anti-gravity stabilisers located at the far right of the ship. You must bomb each five times before it is destroyed - not an easy task even for an avid games player.

It is very easy to run out of bombs while you’re trying to knock out the stabilisers so an option to reload is built into the game.

When you have used all your bombs, fly to the far left hand of the transporter and land on your mothership where your supply will be refurbished.

When you have destroyed both stabilisers, fly to the left of the transporter and land on the pad. You will then be transported to the bowels of the ship and enter the thermonuclear laser room.

If you come into contact with any of the lasers or the walls you will be instantly disintegrated.

Remember to watch the level indicator at the top of the screen. The intense radiation generated by the lasers will destroy your Thunderfox if you take too long getting through.

Once you manage to get past the lasers you enter the energy crystal room where the guardian is waiting for you.

The Disilicate crystal is located in its head and you must shoot it 10 times to blow it up. This is hindered by the mobile wall that moves up and down in front.

The playfield uses a split screen and in the bottom quarter is the long range scanner - which indicates how close the Phalon war machine is to the transporter.

This distance is constantly closing, so time is of the essence - don’t mess around shooting enemy vessels that you can just ignore. Also at the bottom of the screen is a status line showing your score, lives remaining, weapon in use and the current level.

The main action takes place at the top of the screen.

An extra ship is awarded for every 5,000 points scored, and your total score is calculated depending on a number of factors, such as destroying the guardian head and blowing up ground installations.

The game is joystick controlled, allowing you four directions of movement - up, down, left and right. If you are travelling flat out when you push forward or backwards you will accelerate or decelerate relative to the movement.

However, when your craft is moving at its slowest speed, when you pull in the opposite direction it will flip over and reverse its travel. The fire button is used to activate the on-board lasers but it also switches from lasers and bombs when you hold it down and move in the opposite direction.

The graphics are nice with lovely scrolling. The sound effects are well implemented and there is a catchy main tune.

When your fighter launches from its hangar you get a superb side on view of it - an original feature. Also, when your craft is hit by enemy fire it doesn’t explode straight away. It plummets to the surface of the transporter - another nice idea.

The game is quite difficult to get to grips with, but after the initial hiccups it got me hooked. I would recommend Thunderfox to lovers of shoot-'em-ups.

Neil Fawcett

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

Program: Winter Olympiad
Price: £8.95 (cassette), £14.95 (disc)
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Tel: 091-414 4611

COMING hot on the heels of the recent Winter Olympics this is a new sports simulation from Tynesoft.

Although this style of game is now a little old hat, and similar ones were on the go at least 12 months ago - notably Winter Games by Expy - this fresh product from Tynesoft has a lot going for it.

It kicks off with a lively rendition of the signature tune from the BBC Ski Sunday program, then offers up to six players the chance to participate in any or all of five different events - the downhill race, ski jump, biathlon, slalom and bobsled.

Each player can represent any country from 12 given, although this has little bearing on the game. The selection process is followed by a picture of the Olympic flame in full blaze and then it's on to the simulation itself.

sundry obstacles and deposit him safely across the finish line.

It's not easy and, since you only get one attempt, mistakes such as creaming yourself on a silken spruce are costly - not to mention probably fatal.

Next comes the ski jump. If you ever thought you could do better than Eddie the Eagle, now's your chance.

Your man shuffles out from a hut and positions himself at the top of the long and menacing ramp: Your view is from behind him. Then it's all systems go as he launches himself down the jump.

When he reaches take-off point the picture changes to give a side-on view of the.

The Biathlon

with motorboat - a short uphill climb, followed by a pretty bridge and then a short downhill run.

The view during this is from the side. However, during each lap you have two opportunities to draw a bead with your rifle and hit five static targets - 20 targets and 20 bullets in all. Here the view is from behind the competitor.

The slalom is particularly difficult. Your view is from the side but moving downhill from right to left. You are supposed to weave past the appropriate poles but I found it only too simple to crash into the side barriers.

Finally comes the two man bobsled event. The sled is first pushed from left to right to the top of the run when the picture changes to give you a view looking down the run.

This is rather like Pole Position on ice with the run scrolling towards you and the backdrop scenery whistling across from side to side as you go round bends.

A small display to the left of the main scene shows an overhead view of the course.

The sled has a natural tendency to swerve up the banks as it hurtles round bends and it's your job to see that it doesn't overturn. The ride seemed to go on forever but this event turned out to be the easiest in my experience.

The game's main strength lies in the very picturesque graphics - lots of lovely Alpine scenery here for you to enjoy, and some good animation, too. Sound effects and music are also used to the benefit of the game's atmosphere.

While the gameplay may not boast of anything new or novel, and perhaps lacks lasting interest, there's no doubt that Tynesoft has done a good job on this one and you certainly get your money's worth of thrills and spills.

Bob Chappell
Two player destruction

Product: Zybex
Price: £2.99
Supplier: Zeppelin Games, 26 Osborne Road, Newcastle upon Tyne NE2 2AJ.
Tel: 091-281 4401

AFTER taking a look at the pre-release version of Zybex in the March 1988 issue of Atari User I was delighted when the finished version arrived. Believe me, it was well worth the wait.

The game revolves around the fate of two rebels, Rinser and Cassalana. You control them in their bid to escape death row and execution - and before you think or say anything, not the one in Alcatraz.

To do this you have to undertake an almost suicidal mission to the Croken System.

Once there you have to visit 16 strange worlds and do battle with wave after wave of alien hordes.

If you survive you will be awarded a teleport crystal which allows you access to other planets in the system.

Eventually you will reach the restricted levels and the ultimate challenge - the Zybex itself.

As well as needing the crystals for access to the other planets you are also governed by how many tokens you have collected.

After completing the initial level it is possible to advance up to level 12 in any order you want without a token, but after that you will need three tokens to get to the restricted areas. These are awarded after the completion of a level.

If you survive and retrieve the Zybex, the death rings - placed around your necks by your captors - will be removed.

To help you on the mission you have been given the Orbit weapon with its lowest power level.

As the mission progresses you can increase the destructive force of the Orbit by picking up debris of the same shape that appears on screen after you have blasted an alien wave.

Many different instruments of destruction can be collected including the Rail Gun, the 8-Way, the Wall and the Pulse.

Extra lives are awarded in the same way - simply fly over the spare man when he appears.

The game has an original shooting system. You have built-in auto-fire which allows you to select any of the weapons you have collected by pressing fire to step through them.

In later stages you can have them all going at once - it was a real pleasure watching aliens explode all over the screen under a hail of laser fire.

Your weapons are displayed in two status screens that sandwich the main playfield - one for each player.

Another status line near the bottom of the screen shows lives remaining, score and which weapon you are using.

You can have both players on screen at the same time, and luckily you can't shoot each other.

The play area uses a number of graphics modes with a carefully thought out use of colour and superb scrolling. The alien landscapes for the different planets have been beautifully designed.

Similar games are often criticised about the design and animation of the hero and aliens, but Zybex doesn't suffer from any of these faults.

The animation and design of your player is excellent.

His arm jerks back as he fires his weapons and he swings and tucks his legs as he thrusts upwards or accelerates.

Every alien wave that attacks you is animated in its own way: Some rotate and others pulse as they zoom across the screen.

The game caters for everything you would ever want. The high score tables have a dual entry mode - two players with two joysticks can enter their names at the same time.

All game options are controlled using the joystick - all you need to do is simply highlight the icon you want on the main title screen and away you go.

One of my favourite features is the music. Several pieces are used throughout, but the main tune is so catchy I found myself whistling it all day.

A fine finishing touch to a wonderful shoot-'em-up.

Neil Fawcett
DOUBLE Pack I contains two games, Mad Jax and Planet Attack. In the first you control a car driving through horizontally scrolling scenery and your objective is to travel as far as possible.

Out to stop you are a number of unsociable road hogs, which can either be shot or avoided.

Various items along the roadway can be picked up by driving over them. These include fuel, weapons and a couple of objects which appeared to have no discernible effect on anything.

One of the weapons on offer is a rearward shooting cannon. Although I scored what appeared to be direct hits on vehicles behind me many times, not one of them blew up. Most upsetting.

There are two sections of road, desert and city. In the former there are the road hogs, while in the latter there are additional hazards in the form of moving road barriers.

To survive the city section you must have collected enough fuel during your drive through the desert.

I found the graphics all right but movement was perhaps a little on the slow side. The gameplay isn’t varied or interesting enough to hold the imagination for long.

The two sections — although getting progressively more difficult — are rather short and, as far as I could see, repeated ad infinitum.

Planet Attack is the better game of the two. Earth is under attack from Tritanian forces which have established a base on Mars and are being kept in our time zone by the installation of Time Scalers.

