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ATARI USER

Vol. 2 No. 10 February 1987 £1

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this
issue



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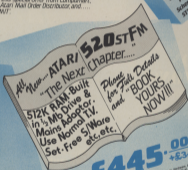
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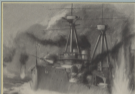
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Experts are convinced 1987 will be the Year of Atari - thanks to exciting developments in the ST range, coupled with a renewed commitment by Atari to support and encourage the ever-popular Atari 8-bit range.

New hardware enhancements, and hundreds of new software packages, testify to how writers and developers throughout Britain and the USA are creating new ways of exploiting the power of Atari computers - and they'll all be on display at the April Atari Computer Show.

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NEW ATARI MODELS ROCK MICRO WORLD

AT&T has shaken the computer industry to its foundations with the dramatic announcement of new products in three major areas of the micro marketplace.

They include an IBM PC compatible of radically new design, a revolutionary desktop publishing system with low-cost laser printer, and three powerful additions to the ST series.

The Atari PC, which will sell in the US for under \$600, is a fully-loaded, state-of-the-art machine at a price low enough to send shudders through the ranks of competitors.

An observer at its unveiling in Las Vegas described it as "a compact and elegant system loaded with features not found on systems costing thousands of dollars more".

The unit includes a built-in 5.25-in disc drive, integral power supply, and sensitive IBM XT-style keyboard.

A second 5.25-in drive as ST-style 3.5-in drive, capable of reading discs in either ST or IBM format, can be attached externally.

The machine comes with 512K of ram, expandable to 602K via sockets on the motherboard. Standard serial, paral-

- IBM PC compatible
- Low cost laser printer
- Three new ST models

l and combination video ports — and an ST-style disc port — are included.

A mouse port based on the Microsoft Import chip is built in and an ST-type mouse included with the system, thereby enabling the Atari PC to run PC Games, Microsoft Windows and mouse-based programs like Microsoft Word without adaptation.

On the graphics front Atari has somehow managed to squeeze IBM monochrome, CGA, EGA and Hercules graphics capabilities into the new PC.

It is the only PC compatible to include EGA graphics — completely downward compatible with CGA — as standard.

Atari is also bringing out a unique 3200 monochrome green screen monitor for the PC that can display all its graphics modes — including the high resolution EGA, colour mode — using grey

scales to represent colours.

The monitor is intelligent and can recognise the frequency of signals coming from the combination video port, adjusting itself appropriately to display whatever kind of text or graphics the machine produces.

An Atari spokesman said the machine, a sleek and slimline 22 x 22 x 8 in., is "virtually 100 per cent compatible with existing software for the IBM PC and XT".

An observer who attended the Las Vegas launch told Atari User: "It's as if Atari, in one fell swoop, has stepped into the leading edge in three markets — high performance workstations, desktop publishing systems and the lucrative PC-compatible game.

"It's going to be the company to watch in 1987".

■ For details of the Mega-ST range and Atari desktop publishing system turn to Page 3 of Atari ST User.

Latest products at Show

The next Atari Computer Show — to be held at the Novotel, Hammersmith, in April — promises to be the most exciting of them all.

As well as offering all the latest hardware and software products from UK suppliers it will provide a shop window for the startling new machines just announced by Atari.

Last March saw the world's first ever Atari-specific exhibition at the same venue. And the follow-up Atari Christmas Show at the Royal Horticultural Hall, Westminster, attracted close to 15,000 visitors in December.

Now the event that provides Atari's busiest pad in the UK comes back to where it all started — the plush surroundings of the Novotel's Champagne Suite.

Exhibitors were queuing up after the Christmas Show to book space for April and in excess of 75 are expected to attend.

They will be bringing with them a host of new hardware and software, plus loads of bargains.

Again the show has the wholehearted support of Atari itself and the company will have a major presence.

And of course there will be every chance for visitors to talk to Atari's own experts about all the latest exciting developments — including the revolutionary Atari desktop publishing system currently being developed in the USA.

The Atari Computer Show takes place at the Novotel on Friday, Saturday and Sunday, April 24 to 26.

Doors open at 10am each day and close at 6pm on Friday and Saturday, 4pm on Sunday.

A money-saving entrance ticket order form is on Page 3 of this issue of Atari User.

TURNOVER HAS DOUBLED

AT&T has successfully silenced its critics in the USA by bouncing back into profit in a big way. In the two years since Jack Trammell took over the helm, he has dragged the corporation back from the brink of disaster.

Now the first report to shareholders since going public last month reveals sales of \$40 million worldwide in the last quarter.

And this is more than double the turnover for the same period last year.

But more important for the American money man was the news that net income for the first nine months of 1986 was \$21.5 million compared to a loss of \$29.2 million to September 30, 1985.