It’s your job to destroy these by attacking them from the ship Star Eagle, but you seem to have about as much chance of succeeding as Stockport County has winning the FA Cup.

Graphics are an improvement on Mad Jax. The background scrolls by on six different levels and gives a passable illusion of dimension in depth.

Forward progress of your ship is at a pre-set pace and movements available are up, down and sideways. Your relative position is indicated by your shadow on the ground.

Armaments available are forward shooting lasers to defend against attacking Tritanian Auto Droids, Space Cruisers and missiles.

The Star Eagle also has bombs which you can use to destroy ground installations, Tritanian settlements, radar sites and the all important Time Scalers.

Bombing a fuel dump increases your own fuel level, but if you do run out you can eject to safety. The game then continues as before, with you now controlling your ejector seat.

This amazing device also appears to be equipped with laser cannon and bombs and needs refuelling in the same way as your spaceship did.

After a short run — around 35 seconds — the landscape scrolls back to the launch pad and you must land your craft to gain bonus points. Re-launch for more of the same, but with additional hazards to contend with.

Double Pack II includes the games Space Wars and Dreadnought.

Space Wars really is looking a little long in the tooth. You control a spaceship at the bottom of the screen and have to fight off successive waves of aliens or meteors.

If you collide with one your shield loses effectiveness and the latter cannot be shot, but must be dodged.

This concept can still work if there is something in it to take it out of the ordinary and bring it alive. I didn’t think Space Wars made that jump. The graphics are at
best only average, response is a little sluggish and detection of a missile hit on the aliens seemed suspect at times.

The game's simplicity may appeal to younger children, perhaps just starting out on careers in universe-saving, but more experienced players will probably lose interest after a short while.

The other game Dreadnought is a sort of submarine, blasting enemy subs and negotiating traps and underwater hazards.

You can move deeper into the water or toward the surface. Hitting the sea bed, or indeed surface waves, costs you life.

Horizontal speed can be delicately controlled and I found that I was more successful when resisting the urge to bolt round at a rate of knots blasting everything.

A slower pace made for more controlled accuracy and more reaction time if the enemy ships suddenly turned in front of you as they had a habit of doing in the later stages.

Although not possessing the finesse, frenetic action or same quality graphics of Dropzone, Dreadnought is not a bad budget game in its own right.

Niels Reynolds

---

**Kicking into touch...**

*Program: Super Soccer*

*Price: £9.95 (cassette), £14.95 (disc)*

*Supplier: Tynesoft, Unit 3, Addison Industrial Estate, Blaydon, Tyne and Wear NE21 4TE.*

*Tel: 091-414 4911*

When all matches are off due to adverse weather conditions Subbuteo sets have long since been strung to all four corners of the loft, soccer fans might well be tempted to try a football game on their Atari.

Super Soccer gives you the opportunity to play a match against a team controlled by your computer or by another player.

Team colours can be cycled, although both teams end up looking much the same and even the goalkeepers wear the same colour as their team.

You can choose which country you want to represent, but this seems to have no bearing on the game and is not referenced elsewhere — for example, the scoreboard merely titles the sides as home and away.

Your view of the action is from the side with the pitch set against a backdrop of static spectators and ground-level advertisements.

The two teams — quite large figures — troop out, a whistle sounds and play begins. As players advance towards either goal — only a part of the pitch is visible at any time — the screen scrolls rather jerkily.

The player currently under control from each team is highlighted by a pair of brackets surrounding his head. Players and ball move slowly, particularly when two players are close to each other — essential when one player is trying to gain possession of the ball.

It is sometimes difficult to see who is who and quite what is going on.

The goalies can be controlled to a limited extent but only when the ball is nearby. At the press of the fire button, the appropriate one will immediately execute an unobtrusive dive.

The goalkeepers are likely to find themselves on the free transfer list before long — on several occasions they faced their goal when a goal kick was being taken.

I don't know if the invisible referee was off buying a packet of peanuts whenever it happened, but the teams have an unlawful habit of taking a goal kick when opponents are still in the goal area.

There is a good sport opening tune, but apart from that and the piercing whistle, sound effects are lacking.

The roar of the crowd is nothing more than a constant hiss which rises and falls in volume in relation to the action and the ball bounces unrealistically when it bounces.

No, much as I love football, I really couldn't take to this game. It plays a little too slowly for my liking and didn't generate enough feeling of a real match. If it's a football simulation you want — I use this word because a graphical representation is not the same — you would be better off getting Addictive Games' ancient Football Manager — it's still the best soccer simulation.

But if you actually want to see 22 men running around a pitch you might give this one a try.

Bob Chappell

---

| Pack I | Sound | 6 |
|        | Graphics | 7 |
|        | Playability | 7 |
|        | Value for money | 7 |
|        | Overall | 7 |
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|        | Graphics | 7 |
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|        | Value for money | 6 |
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ATARI USER
WE welcome letters from readers giving their help with games on the Atari that they would like to pass on to other readers. The address to write to is:

Hints and Tips
Atari User
Europa House
Adlington Park
Adlington
Macclesfield SK10 4NP

The Eidolon

This month's map on page 32 shows you the levels of Activision's entertaining game The Eidolon, so to complement it here are some useful tips:
• On the lower levels the jewel guardians are not very dangerous, but they can still drain your energy. So when you approach one, to wake it up, shoot your fireballs at it quickly while moving backwards.
• If you do manage to get lost, press P to pause the game and then refer to the map.
• Shooting a blue fireball at a creature will freeze it, but a green one will change it into something else. But beware, the monster it changes into may be more dangerous than the one you faced in the first place.
• When you're fighting something dangerous and your energy level gets too low don't be proud - just run away. Amass more energy by collecting fireballs and return for another go.
• When confronting a dragon, you can still collect the fireballs it spits at you by pressing the spacebar. Unusual hint: If you need both hands to hold your joystick, take your shoes and socks off, put the computer on the floor and use your left big toe to press the spacebar and your right one to press the P key.
• If you collect all the jewels in the first five levels you can bypass all the creatures in levels six and seven. That is if you don't get killed by a dragon, in which case you lose all the jewels.
• If you run out of time you will have to start again on level one. So if time is running out you have two options: Face any wall and shoot at it - the fireballs will rebound and kill you - or let a creature or dragon kill you.
• On level eight, collect as many jewels as you can to give you a high energy level. Avoid all the red fireballs - you can't shoot them, as the roof is too low.
• Finally, when you meet the dragon on level eight, don't panic. Next month we'll introduce you to the demonic and strange monsters that inhabit the underground caves and tell you in detail how to kill them. - Bryan Stevens, Andover, Hants.

Spy Hunter

When the spy car is first placed on the road from the weapons van it can travel on rough ground to the right of the screen - this normally causes your car to explode later in the game.
To do this you must go forward at the slowest speed and pull right as far as the car will go. The noise is pretty bad but it gets you out of some pretty tight spots on the expert level.
When the mad helicopter starts attacking the spy car, watch for the small square on the side of it to flash before you move away. Then, unless you hit a screen boundary, your car will not be destroyed.
When one of the enemy vehicles goes under the helicopter wait until the chopper tries to drop a bomb and fire at the car. Both of them will explode. - Andrew Patterson, Basingstoke, Hants.

Universal Hero

First of all you need to get the remote switch, which can be found in what looks like a car. Go to the force field where the floppy disc is and use the switch, then get the disc.
Next, get to the tap on the surface and go as far as possible to the right. You will see a white object sticking out of the cliff. Use the tap to stop the fountain. Now go all the way down the cliff and get the wire. Go to the dynamite, near the start and down to the right.
Get the plunger and go to the room with all the rods piled up. Use the plunger to clear the door.
Go through this door and use the plug and the floppy disc. When asked to identify yourself type SLARTIBARTFAST and the force door will now open. Go through it to the pineapple.
Get the oil and go to the fountain room. Two screens on from this you will find a red machine. Get the fuel and go to the spaceship, but make sure that you have the ID card.
Use the fuel and the ship will launch while you get ready for the next puzzle. - Gary Quigley, Finglas, Dublin.
WITH few new adventures being released for the 8 bit Atari just now, I suggest you rummage around in your sack and pull out a few of those golden oldies and revisit old acquaintances.

And what better way to start with them with an Infocom adventure then? There is so much in them that they always repay a return visit. The classic Zork trilogy should be high up on your list, as should Planetfall, Deadline and Wishbringer.

For cassette owners, I would recommend Level 9's Colossal Adventure for a replay. This is the best version of the famous Crowther and Woods original Colossal Cave adventure that I know, and still gives me a real kick every time I go back to it.

One new adventure for 48K Atari machines has come to my attention, but due to the fact that my disc drive has been showing signs of old age, I have been unable to give it the Rouloc razor-sane trouble treatment. The game is OCI - Operation Computer Industry - and is produced by a company called Tearsoft.

The plot concerns one Professor Decker who has kidnapped a bunch of programmers attending a software conference. His plan is to hold them hostage while you go off and recover a folder which will prove that the professor's son was killed in a fighter test crash in 1980.

To keep the authorities at bay and the town clear while you accomplish your task, the professor has built an atomic bomb and has other aggressive tricks up his sleeve - no half-measures for this guy!

OCI is a text only adventure using a simple vocabulary. It costs only £1.99 on cassette and £2.99 on disc, so you can’t really go wrong. Copies are available direct from Tearsoft at Seawinds, Croft Road, Lochcarron, Ross-Shire IV54 8YA.

Lots of help has been supplied by readers in response to Dave Hall of Sheffield's pleas for assistance with Alternate Reality: The Dungeon. Although Dave has since written to say that he is well on the way to solving all the secrets of this adventure, I think it would help other readers to print some of the advice received from those adventurers who have taken the time and trouble to write in.

David Lago of Burton-Upon-Humber says that he has found it better to start off with a new character, as imported ones seem to get killed off too easily. He brought in a really good Level 11 character from the city but that too suffered the same early demise.

The progression of statistics is much better if you start off from scratch, says David, and by using good weapons found in special places, you can have a better character at Level 5 in the Dungeon than by importing a higher level one from the City.

David recommends that if you find a silver key on a corpse or elsewhere, you should take it to the prison in the palace dungeon area. There you can free Acrissimird's assistant who will give you a spell called Temporal Fugue which speeds you up in combat, makes you hit harder and lets you pick up dropped weapons.

The oracle doesn’t appear to know what your abilities are, but simply lists the quests in order. There’s nothing for it but to keep on throwing in gold and listening. The first clue to the Gargoyle’s riddle is SHIPWRECK and you can only cross the River Storm at midnight.

Susan Fairhurst of Ashton, near Wigan, adds to this by saying that the other words needed to answer the Gargoyle’s riddles are ORACLE and BLOODSTONE. She warns to take care as there is something nasty on the other side of the river.

Susan and others also advise that you check that you have version 2.1, as version 2.0 has two FBI agents that prevent you from transferring a city character to the dungeon.

Susan would like to know the solution to the three doors. She knows that going to the first three times opens the one to the corridor and going to door two shuts it — but what does door three do? The answer is something to do with two other minor quests — but does anyone know what?

Poet Laureate of the month award has to go to Dave Fox of Kemping in Kent. He has sent in a number of

**Back to the Golden Age of Adventures**

**by Rouloc**
rhyming tips for The Dungeon. For example:

A beast with fangs and fearsome gaze,
Whose hide will stop the keenest blades;
All forms of magic it withstands,
Yet thou might conquer with bare hands.

Good, eh? What it actually means is
that to gain the Bloodstone you must
kill the Basilisk using the mirrored
shield and your bare hands.

In return for his magnificent poetic
efforts, the bard Dave Fox would like
to know what is the Axiom of Truth in
Ultima IV. Can anyone help? And, in
addition, Dave Hall of Sheffield still
has one question unanswered – what
is the name of the Gargoyle?

Finally, in response to requests from
other readers including Chris Leighton
of Sherwood in Nottingham and
Andrew Merrett of Worthing, Sussex, I
have given some hints for Guild of
Thieves and The Price of Magik.

Until next month, exciting adventuring!

GUILD OF THIEVES

To cross the room of coloured squares
starting on the black square, follow
the colours of the rainbow backwards
– violet, indigo, blue, green, yellow,
orange and red – then move to the
white square. You should have
noticed that WOBNIAR is the word
Rainbow spelled backwards! To return
across the room, reverse the order.

To enter the Bank of Kerovnia, you
must place all the treasures in one of
the night safes – the sign outside the
bank will change, depending on how
many treasures have so far been
deposited.

The pick is used to get the chips of
mineral from the rock face near the
waterfall.

PRICE OF MAGIK

To recover the sword stuck through
the ceiling, push the secret panel in
one of the rooms – S then SE from the
Misty Corridor – in the oak panelled
corridor then pull the lever. To read
the inscription on the ceiling, cast the
fly spell on yourself.

To deal with the glowing gateway,
try giving any spell focus – the pen-
dulum, for example.

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Turn to page 61 to take advantage of this superb offer
Now we are three

This month Atari User is three years old and much has happened in the last 12 months. The quality of software continues to improve as games players expect more and more from their computers. Indeed Atari itself has launched an addition to its range with the Atari XE Games System.

So to celebrate the success of the Atari as a games machine we are offering you the opportunity of winning:

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André Willey, Atari User, February 1988

2nd Prize

From Tynesoft comes Winter Olympics 88. This exciting new release comprises five games with first-rate graphics and excellent gameplay. There are 15 copies to be won. Value: £14.95 each

"Lots of lovely Alpine scenery for you to enjoy, and some good animation too. Sound effects and music are also used to the benefit of the game's atmosphere."

Bob Choppell, Atari User, May 1988

3rd Prize

15 copies of Mirax Force and Phantom - two more games of quality from Tynesoft. Value: £9.95 each

Mirax Force: "The sound, graphics and superb scrolling complement each other... with numerous levels featuring the very best of the Atari's graphic capabilities."

Neil Fawcett, Atari User, January 1988

Phantom: "Character animation is superb both for spooks and your player character. Phantom is original and well worth buying for the sheer pleasure of playing it."

Neil Fawcett, Atari User, July 1987

What You Have To Do

Simply answer the following four questions, complete the entry form and send it to arrive no later than May 29, 1988.

Questions

1. Which event did Eddie Edwards enter in the 1986 Winter Olympics?
2. In which year did Torvill and Dean win their last Gold Olympic medal?
3. How many GhostBusters were there by the end of the film?
4. Which film is famous for the phrase: "May the Force be with you"?

Entry Form

Answers:

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TO ORDER PLEASE USE THE FORM ON PAGE 61
HERE'S a very addictive game set in an abandoned mine which you explore in your UEV - Underground Exploration Vehicle. You descend from the top of each level - mine in all - avoiding radioactive stalactites, stalagmites, and evil ghosts on the prowl for victims.

A joystick plugged into port one controls the UEV's movements and the fire button accelerates it in case of trouble. You start the game with nine lives - and you'll need them - with extra ones being given as you enter levels four, six and eight. Touching walls, ghosts or various obstacles robs you of one life.

Once you've completed a level you are awarded a bonus which is calculated according to the time it took you - the quicker you do it the more you score.

Each successive level gets harder and some require a lot of thought before you can complete them. After you have finished press Start to begin again.

The layout for levels one to four can be found between lines 900 and 1090, with levels five to seven between 1550 and 1740. These routines use re-defined characters which makes it very easy to customise your own version of the game.

If you delete line 480 you can have infinite lives, while changing line 420 to read:

```
420 RETURN
```

will remove all collision detection for your UEV and allow you to travel through walls and see the whole game from start to finish.

**Turn to Page 41**
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40 Atari User May 1986
From Page 39

670 POKE $M281,8:POKE $M295,0
680 FOR N=$64 TO 0 STEP -1
690 SOUND 0,M,10,12
700 NEXT N
710 IF LEVEL=7 THEN POKE $M210,0
720 RETURN
730 REM REM GO OVER
740 POSITION 0,7:"GAME OVER"
750 SCORE=0:BONUS=0:LEVEL=1:LIVES=5
760 IF PEEK($32737) THEN 780
770 GOSUB 1120:GOSUB 62:RETURN
780 REM BACK TO 65536=HORIZONTAL SHUFFLE
790 FOR I=0 TO 28:POKE PL+PEEK(IP)+5,0
800 NEXT I
810 REM FINISH LEVEL SOUND EFFECT
820 REM
830 FOR N=14 TO 6 STEP -2
840 SOUND 0,M,14,14:Sound 1,M,14,14,1,2
850 FOR O=1 TO 100:NEXT O
860 NEXT N:NEXT P=1 TO 50:NEXT P=1:Sound 8,0,0,0
870 RETURN
880 REM BACK TO SCREEN DISPLAY - LIVES:
890 REM
910 REM POSITION 0,0