Paul Freilinger of the influential San Francisco Examiner described the

results as "the biggest surprise of the year in the personal computer industry".

Mr Freilinger is writing in his praise of chairman Jack Trammell. "He has already accomplished more than the pundits expected", he wrote.

Now Atari is well and truly in the black, America's analysts are predicting that the sky will be the limit for the company during 1987.

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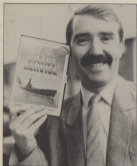
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Simon Bernard... seeks top writers

Want to be a millionaire?

A SEARCH has been launched nationwide to find Atari software writers with the ability to become "millionaires almost overnight".

Man behind the hunt for star programmers is Simon Bernard, the recently appointed development manager of MicroProse UK.

He is able to offer the potential of far greater rewards than can be normally expected in the UK because he is backed by the third largest entertainment software house in the US. "We

believe that the UK has the best software writers", he told Atari User.

"And my job is to find them and offer them not only money but international recognition".

Simon Bernard points to the fact that MicroProse in the States is known to spend in excess of \$1 million developing each of its simulation blockbusters. Each of these is eventually marketed not only in America but also Europe and Australia.

Royalties

"Our titles routinely remain at the top of the US charts for years, not just weeks like products over here", he says.

"And that can translate into rather a lot of royalties, never mind substantial advances.

"So I don't think it would be unfair to claim that if we can find someone who can write a simulation like our Silent Service for the Atari ST, they could become a millionaire almost overnight".

Arcade

Although MicroProse is best known for its award-winning entertainment simulation software, Simon Bernard is not looking for writers exclusively in this area.

"We would be just as happy to find writers of top quality arcade games for the Atari", he said.

MicroProse recently set up its British headquarters in the picturesque Cotswolds market town of Tetbury, Gloucestershire, the home of Prince Charles.

Now it is hoping to more than double its success in the Atari 8 bit market in America where its titles account for more than 25 per cent of all sales.

New 8 bit micro will boost market

ATARI has unveiled the prototype of a revolutionary 8 bit machine which will revitalise this sector of the UK market.

With a built-in cassette and priced at under £100, the micro is expected to go on sale in May.

It will replace the previously announced cartridge-based 7600 machine which was also scheduled for its British launch this month.

The reason for this move is that Atari officials in the States have been convinced that the UK 8 bit market is still "a gas driver".

One of the arguments they accepted was that in Britain there are difficulties in producing cartridges in that they require high volume production and long lead times.

So while the 7600 console may well be sold in the States, it will not now be shipped here.

This is good news for the 350,000 Atari 8 bit users as it will precipitate a flood of new

software titles. "This will give a real injection for the 8 bit scene", says Bob Gleadow, Atari UK's general manager.

It was he who brought the prototype of the new 8 bit machine from the States to show it to the British software houses.

And according to early reports they have given it an enthusiastic welcome.

Not that the Atari 8 bit user has in fact been ignored of late. For new titles have been appearing for the machines at the rate of up to 10 a month.

And the demand for development kits from software houses wanting to supply the market has never diminished.

"The fact of the matter is that the 8 bit scene had been ticking over quite nicely", says Bob Katz, Atari UK's software development manager. "But some users have

felt a little ignored simply because most of the publicity has surrounded the ST range of kits.

"The point is with so many end users out there, it almost becomes self-perpetuating. It would be very bad business for a company to ignore the Atari 8 bit scene".

For in this just a company view.

John Arndel, marketing manager of Silice Shop, insists there has been no sign of support slipping for either the XL or XE.

"The 8 bit market is far from finished", he told Atari User, "in fact it isn't even slowing down".

And he points to his own company's current list of software titles for the machines - covering 18 A4 pages of closely-packed type - as demonstrating the extent of existing support.

Interface to total control

HERE'S a simple interface which allows your computer to see a large network of sensors, such as pressure mats, microswitches and thermostats. It can be used for intruder alarms, energy management systems or any other task which requires this kind of continuous monitoring.

It's based on the joystick port, which has nine pins—seven signal lines plus GND and DC . Five of the signal lines can detect only whether a device is on or off, but the other two can distinguish between 256 different states.

These two analog lines will accept inputs from a wide range of devices, but you can't do anything very ambitious with only two lines per port. This simple interface uses a kind of electronic rotary switch to scan 16 separate devices and feed the results through a single analog line.

Figure 1 shows in simplified form how it works. Any one of 16 inputs can be connected to the common output line by setting up a binary number from 0000 to 1111 at the four control pins.

These codes represent decimal values 0 to 15 and we can send them from the joystick port by making pins 1 to 4 serve as outputs, in the now familiar way.

The switch's common line is connected to the analog input at pin 8, though it could equally well go to the other one at pin 5, provided you modify the software.

The programs described use port number 2, leaving port 1 free for an output device, such as the matrix controller or four-channel switch described in previous issues.