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900 "MG:";
910 "MG:";
920 "MG:";
930 "MG:";
940 "MG:";
950 "MG:";
960 "MG:";
970 "MG:";
980 "MG:";
990 "MG:";
1000 "MG:";
1010 "MG:";
1020 "MG:";
1030 "MG:";
1040 "MG:";
1050 "MG:";
1060 "MG:";
1070 "MG:";
1080 "MG:";
1090 "MG:";
1100 "MG:";
1110 RETURN
1120 REM (SCREEN DISPLAY)
1130 POKE 769,60:POKE 710,8:POKE 711,1
1140 POKE 708,LEVEL+18:10
1150 IF LEVEL>3 THEN 1255
1160 IF LEVEL>7 THEN GOSUB 1340
1170 IF LEVEL>9 THEN GOSUB 1380:RETURN
1180 POKE $M26,125:POKE $M34,125
1190 POKE $M49,126
1200 IF LEVEL=3 THEN RETURN
1210 POKE $M261,125:POKE $M267,125:P
1220 POKE $M273,125
1230 POKE $M284,126:POKE $M270,126
1240 RESTORE 2201FOR I=0 TO 14:READ A:
1250 POKE PL+172,6:NEXT I
1260 POKE 706,12
1270 IF LEVEL=4 THEN LIVES=LIVES+1:GOS
1280 RETURN
1290 GOSUB 1540
1300 IF LEVEL=5 THEN RETURN
1310 POKE $M183,125:POKE $M187,125
1320 POKE $M285,126
1330 IF LEVEL=5 THEN LIVES=LIVES+1:GOS
1340 UD 62:RETURN
1350 POKE $M253,126:POKE $M115,126:P
1360 $M212,125:POKE $M250,126
1370 IF LEVEL=7 THEN RETURN
1380 REM
1390 REM LEVEL6
1400 FOR I=21 TO 361 STEP 28
1410 FOR X=8 TO 17:POKE SM198,X:PRINT
1420 NEXT Y
1430 IF LEVEL=3 THEN GOSUB 1400:POKE 5
1440 M120,102:RETURN
1450 POKE $M102,1:POKE $M103,0
1460 FOR Z=21 TO 342 STEP 88
1470 FOR E=8 TO 17 STEP 2
1480 POKE SM194,125
1490 NEXT L:NEXT I
1500 FOR C=21 TO 382 STEP 88
1510 FOR E=1 TO 17 STEP 2
1520 POKE SM194,125
1530 NEXT L:NEXT I
1540 POKE SM210,135
1550 IF LEVEL>8 THEN LIVES=LIVES+1:GOS
1560 UD 62:RETURN
1570 POKE SM25,1:POKE SM3,0
1580 REM (SCREEN DISPLAY)
1590 REM BACK TO 65536=HORIZONTAL SHUFFLE
1600 REM BACK TO SCREEN DISPLAY - LIVES:
1610 REM BACK TO SCREEN DISPLAY - LIVES:
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THIS month the first letter comes from Bryan Kennerley who is based at Rhyl in Wales. He has a few questions about some puzzling aspects of the Atari floppy disc system.

I am currently writing a disc sector editor and while doing so I have uncovered a few unusual phenomena. Firstly, on reading the directory of Alternate Reality — The City (disc 1, side 1), two directories appear to be displayed in a random order.

Investigation reveals that on reading the directory sectors (361 to 364) the same thing occurs. How can these sectors hold one set of data on one pass and a completely different set on the next?

Also, while writing the DLI routines I made extensive use of the DOS 2.5 ramdisc on my 130XE, and in doing so I discovered a seemingly pointless function. If a working DLI is disabled by setting bit 7 of location 54286 to zero (using POKE 54286, 64) before accessing a D8: ramdisc file, the DLI miraculously springs back into life again. Is this essential to the ramdisc’s operation, or is it just a bug?

I would like to include in my program the capability to detect, examine and create bad sectors — but to do so I need to know what one is. What makes them different to ordinary sectors and how are they created?

As far as the DLI part of your question goes, the answer is probably a slip up on the part of the authors of DOS 2.5. When the ramdisk is accessed various portions of rom and ram are switched in and out of the memory map, and the operating system must always be deactivated before attempting to do such bank selection operations.

This involves turning off both the Vertical Blank and Display List Interrupts (VBl's and DLIs) by setting location 54286 to zero. Normally the original contents would be stored temporarily on the stack, but in this case that doesn’t seem to happen and the value 192 is restored after the DOS call — re-activating any DLIs as well as the required VBl.

The other part of your letter requires a greater understanding of the way in which an Atari disc drive works.

Although we tend to think of disc sectors as being numbered sequentially from 1 to 720, the disc drive actually sees them rather differently. It deals with the disc as 40 separate tracks with each containing 18 sectors of data (or 26 if you’re using an enhanced density disc).

Each sector within a track is assigned a number between 1 and 18 so when you ask to read a given disc sector, the number you specify must first be converted into track and sector references — and only when the disc drive’s read/write head is positioned over the correct track can the sector offset value be used to read in the correct data.

For example, if you try to access sector 18 the drive looks on track 0 for the sector numbered 18. Similarly, sector 19 would actually be at track 1/sector 1 and so on up to sector 720 which is really track 40/sector 18.

Some manufacturers use a special timing hole punched into all 5.25in discs to work out where each sector occurs within a track. Atari, however, opted for a software approach and each sector has a short block of header data which provides the sector reference number and some error prevention checksum data.

What you have come across is a method of copy protection used by some disc manufacturers. As you have observed, the first directory entry is located at sector number 361, which is in fact the first sector of track 20. Whenever you ask for a directory (from sector 361) the drive head moves straight to track 20 and starts reading each sector in turn until it finds one with a header value of one. As soon as it finds the correct header it knows that it must send the next 128 bytes of data directly to your micro. Finally, all the data bytes are added together and compared with the original checksum digit found in the header, and only if the two numbers match will the transfer be considered complete.

The drive expects there to be 18 individual sectors, each with a unique number, but it is theoretically possible to have more than one sector with the same reference number — it being pot luck which one the drive arrives at first. Some discs even contain 18 sectors, all with the same number — giving 18 possible sets of data for one official sector number.

There are obviously some devious ways of contriving to read a specific sector out of the 18 present, but there is no point going into detail because there is absolutely no way in which you can create a disc like this with a normal drive. Software manufacturers use some very special pieces of equipment to make such discs, and the program won’t run unless this custom format is present.

The same applies to so-called bad sectors, which are often physically damaged or given incorrect checksum digits — thus returning a disc read error even when there may be 128 bytes of good data present. Once again, you can’t create these with a normal drive — indeed Atari has provided you with an awful lot of circuitry to prevent the possibility of any bad data being recorded on a disc.

Of course, you are a responsible Atari owner, and wouldn’t be interested in actually copying such things anyway, would you? That would be both illegal and immoral, and is the

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reason why such weird and uncopyable data formats were created in the first place. Here endeth today's lecture!

SuperScript puzzle

On now to a letter from the Netherlands, from Th.P.J. Bloks:

"Last August I bought the SuperScript word processor which I had seen advertised in Atari User, and which I am generally very happy with.

However, a few days ago I was re-reading your March 1986 issue containing the SuperScript review in which the reviewer mentions a bug with the Return character (13) versus the normal Atari code of 155.

As I had already encountered the problem of printing a text file to disc I was glad to get an answer to this problem, so I decided to follow the reviewer's advice and alter the 13 on my own disc defaults file, and in the Epson file on the master disc.

I booted up SuperScript and loaded the Epson printer driver and changed the Return number code 13 to 155. Then I used the Document Replace option to write the printer driver back to my disc and put the program away.

The following day I tried to boot SuperScript and I could only get the READY prompt or the Self-Test menu. Upon checking the disc I found that the first three files, the ones with hearts in the directory, had been deleted. I then used the Restore option from my modified Dos 2.9, and now the defaults file seems to contain some 800 sectors - but the disc still doesn't boot.

I hope that you can offer me a solution as to how to get SuperScript working again, or print a warning in your magazine for other readers so it won't happen to anyone else."

As you have by now realised, it's always a mistake to write anything to a master disc unless you've first made a backup of it. Since SuperScript is heavily copy-protected, it's best to assume that you just don't write anything to it at all.

What you should have done is to write your new defaults file on to your work disc, and not used the original version on the master disc at all. As you have discovered, your master is now corrupted and you should send it back for a replacement (although you will probably have to pay the media cost - somewhere around £3 to £5 sounds reasonable).

The first three boot files on the disc were originally hidden from view by altering their respective directory entries, so when you tried to write a new file on to the disc the first blank entry was assumed to be empty and re-used, thus corrupting the hidden DOS.SYS file.