Information from the sensor network can therefore be used to trigger alarms, switch lights on or off, control central heating systems, water your

Part 8 of LEN GOLDING'S series on using your Atari to control devices



Figure 1: Theory of switch operation

plants, feed the goldfish or whatever.

Figures 1 and 2 show the printed circuit board foot pattern and component layout. It could hardly be simpler to put together. The terminal blocks account for about one quarter of the total cost and may be omitted if you don't mind soldering the various leads directly to the PCB tracks.

The 4667 chip is a CMOS device, so needs careful handling. Leave it in its packaging until you're ready to insert it and touch an earthed metal appliance before handling the chip to get rid of any static charge that may have built up on your hands.

Make sure you insert the chip the right way round and check that every one of its pins is correctly fitted into the socket. Remember the interface has to plug into joystick port 2 if you're using the software shown here.

Software is fairly straightforward and, like Program 1, can be written in Basic. Line 10 initializes an array to

hold the 16 sensor values, turns the cursor off and clears the screen.

Line 20 sets up both joystick ports for output—if you prefer to keep port 1 set for input, change the FORK 04016,256 to FORK 04016,240.

Line 30 starts a loop which steps through the numbers 0 to 15, multiplies them by 16 (because we're using port 2) and sends out the corresponding binary codes at each step.

The short delay at line 40 gives the analog reading time to settle down once a particular input has been selected.

Line 50 stores the chosen sensor's value in the array, and line 60 completes the loop. Lines 70 to 80 print out all 16 values, then start the process again.

Unfortunately this method is very slow. It can take a couple of seconds for a new reading to register and if you want to add any extra lines of code—to trigger a sine, for example—you will have to fit them into the main loop.

This will slow things down even further and makes the program needlessly complex. It's much more elegant to use the machine code routine in Program 11—which is also listed in source form as Program 11.

This is inherently faster. And because it is executed during the vertical blanking interval, it will not interrupt your Basic program without interfering with it in any way.

The biggest advantage though, is that it synchronises precisely with the TV frame counter, which also drives



switches within a single room – only one 5V line needs to go all the way back to the computer, which saves cost and complexity.

Since the switches are effectively in parallel rather than series, it's easy to see which one has been activated. You can tell instantly where the intruder attempted to gain entry and those faults very quickly.

If you want to really impress the neighbours, why not draw a house plan on screen, with all sensors marked in colour to indicate whether they are open or closed?

The other main application for this gadget is energy management. You could use sensors to monitor individual room temperatures or loop back lights that were (or needed to



Figure 51: A simple security system

be) switched on.

To measure temperature, use a thermistor whose resistance at room temperature is between 100k and 480k – type WA1867 is suitable.

Individual devices may vary by up to 20 per cent, so if you want accurate readings you will need to calibrate each one, using a conventional room thermometer.

Light levels can be measured using our friendly cadmium sulphide cell – type ORP12 works quite well. Figure 52 shows how you can wire these sensors into the system, using terminal blocks.

As for other uses, well, you could connect 96 keyboard switches to make



Figure 52: A temper-proof switch for use on others and switches

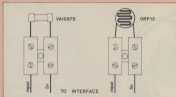


Figure 53: Temperature and light sensor units



Figure 54: Improved switching network

a complete signalling system (for a disabled person perhaps) and write the simple keypad described in part 5, this gadget will respond to more than one key at a time.

How about firing moisture sensors in the soil beside your favourite conservatory plants? A couple of stiff copper wires will do, though they will tend to corrode before long. Carbon rods reclaimed from old dry batteries are better and you can solder leads directly to the brass caps.

If you encase the rods in epoxy resin, leaving just the ends showing, they will make a rain or flood detector which returns 000 when it gets wet. Between 0 and 100 when it gets wet.

If you're content to use simple on/off devices, you could connect the PCB common line to pin 6 at port 3, in which case the sensors' status – '1' or '0' – will be returned at address 845.

There's no need to allow settling down time in this case, as a basic program will work quite well.

With suitable software and three interface boards you could use joystick pins 3, 6 and 8 simultaneously, giving 48 inputs per port!

The gadget can even be used in reverse, as an output device. Try connecting the common line through a 220 ohm resistor to S4 (joystick pin 7)

and take each output through a light-emitting diode to 5v (pin 8).

Numbers at the control pins will switch on one LED at a time, and there you have the basis for a wheel of fortune, roulette game or bargraph display.

■ **That should keep you busy until next time, when we'll be looking at sound-activated switches.**

PARTS REQUIRED

	Magpie codes
1 40E78E analog switch IC	GW42V
1 24-pin IC socket	SL308
3 8-way PC terminal block	PC388
1 8-way PC terminal block	PC730
1 3-way PC terminal block	PC737
1 Cable 'T' strip 31E	LP440

Approximate cost £3.80 with terminal blocks, £3.70 without.