I reckon that such techniques should not be used on business programs, and you should not only be allowed to but be positively encouraged to take backups of your master discs. After all, you've paid out your £50 and the program is now useless through no real fault of your own. I hope you get it sorted out soon, and perhaps software houses will ensure that future versions of such programs will be released in non-protected forms, as they already are on the ST.
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Recently our readers have been sending us Five Liners that have been getting more clever and imaginative by the day. They’re finding lots of ways to cram more and more code into the tight space available. So here are a couple of tips to help you enter the long lines.

Firstly, enter POKE 82,0 to remove the left hand screen margin. This allows you to enter four lines of Basic on the screen. You should also leave out all unnecessary spaces.

Whenever possible use the abbreviated form of the commands. Some common ones are:

```
GRAPHICS GR.
FOR F.
NEXT N.
SOUND SO.
GOTO G.
DATA D.
```

ENHANCED ON-SCREEN EDITOR
from Karl FitzHugh

HOW often have you been setting up a Graphics 0 title screen when you’ve had to strain your eyes to count the characters to the left of the cursor in order to work out coordinates for a POSITION statement?

Or how many times have you had to dig out your trusty manual to look up the internal code for a character you needed to POKE it directly to the screen?

This Five Liner solves both of these problems. It sets up a machine code routine residing in Page 6 – locations 1536 to 1717 – that executes during the vertical blank period – VBL – so make sure that your program doesn’t use this area of memory. An extra line of text is added at the top of a Graphics 0 screen which shows the current row and column of the cursor, as well as the internal character set code for the character currently under the cursor.

Once you have typed it in, save a copy before running it as any mistakes in the DATA statements could cause the computer to crash. After the program is run you can type NEW to delete the Basic from memory and call the routine by typing X-USR(1576).

If you press Reset or execute a Graphics 0 command you will have to call it again but don’t call it from any other mode or you will just get garbage on the screen.

```
1 DATA 0,35,47,44,0,29,0,15,16,0,9,58,47,55,0,29,0,16,16,0,8,35,48,59,51,37,52,0,35,47,16,17,27,0,16,16,0,8
104,162
2 DATA 147,166,6,142,45,2,146,49,2,166
186,104,89,142,154,6,148,155,6,152,6,11
168,287,9,32,22,22,28,96,165,25,32,134
167,310
3 DATA 28,141,28,6,138,32,134,5,105,28
141,27,6,24,170,105,16,141,28,6,165,8
4,32,124,6,165,26,141,10,6,24,124,105
16,141
4 DATA 17,6,165,85,32,134,6,105,26,141
14,6,24,138,105,16,141,7,6,76,90,220,1
62,0,55,233,10,144,6,232,76,137,6,24,9
1,112
5 FOR I=1536 TO 1717:REO=POKEI,0:PO
EXT I:DATA 88,86,8,15,56,64,156,2,2
2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2
65,147,6
```

Get it right!

PROGRAM BREAKDOWN

1 Sets up a Graphics Mode 2+16 screen and tests for Start to be pressed
2 Generates and prints the two random numbers and tests for the trigger to be pressed
3 Speeds up the game, prints the score and your number of attempts
4 Tests whether X is the same as Y subtracts attempts and returns to line two
5 Adds one point and returns to line two

```
1 GRAPHICS 18:X=1000? #G:"PRESS RESET"
2 0:POSITION 6,188:"YOUR SCORE:"#R:"P"
3 GRAPHICS 18:ON PEERO(IS2573)O GOTO 1
10:0
2 X=INT(RND(200):Y=INT(RND(200):R= Position 7,571:"X":X=POSITION 11,5:Y=Y:FOR W=0 TO X=5:STROBE(131):S=0:GOSUB
4:NEXT M
3 IF X=0:POSITIOM 4,817:"YOUR SCORE"
4="18:POSITION 5,117:"GAME OVER"BU
5 PEND 1:GOTO 1:GOTO 2
4 IF X>Y THEN P=1:FOR W=0 TO 100050
5 AND 0,W,4,16:NEXT 6=WORD 0,W,8:RETURN
6 B=81:FOR W=2 TO 200:WORD 0,W,10,10
7 NEXT 6=WORD 0,9,9,9:RETURN
```

Get it right!

PROGRAM VARIABLES

X, Y The two random numbers
P Number of attempts made
B Score
K Controls the speed of the game

```
1 275K (O)
2 AUU (P)
3 VN4 (Y)
4 JAS (W)
5 8GK (H)
```

Get it right!
IF you've written any useful or interesting five line programs why not send them to us to grace our pages? We pay £25 for each one published. You should give a full description of the routine and any other details that are relevant. And remember if you want your material returning please enclose a suitably stamped package.

Win £25

Simply send a copy of the program on disc or tape together with the documentation – preferably as a word processed file – to:
Atari User, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP.

BOUNCE DEMO
from Keith and Joel Goodwin

This program proves that you can achieve smooth fine scrolling without having to use complex assembly language. Instead it simply manipulates the display list to do the trick equally as well.

When you first run it, the message, ATARI USER MAGAZINE! will bounce up and down the screen very smoothly with none of the jerkiness that usually occurs with on-screen character animation. After a short while it slows down until it stops at the bottom of the display: Then it starts all over again.

PROGRAM BREAKDOWN

1 Sets up the display list, disables the screen and sets up the variables
2 Finishes the display list and prints a message
3 Re-enables the screen and fades in the message with sound effects
4 Scrolls the message down, lowers the height of the next bounce and checks whether the message has stopped bouncing at the bottom
5 Makes the sound of the message hitting the bottom, scrolls the message up and makes the sound of hitting the top of the screen

1 Z=#212:GRAPHICS 17:POKE 555,0:556:5760
4 717,48
5 POKE 559,24:FOR B=0 TO 15 STEP 0.2:F
6 POKE 760,224:B:POKE 5370,8:40:POKE 587
7 61,192:B:POKE 5370,1:NEXT B:SOUND 0,0,0,0,0,0,0,
8,0:SOUND 1,0,0,0,0,0,0
9 FOR C=-3 TO 3 STEP -1:FOR B=0 TO 2
10 STEP 16:POKE 840,B:NEXT B:NEXT C:FOR P=2
11 IF P=0 THEN FOR B=0 TO 768:NEXT B:NEXT C
12 FOR B=16 TO 0 STEP -3:SOUND 0,0,0,0,0,0,0,
13 NEXT D:B=FOR C=0 TO P-1:FOR C=0 TO 8 STEP -16:POKE 440,C:NEXT C:NEXT D:FOR B=16 TO 0 STEP -16
14 SOUNDO:0,0,0,0,0,0,0:16
15
16 SOUNDO,159,150,12:GRAPHICS 15151C
17 OLOR 1:FOR X=0 TO 159 STEP 5:GOTO 79,0
18 DORAMO X,79:NEXT X:FOR X=0 TO 159 STEP 5
19 PLOT 79,192:DORAMO X,79:NEXT X:COLOR 1:FOR X=0 TO 159 STEP 5:GOTO 79,128:20
21 DORAMO X,79:NEXT X:FOR X=0 TO 159 STEP 5
22 PLOT 79,75:DORAMO X,79:NEXT X:COLOR 3:FOR X=0 TO 159 STEP 5:GOTO 79,128:
23 DORAMO X,79:NEXT X:FOR X=0 TO 159 STEP 5
24 PLOT 558,0:DORAMO X,79:NEXT X:COLOR 1:FOR X=0 TO 159 STEP 5
25 TO 159 STEP 5:GOTO 558,128:DORAMO X
26 TO 159 STEP 1:GOTO 79,75:79:NEXT X:FOR X=0 TO 159 STEP 5
27 PLOT 558,0:DORAMO X,79:NEXT X:POKE
28 53768,15151FOR X=0 TO 1000:NEXT D:GOTO 1

VARIABLES

G, I Low and high bytes of the display list
D Location of the display list
L, H Low and high byte pointers to the screen memory
P Holds the height of the current bounce
Q, R FOR...NEXT loop counters

LACE from Damon Burroughs

Here's a super little program that will show you just how easy it is to create colourful graphics on your Atari. The finished three-colour picture is drawn in eight parts – mirrored in the specified colour.

When the program has finished it holds the pattern for a short while and then starts it again. Also included is a short sound effect which can be heard as the screen is drawn.

PROGRAM BREAKDOWN

10 Sets up sound, colour and graphics mode and then draws the first stage of the computer face
20 Draws the second stage, changes the colours for the next two and then draws stage three
30 Draws the fourth stage, changes the colour for the next four and then draws stage five
40 Draws stages six and seven
50 Draws stage eight, switches off the sound, holds the face design for a few seconds and then loops back to line 10 to re-draw the pattern
Now you see it, now you don’t

LEN GOLDING continues his look at animation using Atari Basic

AS we saw last month, it’s quite easy to make a keyboard character move around the screen by just printing a blank space over it, then re-printing it somewhere else.