A joystick extension lead is available from Tandy stores (code 226-1876) or from large computer shops, priced around £3.00.

All components, including the sensor devices mentioned in the text are available from:

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Printed circuit board (enter code 0876) available from:

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HELP is at hand for David Peris of Cardiff who has been captured by Iffrican's Sorcerer. In fact, things are so bad that after diving down the coal chute to meet up face to face with his younger self, David soon ceases to exist!

The key to the problem is given below for David and for many others like him who are baffled by what is actually a beautifully logical puzzle. It concerns the interaction of the past, present and future, and the consequences of influencing history.

As the whole answer is impossible to give in coded form below, let me just say this:

When you (as the older self) meet your younger self, you've got to ensure that your younger self will grow up so that one day he will be the older self standing just where you are and similarly meeting his younger self!

If you don't assist the younger self he will not eventually become the older self. And that's why you, as the older self, will suddenly cease to exist. Got it? You will if you go on to decode the clues below.

Can anyone help J.C. Smedley of Sheffield (Glitch Master for the second month) naming who wants to know how to find the correct combination to the jewel case obtained to the cellar

The question of existence

well in Lepis Philosophorum? The number found under the desk appears to be a red herring.

He also wonders if it is possible to get past the boiler which blocks the passage near the Troll's cave.

Eric Nolan from Dublin has multiple troubles. He cannot find the game from below ground in Zork I and although he has listened to the poem he is unable to get the pointer in Hitch-Hiker's Guide to the Galaxy. Look below for a clue to Zork.

The problem in RHGG is probably one of finding the right syntax. You simply need to TYPE "BRILLIG" ON KEYBOARD (replacing Brillig by the discovered word which is random from game to game). Don't forget the question marks though.

Eric has contributed this month's "For fun" tips below. Many thanks, Eric. I hope other readers will follow

By Brillig

will and send in their tips so that we can all get the most out of our adventures.

Scott Adams's Mystery Fun House has caused some head-scratching. Ken White suggests that adventurers might welcome advice on how to get the coin from the grating since the solution is rather devious.

Mark Powell from Lewes would like to know how to ride the merry-go-round and reach the catwalk in the same adventure. Answers below. He would also like help with Morden's Jewel. Has anyone got a complete solution to this one?

Both Ken and Mark have sent in some comprehensive tips for other games. Thanks to both of you.

Finally, a mention of an unusual service. Mrs Pat Wintarsley of 13 Hollington Way, Wigan WN6 6LS publishes Adventure Contact, a magazine that is aimed not at adventure players but at adventure writers.

The service caters for all authors whether novice or experienced. If you're interested, why not write to Pat at the above address?

CLUES CORNER

SORCERER

Coasting to exist in the coal bin room?
 MOIT ANISM OCEH TMH EYIG
 MOOR DETH ALSE HTOT TEOR EVEN LUW SHES WIRE
 HTO
 FLES PDEL OPMO CEBD NACA NALOG TEOR O

ZORK I

Can't unlock the grate?
 WIOLE EMOOR FTR COUM U
 EDAM EHTN HTI WMOH HSH NTA ROEH T

For fun:

THEH ERYT ONDI TIME HWEP RKE KATO TYRT
 THEE ENPE RASE YMK HTOE NEHW EDAM EHTN ER
 NROE AJDT YRT
 EFM KYTS URSH TESU DTYRT

ENCHANTER

For fun:

PLDH SHR CPMI HENA HT
 WAKR WTS OMD NWEV HTOT UDYV OLLD PHER UTM
 VDRE HTRA AM
 LUSP SDAC LUKE HTTS ACNE HT

MYSTERY FUN HOUSE

Want the coin from the grating?
 HCRN RBNQ MJOJK CYS NERT MUOW SHC
 HCRN RBNQ MJOJK CYS NERT MUOW SHC

Swamped by the merry-go-round?

PMUJ NERT PUKO OLLD QPOD ESRQ HOET PHEM DO

GLITCH OF THE MONTH

Sheffield man Joe Chastreury has found a beauty in Aristotle's Lepis Philosophorum. The aim of this adventure is to cure the king with a potion made up of water and the philosopher's stone.

He says that if you go straight to the king with GO CASTLE and WEST, the game responds with "The King drinks the potion and is cured" and the game is over. The strange thing is that you can do this without ever having found the water or the stone!

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LAST month we took a general look at the way that the Atari operating system handles data transfer operations via the Central Input/Output system. This time we'll take a closer look at how CIO works, and see a simple example of its use from machine code.

First though, how did you get on with the puzzle I left you with last time? If you remember, I gave you the following line to type in:

```
OPEN #1,0,"P"~POKE 838,
PEEK838:POKE 838,PEEK838!
```

You probably realized that everything the computer normally displays on the screen was sent to the printer instead... but why?

Well from last issue you know that IOCB zero - assigned to the screen editor - resides at location \$048 (\$02 decimal), which means that the POKEs to 838 and 839 changed the value of IOCB0 plus 8 and IOCB0 plus 7.

If you look at Figure 1 you will see that these locations define the screen editor's Put-Byte routine through which text is sent to the screen.

Since you also know that IOCB seven - which we OPENed to the printer - exists at \$288 (\$94), the PEEKs to 958 and 961 return the equivalent two locations for the printer transfer routines. Thus all we have done is to POKE the address of the printer's Put-Byte routine into the place where CIO expects to find the screen display Put-Byte address.

We'll look in the future at how to use CIO from Basic, but let's start off by seeing how to access it from machine code. Don't be put off if you don't know anything about machine code - we'll keep it as simple as possible. All you will need to know are a couple of 6802 operations.

We will be using the three main 6802 registers, known as A, X and Y,

Accessing CIO from machine code

which are really just the machine code equivalent of Basic variables.

These may be given values by using the commands LDA, LDY and LDY - short for Load A, Load X and Load Y, rather like the LIT command in Basic. They may be POKE'd back into memory with the store commands STA, STX and STY.

The other main command we shall use is the machine code version of GOSUB, known as JSR - which simply means Jump to Subroutine.

André Willey continues his series on the Atari's input/ output facilities

In order to make use of CIO for yourself you must follow a set of simple steps:

First decide on the IOCB you wish to use. We'll use number one in these examples.

Then set up the various bytes within that IOCB, dependent on which function you wish to use.

Next store the IOCB number times 16 in the X register and jump to the subroutine called CIOY to execute.

Finally, check the status of the operation before proceeding.

Program 1 is a pretty simple piece of machine code which opens channel

one to the printer, sends a small message and then closes it again.

Lines 180 to 360 are used to tell the computer what names we are going to use for the various locations involved. This is known as an equates table, because it equates the names we want to use with the real addresses in memory.

If you wanted to use a different channel number, simply change the address in line 180 according to Figure 2. Don't forget to adjust line 360 accordingly also.

Lines 430 to 480 set up IOCB one ready to open the channel to the printer. This is the direct equivalent of the Basic command:

```
OPEN #1,0,"P"
```

In fact you can easily see the similarity between the two versions of the same command. The OPEN in Basic translates to the LDA #0 on line 408, since 0 is the CIO code for Open.

The #1 in Basic is the channel number, which we have already defined in our equates table.

The second and third Basic parameters are always placed into ICAN1 and ICAN2, thus the values of 8 and 8 we stored there.

The final parameter in Basic is the filename - "P" - which is actually on line 170 in the machine code program. Since a single byte can only store a number between 0 and 255, and the address of the "P" filename is much greater than this, we have to use a special notation called low-high address storage.

This is actually very simple, and all it means is that we split the large number into two smaller byte-size numbers, in much the same way as we use tens and units to represent larger numbers as two smaller digits when counting with ordinary numbers.

For example, an address of \$1034

IOCB Zero	\$048	(002)
IOCB One	\$288	(948)
IOCB Two	\$390	(966)
IOCB Three	\$37E	(962)
IOCB Four	\$396	(966)
IOCB Five	\$39E	(972)
IOCB Six	\$3A0	(978)
IOCB Seven	\$3B0	(944)

Figure 2: IOCB start addresses

Address	Label	Bytes	Description
IOCB + 0	ICB0	1	Index into HATABS
IOCB + 1	ICB10	1	Device number (eg: D1, D2)
IOCB + 2	ICCOM	1	Command type (eg: OPEN, CLOSE)
IOCB + 3	ICSTA	1	Current Status of Device
IOCB + 4,5	ICBAUM	2	Buffer or Sleeps address.
IOCB + 6,7	ICPTLH	2	Address of Put-Byte routine (-7)
IOCB + 8,9	ICBLWH	2	Buffer data length (nonreturned)
IOCB + 10	ICAX1	1	Auxiliary byte 1
IOCB + 11	ICAX2	1	Auxiliary byte 2
IOCB + 12	ICAX3	1	Auxiliary byte 3
IOCB + 13	ICAX4	1	Auxiliary byte 4
IOCB + 14	ICAX5	1	Auxiliary byte 5
IOCB + 15	ICAX6	1	Auxiliary byte 6

Figure 1: IOCB structure

would be stored as \$32 in the high-byte address and \$04 in the low-byte address. These are often called the Most Significant Byte and the Least Significant Byte - MSB and LSB - but we'll stick to high and low for now.