This is fine as long as the background is blank, but suppose the character has to move across a terrain map or other scenery? If you print a blank space every time the character moves, it will leave behind it a trail of missing background.

The theory behind overcoming the problem is straightforward: We first look to see where our moving character is about to land, find what’s currently printed there and store the information in a safe place.

Next we print our character, which will then erase the background at that position. When the time comes to move it, we re-print the original background data, which erases the moving character and restores the background — all in one go.

Although it sounds fairly simple, it’s a very complicated thing for a computer to do. Consider this statement:

```
LOCATE 10,20,4
```

In ordinary English, it means: Move the cursor to a position 10 columns in from the left and 20 rows down. Read the character currently occupying that spot and store its code number in a variable called A.

If, for example, the letter A is cur-

```java
10 REM Program 1: 8-directional joystick-controlled movement over a background.
20 GRAPHICS 0: REM necessary for LOCATE command to work.
30 POKE 752, 1: CHRS$(125): REM turn cursor off and clear screen.
40 HZ=19292: 11: REM initial horizontal and vertical co-ordinates for ball.
50 GOSUB 350: REM fill the screen with a background of letters.
60 GOTO 100: REM start loop, printing the ball at its initial position.
70 REM main loop starts here:
80 GOSUB 150: REM get new horizontal and vertical co-ordinates.
90 POSITION H1: V1: CHRS$(1): REM erase ball by printing background over it.
100 LOCATE H2, V2: REM store background character on which the ball will land.
110 POSITION H2, V2: CHRS$(201): REM print the ball.
120 H1=H2: V1=V2: REM reset H1 and V1 to new position, ready for next cycle.
130 GOTO 80.
140 REM Subroutines start here:
150 S=STICK$(0): REM Read position of joystick in port 0.
160 IF S=14 THEN GOSUB 270: GOTO 260: REM M up only.
190 IF S=4 THEN GOSUB 270: GOSUB 310: 60: TO 260: REM Up/right.
210 IF S=7 THEN GOSUB 310: GOSUB 60: TO 260: REM Right only.
240 IF S=13 THEN GOSUB 290: GOSUB 60: TO 260: REM Down only.
260 IF S=11 THEN GOSUB 330: GOSUB 60: TO 260: REM Left only.
280 RETURN.
290 IF V1=1 THEN V2=V1-1: REM Prepare to move up, if there's room.
300 RETURN.
310 IF H1=32 THEN H2=H1-1: REM Prepare to move right, if there's room.
320 RETURN.
330 IF H1>1 THEN H2=H1+1: REM Prepare to move left, if there's room.
340 RETURN.
350 FOR ROW=1 TO 22: FOR COLUMN=1 TO 37.
360 POSITION COLUMN, ROW: CHRS$(ROW+64).
370 NEXT COLUMN: NEXT ROW.
380 RETURN.
```

Program 1: Example of joystick control
rently sitting at coordinates 10,20 the value stored in Q will be 65 — the Ascii code for A.

As always, you can change either or both coordinates to any value within the corresponding screen boundary, and variable Q can have any legal name you choose.

Here’s how it works in practice, using the ball — Ascii 20 — as our moving character. We'll let the ball’s current position be H1,V1 and its new position H2,V2. Also, for convenience, let’s pretend the values for H2 and V2 are updated by an imaginary subroutine at line 1000. Our program might look like this:

```
10 GRAPHICS 0
20 H2=10:V2=20
30 GOTO 60
40 GOSUB 1000
50 POSITION H1,V1:PRINT CHR$(Q)
60 LOCATE H2,V2:4
70 POSITION H1,V1:PRINT CHR$(20)
80 H1=H2:V1=V2
90 GOTO 20
```

We start the program by telling the computer what graphics mode we’re using. It’s essential to do this, or the LOCATE command won’t work. Next we specify the ball’s starting position H2,V2, then jump into the middle of the main loop at line 80.

This line reads the background character at our ball’s initial position and stores it in Q. Line 70 prints the ball, and line 80 sets H1 and V1 to the ball’s current coordinates. Line 90 then sets the game loop running. Line 40 executes our joystick subroutine, and returns with the ball’s new coordinates in H2,V2.

Line 50 erases the ball by restoring the original background data — the character whose Ascii code is held in Q. Line 60 identifies the background character which is currently sitting at the ball’s new destination — H2,V2 — and stores its Ascii number in Q, replacing the previous value. Line 70 prints the ball at H2,V2, and this is where we came in.

The whole process will repeat until we stop the program by pressing Break or Reset, or switching power off.

Program 1 is a fully working demonstration that’s similar to last month’s Program IV, but we’ve rearranged things to give you a bit more practice with subroutines. Notice that the joystick control system — lines 150 to 340 — is now nested. The first subroutine (150 to 260) calls other subroutines (270 to 340) as necessary, before returning to the main-line code at line 110.

Because lines 150 to 340 are now a self-contained mini-program, you can incorporate the routine easily into your own games.

The screen background — a pattern of capital letters — is also drawn by a subroutine, this time at line 350. You can easily change it to draw any pattern or background you choose — a haunted house or dungeon floor plan, for example — using control characters. The utility program we gave you in Part I — the March 1988 issue of Atari User — will help you in this.

![Diagram of the program flow chart](image-url)

**Figure 1: Flow chart describing Program 1**
Atari User — takes the drudgery out of this.

Another use for LOCATE is to detect when your moving character has hit a target of some kind. Try adding these lines to Program 1:

```
115 IF Q=72 THEN GOSUB 500
500 SOUND 0,150,10,8
510 FOR W=1 TO 20:NEXT W
520 SOUND 0,0,0,0
530 RETURN
```

Now you'll get a short beep whenever the moving ball lands on a letter H. If you want the hit to produce a more exciting result, just change the code at line 500. Aren't subroutines wonderful?

If you want your moving character to destroy only certain symbols in the background picture without disturbing the rest, that's easy too. Try changing line 100 to read:

```
100 LOCATE H2,V2,Q:IF Q=77 THEN G=32
```

If the ball now lands on a letter M, the value stored in Q will be changed from 77 — the Ascii code for M — to 32 — the code for a blank space. So next time the ball moves it will leave a blank space behind it. You'll find, therefore, that the ball wipes out every M but doesn't disturb anything else.

We're fast approaching the stage where we can write real arcade games, and our programs are consequently becoming more complex. Computers can follow the most tortuous listings without difficulty, but human programmers tend to get lost in the maze. So now's a good time to introduce a system of diagrams which makes it much simpler to keep track of things.

Look at Figure I on the previous page. It shows the operation of Program 1 in simplified pictorial form. Notice how the diagram corresponds to REMarks in the listing, and try checking the program's operation against our written explanation. The pictorial flow chart is much easier to follow and saves an awful lot of writing.

Professional programmers use a whole range of symbols in their flow charts, but we can get a long way with just two, rectangles for operations and diamonds for decisions. Diamonds always have two outputs, corresponding to yes and no, while rectangles have only one, corresponding to done.

Basic is one of the few languages that doesn't demand an accurate flow chart before you start programming — it's very tolerant of variations in construction and layout. As your programs become more complicated, however, you'll find that time spent on designing it — by flow chart or other methods — will save many hours of trial and error and the end result will be tidier, shorter and probably faster.

Now let's turn to a topic that will help you to produce more realistic games — the use of colour. Deep inside your Atari is a group of memory addresses called colour registers. Whenever the computer draws a screen they tell it which colours to use and what to use them for. You can change the contents of the registers, and consequently the colours displayed by using SETCOLOR.

For convenience — and to avoid misspelling — this command can be abbreviated to SE. — Basic will write it out in full when the program is LISTed. Its format looks like this:

```
SE TC,HL
```

The first figure after SETCOLOR identifies which register we want to alter. In Graphics 0 we can use only registers 1, 2 and 4 but these enable us to change text brightness, background colour and border colour respectively.

The second figure specifies the colour — or hue — to be used and can have any value from 0 to 15. Figure II shows the hues available using Atari's own words, but you may disagree with the descriptions. In any case there's no absolute standard — many TV's and computers will inevitably produce different results.

The third and final figure in a SETCOLOR command controls the colour's brightness, and it can be any even number from 0 to 14. Changing this level has a marked effect on the perceived colour. For example:

```
SE 2,12,8
```

will turn the background a dark green, whereas:

```
SE 2,12,4
```

will turn it bright yellow, even though the hue number is the same — 12 — in both cases.