All that needs to be done now is to load the X register with the channel number times 16, which is done on line 600. This may seem a little odd, but if you think it in hexadecimal for a moment all this means is that channel one would be \$10, two would be \$20, and so on up to \$70 for channel seven. Sometimes looking at a problem in the computer's terms makes it very much clearer.

Once the ICCB is thus prepared, you may jump to CIOV with the JBR command. Before returning to your code, CIO will set a special switch inside the 6502 chip itself.

If the function was completed correctly this will be positive, but if there was any error it will be set to negative. Thus to test if there has been an error during the I/O operation all you need to do is perform a BMI instruction straight after your JBR. This means "Branch if Minus", and only like an IF ... THEN GOTO command in Basic, jumping somewhere only if CIO has set up a minus code.

Should you be interested in the type of error, CIO also stores the error number in the Y register. In fact you could always check to see that the Y register contains a one - the code for no error - instead of testing for a minus.

Once the OPEN command has set up the system you may then send anything you like to it. We've chosen the single "HELLO THERE" message on line 610. Note the carriage return at the end of the text because the output command we'll be using keeps sending characters until it comes to an end-of-line character. AtASCII code 13 - otherwise known as the carriage return.

As before, we use the low-high format to store the address of the message, and set the ICCOM command byte to tell CIO what we want it to do with that text.

This time we want to output a line, which is command number 6. As the X register will not have been altered since the last time we set it, we can just call CIOV again, and follow it with the same error test we used earlier.

Finally, store the Close command (13) in ICCOM and call CIOV again.

Now all this may seem to be an awful lot of work to go through to do what Basic does in the single command LPRINT "HELLO THERE", but don't forget that there are many things that CIO is capable of that Basic

```

6000 (Example of the use of CIO to
6010 send "HELLO THERE" to the
printer.
6020 (By Andre Miller, Atari User Feb
'87
6030 ;
6040 (Set equates for CIO addresses
6050 ;
6060 CIO0 = 40150 (see I/OB one
6070 ;
6080 CIO1 = CIO0+8
6090 CIO2 = CIO0+1
6100 CIO3 = CIO0+2
6110 CIO4 = CIO0+3
6120 CIO5 = CIO0+4
6130 CIO6 = CIO0+5
6140 CIO7 = CIO0+6
6150 CIO8 = CIO0+7
6160 CIO9 = CIO0+8
6170 CIO10 = CIO0+9
6180 CIO11 = CIO0+10
6190 CIO12 = CIO0+11
6200 CIO13 = CIO0+12
6210 CIO14 = CIO0+13
6220 CIO15 = CIO0+14
6230 CIO16 = CIO0+15
6240 ;
6250 CIOV = 40156 (CIO Vector
400000
6260 CR = 13 (Carriage Return
character
6270 ;
6280 (Open channel zero to printer
6290 ;
6300 LDA #0 (OPEN command
6310 STA CIO0
6320 LDA #010000 (Address
400000 low byte
6330 STA CIO1
6340 LDA #010010 (Address
400000 high byte
6350 STA CIO2
6360 LDA #0 (Set output mode
6370 STA CIO3
6380 LDA #0 (Set value
6390 STA CIO4
6400 LDA #6 (Set 6 for
channel one
6410 JBR CIO8 (Jump to CIO
subroutine
6420 BMI ERROR (Test for an
error
6430 ; (If so, jump to
ERROR
6440 ;
6450 ;
6460 LDA #0 (PRINT line
command
6470 STA CIO5
6480 LDA #0200000000 (Address of
message low byte
6490 STA CIO6
6500 LDA #02000010 (Address of
message high byte
6510 STA CIO7
6520 JBR CIO8 (Jump to CIO
subroutine
6530 BMI ERROR (Test for an
error
6540 ; (If so, jump to
ERROR
6550 ;
6560 (Close channel one again
6570 ;
6580 LDA #0 (CLOSE command
6590 STA CIO9
6600 JBR CIOV (Jump to CIO
subroutine
6610 BMI ERROR (Test for an
error
6620 ; (If so, jump to
ERROR
6630 ;
6640 (Continue your
program here...
6650 ;
6660 LDA #0 (Fillspace for
printer
6670 STA CIO10
6680 (Fillspace for
printer
6690 ;
6700 (Set message "HELLO THERE" in
CIOV to print
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```

Program 1

does not fully support. Next time you type LPRINT just think of all the work Basic has to go through to perform that one simple task for you!

► Next month we'll be providing a full list of these other commands, and how each works. In the meantime,

consider the results of the following:

```
OPEN #6,12="6,T,"0"
```

(What: #6CARI is set to 6 for read data, and 12 for write data, what might 0 mean? And what do you think the - 0 is doing? See what happens without it.)

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MACHINE CODE TO STRINGS from HOWARD MORLAN

This takes machine code routines from memory and turns them into these long strings without you having to press the control key once. The normal way for executing machine code is to use:

X=LOAD(ROM)

With machine code stored in a string such as P1, you use:

X=USR(AORP1)

Using machine code strings means that you don't have to wait for the data to be poked in and the Atari will automatically store the machine code in free memory.

The machine code can be up to 170 bytes long. You can correct longer strings by breaking them up into sections and later reassembling them using:

POKE(P1)+1=00

where 00 is the second part of the routine.

Once the string is created the program will list it to disc under the chosen filename. To use cassette instead of disc, you should change line 4 to:

```
4 *POKE$A,124,"CHR$(P1)+0  
:CHR$(P1)+1,0-0.5*POK.0  
:POK 045,10.000
```

Line Breakdown

- 1 Inputs the routine's name, start

- address and length of the string.
2 Inputs the file name and reads the machine code into the string.
3 Creates the small program containing the string.
4 Saves the string to disc or tape.
5 Deletes the programmer.

WORMY by M.J. TRENLE

In this small game you control a worm which works its way around the screen, eating the white diamond shaped flowers. If you go back on yourself, you will die.

Line breakdown

- 10 Clears the screen and initialises variables.
20 Draws the flower and updates the score.
30 Draws the worm, reads the joystick and tests for death.
40 Eats an old flower.
50 Prints the score at the end of the game and restarts.