Program II lets you use a joystick to
experiment with colour registers 1, 2 and 4. Press the trigger to step from one register to the next, move the stick up or down to change the hue value, and move it left or right to change the brightness level. If things get out of hand, pressing Reset will automatically restore the screen to its normal condition.

All our programming so far has been done in Graphics Mode 0, which is comparatively limited in its use of colour.

Text is always printed in the same hue as its background, but at a different brightness level. You can make it very dark, very bright or invisible, but that's about the limit to special effects.

For genuine multi-colour displays we must enter a new dimension:

```
10 GRAPHICS 1
20 PRINT #6, "Test"
```

When you run this something very peculiar occurs: The screen first goes blank then splits into two parts — a large black area, and a smaller blue one at the bottom — with the normal READY message printed in the blue area as it would be on a Graphics 0 screen.

The word TEST appears in large letters at the top of the black area, but instead of being printed exactly as in line 20, all the letters are in upper case and each is a different colour.

Change line 10 to GRAPHICS 2 and something similar happens, but this time the coloured letters are twice as large.

If you've followed this series from the first part you now know enough to write your first action game, and that's the best way to practise what you've learned.

**Turn to Page 54**

---

**Figure II: Colour values — second parameter in a SETCOLOR statement**

<table>
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<th>Colour Name</th>
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<td>0</td>
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<tr>
<td>1</td>
<td>Rust</td>
</tr>
<tr>
<td>2</td>
<td>Red-Orange</td>
</tr>
<tr>
<td>3</td>
<td>Dark Orange</td>
</tr>
<tr>
<td>4</td>
<td>Red</td>
</tr>
<tr>
<td>5</td>
<td>Dark Lavender</td>
</tr>
<tr>
<td>6</td>
<td>Cobalt Blue</td>
</tr>
<tr>
<td>7</td>
<td>Ultramarine Blue</td>
</tr>
<tr>
<td>8</td>
<td>Medium Blue</td>
</tr>
<tr>
<td>9</td>
<td>Dark Blue</td>
</tr>
<tr>
<td>10</td>
<td>Blue-Grey</td>
</tr>
<tr>
<td>11</td>
<td>Olive Green</td>
</tr>
<tr>
<td>12</td>
<td>Medium Green</td>
</tr>
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</tr>
<tr>
<td>14</td>
<td>Orange-Green</td>
</tr>
<tr>
<td>15</td>
<td>Orange</td>
</tr>
</tbody>
</table>

**Program II: Colour demonstrator**

```
10 REM Program II: Experimenting with colour registers in Graphics 2
20 POKE 752, 1:7 CHRS$(125): REM Clear screen and make cursor invisible
50 R=4: HUE=8: SHADE=0: GOTO 140: REM Initialize colour variables
40 IF STRNG(0)="I" THEN GOTO 88: REM Branch if trigger not pressed
30 IF R=1 THEN R=2: GOTO 140: REM Select next colour register
60 IF R=2 THEN R=4: GOTO 140
70 IF R=4 THEN R=1: GOTO 140
80 S=STICK(0): REM Read joystick in port 1
50 IF S=15 THEN GOTO 40: REM Loop back if stick centralized
100 IF S<14 THEN IF HUE<15 THEN HUE=HUE+1: GOTO 140: REM Joystick 'up'
200 IF S>13 THEN IF HUE>0 THEN HUE=HUE-1: GOTO 140: REM Joystick 'down'
300 IF S=7 THEN IF SHADE<14 THEN SHADE=SHADE+1: GOTO 140: REM Joystick 'right'
400 IF S=11 THEN IF SHADE>0 THEN SHADE=SHADE-1: GOTO 140: REM Joystick 'left'
140 POSITION 3, 10: "COMMAND = SETCOLOR R", HUE, SHADE: REM Change the screen colour as ordered
160 FOR W=1 TO 50: NEXT W: REM Short delay
170 GOTO 40
```

May 1986 Atari User 53
**Putting it into practice**

As an exercise, try designing and writing a program to meet these specifications:

- Turn the background brown with a green border and use control characters to draw a city street plan.
- Insert fuel dumps, airfields and shipyards, represented by the letters F (ASCII 70), A (ASCII 65) and S (ASCII 83).
- Use a ' character (ASCII 39) to fly around the screen under joystick control, without disturbing the background.
- Whenever the joystick trigger is pressed, make the sound of a falling bomb. If the cross is covering an A, F or S, add an explosion sound and leave a blank space behind when the cross moves.
- Near the bottom of the screen, print the number of bombs dropped and the number of hits achieved, updating this every time the trigger is pressed.
- End the game after 20 bombs have been dropped.

Next month we'll explain what's happening in our demonstration and show how easy it is to produce multi-coloured animated displays.

---

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---

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DEEPER INTO THE DUNGEON

I THINK that I may be in a position to help Mr. C. V. Howarth solve his problem with Alternate Reality: The Dungeon that he mentions in the Hints and Tips section of the March 1988 issue of Atari User.

Firstly, the item which he needs to use to pass through death's door is the portal access card.

This will be given to him by Acriminar in exchange for the staff pieces from the prisoner on level one, King Danjor on level two and the dragon on level three - it requires the bloodstone before it will give up its piece.

Secondly, the River Stonz may be crossed at any time after midnight and before the first hour, provided that the boatman is paid with copper.

Thirdly, Morgane's tiara should not be given up to the clothes horse on level two. By wearing the tiara lost points are restored.

The clothes horse will settle for a sweater or a cloak provided you have nothing better, otherwise it will take your finest item of clothing - especially if it's magical.

Finally, does anyone know the name of the gargoyles on level three? - Mike Ward, Warley, West Midlands.

Crashing worksheets

AFTER reading the review of the Swift Spreadsheet from Audiogenic in the March 1988 issue of Atari User I thought I'd point out a problem that I am having with it.

When you are saving and loading worksheets they appear to save accurately and load every cell properly. However, problems occur when the worksheet is then worked on further - the program is prone to crashing with odd garbled messages appearing.

This bug does not occur all the time, but is quite common and very frustrating.

The spreadsheet is potentially powerful and easy to use, and offers good value for money when you compare it to the more expensive VisiCalc and SynCalc.

I have written to Audiogenic but received no reply and I have talked over the phone to Metamorphosis Development - the designers of the spreadsheet - who were helpful but unable to cure my problem.

W. Charles, Winch Wen, Swansea.

Have any of our readers experienced this problem? If you know the cure, please write in.

Getting that hash

I AM very flattered that my letter was chosen for publication in the March 1988 issue of Atari User. I found your attached comment, however, didn't seem to square with my experiences at the keyboard.

I have an 800XL linked to a 1050 disc drive chained to a Panasonic KXP-1081 printer via a graphics interface.

If I use the AtariWriter word processor I found, as you say, that the hash sign is printed out as a £ but displayed on screen and again in preview mode as a hash.

Using Mini Office II, however, if I key hash - Shift-3 - the pound sign appears on the screen, even if the printer is switched off and disconnected from the micro. It is also output in both preview and print modes. Finally, your reply to one of the letters in the March issue surprised me.

Although the SMM6804 is not a commonly advertised printer for the 8 bit Atari, it will work correctly for text if a Centronics type interface is connected. - J.E. Robinson, Millom, Cumbria.

Keys still available

WHEN I read the mailbag section in the March 1988 issue of Atari User I noticed a letter from someone who is having the same problem as me - broken keys on their 1010 tape recorder.

I wrote to Silica Shop - enclosing a postal order for the required amount - but I was most upset when they wrote back to inform me that they had stopped selling replacement 1010 keys.

After a dozen or so phone calls I found someone who sells them - A. S. Wooten & Son, 116 Edleston Road, Crewe, CW2 7HD. The keys are £1.50 each and £1.50 postage and package for up to four keys is required.

Could you please tell me if a tape version of Monopoly is available and where I can get it? - Bryan Poll, Barnsley, South Yorkshire.

We've checked with Silica Shop and it still sells the keys. They are £1.12 each and £1.50 postage and package must be included.

We don't think there is a tape version of Monopoly.

Mini Office II on SpartaDos

I HAVE a 1050 disc drive with a US doubler fitted and it runs correctly. Thanks for a superb program - it has brought many hours of fun.

Has any reader figured out how to dump the 3D image to an Epson or 1029 printer? - Mark Wilkie, Marske by the Sea.

Unfortunately, as the magazine was put together the listing was scrambled slightly.

We are sorry for any inconvenience caused.

DOUBLE TROUBLE

I HAVE just typed in the excellent 3D Plotter program from the March 1988 issue of Atari User and came across what seems a slight error in the listing:

Line 800 has been duplicated and it re-appears on line 790. It should read:

290: PLOT X(POINT10,1)=168, X(POINT10,1)=168, Y(POINT10,1)=168, Y(POINT10,1)=168

Once this has been altered
I was wondering if it is possible to transfer my Mini Office II files to a SpartaDos format.

It would be nice to have the high speed load facility on such a super program. — Alexander Mellor Brooke, Cheddle Hulme, Cheshire.

• Mini Office II works very well on nearly all disc operating systems including SpartaDos.

MAPS COME IN HANDY

I WOULD like to thank you for the excellent article about Spellbound that appeared in the March 1988 issue of Atari User.

Not only was the map very well presented, but the hints and tips were very useful in allowing me to complete this super mini-adventure for the first time.

Also in the same issue was the map of Mercenary: The Second City. Although I have never played this particular graphics adventure I am now thinking about getting it as the map makes it look like a very enjoyable game. The reviews section is always a firm favourite of mine and I was overjoyed when you started to use colour pictures again. The new layout looks superb as does all the magazine. Thanks for a very interesting and informative read.

— Sean Canning, Manchester.

Cartridge connection

I USE an assembler/editor cartridge quite a lot and find that I am having to continually plug it in or out to program in Basic.

I am concerned that the wear and tear on the edge connector will ultimately lead to unreliability. Would it be possible to build a gadget which would mount a cartridge and sit semi-permanently outside the micro? It could then be brought in or out of action by use of a simple switch.

Also, a more complex system could be built to accommodate more than one cartridge and allow them to be switched in or out as required. — R.G. Bryer, Ashtead, Surrey.

• The subject of this gadget has been looked at before and only a simple circuit is needed to allow a number of cartridges to be mounted together on one cable.

The components would make this a rather expensive device, but if enough readers write to us to prove that demand is sufficient we'll reconsider it.

More gadgets on the way

IN recent issues of Atari User there haven't been any gadgets by your resident expert Len Golding. Has he stopped building them? — Dave Manning, Reddish Stockport.

• Len has been having a rest recently, but he promises to build us some more interesting and inventive gadgets soon.

Pascal alternative

I OWN an Atari 800XL and 1050 disc drive. Can you please tell me whether or not there is a software package that would enable me to use Prospero Pascal and, if so, how much it is and where I can buy it from? — J. W. Brezezinski, Spital Tongues, Newcastle-Upon-Tyne.

• Unfortunately, this particular program is not available for the 8 bit Atari. At one time Kyan Pascal was easily obtainable, but it is now very difficult to get hold of.

You could try getting the Action! cartridge-based language. Although it's not identical it does offer similar features to Pascal.

It is a sort of hybrid Basic/C and is available from several advertisers in Atari User.

Happy beginner

UNFORTUNATELY I was late in discovering Atari User, but I now have a regular order with my newsagent so I don't miss it.

I recently bought the back issue pack of magazines from May 1985 to November 1985 and was absolutely delighted with Mike Bibby's articles for beginners.

I'm physically disabled and so started using a computer when I could no longer work. Being a novices at computing, the series was a great help to me.

Please convey my thanks to Mike for explaining things so clearly. Also, thanks for a really terrific magazine.

— Wilma Smith, Aberdeen.

XMM801 printer problem

I RECENTLY bought an Atari XMM801 printer and it was superb for word processing and listing Basic programs. However, a friend lent me Print Shop by Broderbund and I have found it impossible to get it to print out.

I have tried all combinations of options to no avail, so could you please tell me what the XMM801 is equivalent to? And is it possible for this program to work on my printer? — Karen Segar, Stockport, Cheshire.

• Unfortunately, as with all Atari printers, the XMM801 is unique. Atari has for some reason designed printers that don't work with commercial software, and Print Shop will not work with your printer no matter what preferences you choose on the set-up menu.
Italic on tap

WHILE I was working with Mini Office II on my 800XL I discovered that pressing the inverse video key causes any typing that you do after to be printed out in italic. Pressing this key again switches you back to normal print style. — A.R. Hazzard, Swindon, Wilts.

Dipping into the toolkit

AFTER reading the advert for the Atari User Toolkit I decided to send off for the disc version. I’m very pleased with it and I now use it every time I program or type in magazine listings.

The renumber utility is very useful and the variable name change feature is an excellent idea. I find the way that it switches itself out when you run a program is great, and it’s so easy to install once it has been loaded — just press System Reset. — Philip Marsh, Middlesbrough, Cleveland.

Long wait for a drive

WHY on earth did Atari stop producing the 1050 disc drive, especially since the new one isn’t even available?

Each month I am allowed out of my straightjacket to read your masterpiece of a magazine, but with dismay I find no mention of the 1050, and no news of the release of the new drive ever grace the pages. Please could you tell me what exactly is happening? — Martin Tiller, Oxford.

Atari has had some problems with the new drive, but claims it will be available soon. The classified section of Atari User contains many bargain offers including 1050 disc drives.

The catch

I BOUGHT my children an Atari home computer for Christmas and a copy of the January 1989 Issue of Atari User. I found it an excellent publication, but I didn’t understand one of the instructions on a Five Liner program — an unusual character on line 3 of Catch. Can you please help? — Peter Brown, Harpenden, Hertfordshire.

The character you are having problems with can be obtained by pressing the inverse character key and then Control+I-N. A full list of these control characters was in the February issue of Atari User.

Epson drive

I OWN an 800XL and 1010 tape deck. Recently I was offered an Epson 5.25 floppy disc drive and was told that it was double-sided with a one megabyte storage capacity. Could you please tell me what interface I would need to get it working on my Atari? — D.E. Fogerty, Salisbury, Wiltshire.

Unfortunately this disc drive will not work easily on your Atari and an interface to make it work would probably cost more than a new Atari drive.
Three of Level 9’s most acclaimed adventures — Lords of Time, Red Moon and The Price of Magik — come together in one package. Each has been enhanced and enlarged with more text than ever before – 60,000 mind-expanding words creating magik and mystery round every corner. There’s a powerful new parser, and most disc versions include stunning digitised pictures that help to dramatically heighten the atmosphere.

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ONE of the best known software houses producing games for the 8 bit Atari is Tynesoft. Based in Blaydon, Tyne & Wear, it is constantly bringing out quality new software to add to its already impressive range.

So it was with eager anticipation that I went to have a chat with David Croft, Tynesoft's head of software development.

The main topic of conversation was the development of its new sports simulation. Said Croft: "We were determined Winter Olympiad '88 would surpass all other sports simulations in terms of realism, playability and visual presentation". He said this was Tynesoft's most ambitious project to date, with versions being produced across as many computer formats as possible.

To make this possible all other in-house work was halted and programmers, graphic artists and freelance people alike got together to decide the game's format. The first step towards creating was to spend lots of time watching videos of winter sports and deciding which events would appear. They eventually settled for the downhill, bob sleigh, ski jump, slalom and biathlon.

The actual programming fell on the heads of Brian Jobling (downhill), Chris Murray (bob sleigh), Mike Hedley (ski jump, slalom and biathlon) and Philip Scott was their graphics artist. It took the team three months to finish the program.

While all this was going on, managing director Colin Courtney was busy negotiating permission to use the BBC Television theme music from Ski Sunday. He also managed to get program presenter David Vine to write an introduction to the 1988 Winter Olympics to be included in the final packaging.

Tynesoft is very optimistic about the game's future. It has already sold the rights to Mindscape, an American company that will produce it under the name Winter Sports. So just how good is the game? You can find out by reading the full review by Bob Chappell on Page 26.

Now let's take a look at some of Tynesoft's more established games and their authors. Brian Jobling, who has now moved on to his own company, Zeppelin, wrote many of the company's successful games on the 8 bit Atari. His first for Tynesoft - another sports simulation - was Winter Olympics, which sold nearly 4,000 copies in its first month of sales.

Phantom was another of Tynesoft's success stories. Written originally for the BBC Micro, it was converted for the Atari by Brian with music by Ian Waugh - a widely recognised micro music expert. It's an excellent game with everything you need - good sound, stunning graphics and above all, addictiveness.

One of the best programs to come out of the company is Mirax Force by Chris Murray, a very talented writer with many games under his belt. He wrote this one as a freelance programmer but Tynesoft now has him under contract. Mirax Force is a wonderful sideways scrolling shoot-'em-up with digitised speech which really has you wanting just one more go.

As well as producing very good software Tynesoft wraps its products in superb packaging. This is probably because it has facilities to do its own printing and make all the cassette and disc inlays.

The future is looking very rosey for Tynesoft with the release of Winter Olympiad '88, Super Soccer - also reviewed in this issue - and the Microvalue III pack. These Geordie lads definitely seem to know what they are about.
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