```
10 SCREEN 1:POKE 256,100:POKE 257,10  
:POKE 258,10000:POKE 259,10000:POKE 260,  
10000:POKE 261,75:POKE 262,75:POKE 263,100  
:POKE 264,75:POKE 265,100  
20 SCREEN 1:POKE 256,100:POKE 257,10000  
:POKE 258,100:POKE 259,10000:POKE 260,10000  
:POKE 261,75:POKE 262,75:POKE 263,100  
:POKE 264,75:POKE 265,100:POKE 266,100  
:POKE 267,10  
30 SCREEN 1:POKE 256,100:POKE 257,100  
:POKE 258,100:POKE 259,100:POKE 260,100  
:POKE 261,75:POKE 262,75:POKE 263,100  
:POKE 264,75:POKE 265,100  
40 SCREEN 1:POKE 256,100:POKE 257,100  
:POKE 258,100:POKE 259,100:POKE 260,100  
:POKE 261,75:POKE 262,75:POKE 263,100  
:POKE 264,75:POKE 265,100  
50 SCREEN 1:POKE 256,100:POKE 257,100  
:POKE 258,100:POKE 259,100:POKE 260,100  
:POKE 261,75:POKE 262,75:POKE 263,100  
:POKE 264,75:POKE 265,100
```



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BIG TEXT from MARK GODFREY
COPYING large characters on a graphics 8 screen is normally impossible, but this routine shows you how to do it. The program reads the character's definition from the character table and then POKs it directly to the screen, moving it up as necessary.

Line Breakdown

- 10 Gets the desired string from the user.
20 Gets the desired size and begins to read the character from the table.
30 Checks to see if the right-hand side of the screen has been reached.
40 Finds the location of the screen.
50 Prints the characters on to the screen one line at a time.



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Trailing behind

Program: Trailblazer
Price: £8.99 (unrated),
£14.99 (rated)
Supplier: Gemini Games,
50 Dover Street, Shaftesbury
ST 1 1DT,
Tel: 01247 769623

If you want an action packed game which doesn't involve killing little green men or Russians, this may be for you.

The object is to keep a ball on a path of coloured squares. There are holes in the path which you must steer clear of by using the ball's ability to jump and accelerate.

Different coloured squares have a variety of effects. Yellow squares, for instance, will cause you to bounce, and purple squares reverse the left and right control.

The squares are strati-

gically placed to be a help in some places and a hindrance in others.

There are 15 courses in all. In the standard game you must complete each course in the fastest time possible. Bonuses are awarded depending on the time remaining at the end of each round.

There is a 'trail' option available in which you can select any three courses to race on, with a 99 second time limit to complete each course.

A two player option is also included. Here the screen is split into two, with player one taking the top half and player two or the computer taking the bottom.

You can bump your opponent off the course as both balls are shown on each half if they are close together.

At the end of a game the bottom half of the screen is



given over to a high score display.

The game has been converted from the Commodore 64 and frankly it shows. The Reset key isn't trapped and the Select, Option and Start facilities are done with the joystick or keyboard.

There is a keyboard option and you can have either two joysticks, or one player on joystick and one player on keys. There is no pause game facility.

What music there is, is played only between games

and is bland, repetitive and tuneless.

The price will prevent Trailblazer becoming a big hit. If it were budget priced it would be worth it, but at just under £10 it pales in comparison with Rescue or Postatus or Star Raiders II.

Rob Anthony

Sound	0
Graphics	0
Playability	0
Value for money	0
Overall	0

Hot pursuit

Program: Trivial Pursuit
Price: £14.99 (unrated),
£19.99 (rated)
Supplier: Demarc, 204
Wexple Road, London
SW20 0PL,
Tel: 01-847 9204

Q&A games come and go but Trivial Pursuit looks like being here for a long time. Like Monopoly and Scrabble, it's going to be one of those games that is played time after time.

This is not just a straight proposition. While remaining faithful to the original, Demarc has used the computer to bring in new features such as sound, making Trivial Pursuit even more fun to play.

The board resembles a spiked wheel around which are spaced differently coloured squares, each representing a particular subject or a 'throw again' option. The subjects are ar-

& literature, science, geography, history, entertainment and sport.

Spaced around the circumference are six wedges, each of which represents one of the subjects.

The aim is to race around the board in any direction, gathering points by answering a question every time you land on a square.

Your turn ends when you answer incorrectly. But the main objective is to collect all of the six wedges, first by landing on them and then correctly answering a question in that particular category.

When all the wedges have been gathered, the player heads for the wheel's hub and once there must correctly answer a final question on a category chosen jointly by the other players to win the game.

The screen displays the board, your tokens and



status, list of categories and a message area, plus a funny looking character called TP who will hurl a dart at the board to determine the number of squares the player may move.

Selection of the square is by joystick. When the square has been chosen, the screen changes to show TP's living room and the question appears in a speech bubble.

Some questions involve music or pictures in which case TP will switch on his radio or dim the lights and

pull down a projection screen.

A learning curve counts down the time allowed for your answer. All you have to do is to speak it aloud - there's no typing or selection from multiple answers.

More than 3,000 questions are supplied with the program.

Bob Chappell

Sound	0
Graphics	0
Playability	10
Value for money	10
Overall	10

Moon eclipsed

Program: Moonmist
Price: £24.99 (MSRP) if not on
 BT offer
Supplier: Infocom, and
 Activision, 21 Pond Street,
 Newport, London NW9
 9PW
 Tel: 01-427 1507

MOON is real! Dress me in mourning! Something has happened that I would not have dreamed possible. I have discovered an Infocom adventure that fails to satisfy.

The cause of my despair-ency is the ease with which I completed Moonmist. I started the adventure one afternoon and - shock, horror - completed it by tea-time.

The plot is very English and concerns funny goings-on at Treasillian castle.

Apparently a guest, the White Lady, has started some mighty perturbations and worse, someone has attempted to kill one of the guests.

You play a detective invited there by your female friend, Tamara Lynd. The game commences as you pull up outside the castle gates in your sports car.

Once inside and having met all the guests, you can explore the castle or change for dinner.

The program has a number of nice touches. For example, it lets you choose your own name, including a title. I couldn't resist a unique opportunity to solve the case as Lord Dimwit Fitzhead.

If you try to arrest somebody too early in the game, you'll be told, "Bad form. Wait until after dinner".

Moonmist is quite enjoyable judged on its own merits, but suffers when compared to practically every other Infocom adventure.

Because of their depth and originality these normally take most players weeks, sometimes months,



to unravel and complete. Moonmist, I'm sorry to say, is the glaring exception.

To be scrupulously fair, Moonmist is specifically aimed at adult gamers new to adventures and has deliberately been made simpler than the usual run of Infocom products. As an Infocom veteran it was only natural that I should find Moonmist easy meat.

Then again, Westinghouse (an earlier release) was also a beginner's adventure but for my money offered yards more variety, entertainment, humour and challenge. It also had very little padding, symptoms

of which are easily evident in Moonmist.

Having said that, Moonmist is still a better adventure than many from other companies. It is also as handsomely packaged, playable and as bug-free as all Infocom adventures.

If you're new to adventures then by all means give it a try. If you're an old hand, then don't get your expectations too high. Perhaps I did.

Rating

Presentation	FB
Atmosphere	8
Production factor	8
Value for money	7
Overall	7

Worth an airing

Program: Up Up & Away
Price: £2.99
Supplier: Bug-A-Mole, Victory
 House, Leicester Place,
 London WC2H 7NS
 Tel: 01-426 6600

THIS game first saw the light of day more than two years ago. It was quite popular then, and although it looks dated compared with current products, it is still worth playing.

If you don't recognise the title as being from an old Frank Field song you may not have realised that it's all about hot air ballooning.

No, this isn't a flight simulator, but more of an arcade game.

The idea is to pilot a pink balloon over and past a number of hazards. You may have thought that bal-

looning was a safe and peaceful pastime - not so in this game.

The wind is always westerly so you get blows from left to right across the screen, the background scrolling smoothly away behind the balloon.

As well as being able to move the balloon from left to right you can also go up by igniting the gas or buying hot sandbags or down by releasing hot air.

There are refuelling points along the way where you can take on more gas and sand.

The first hazard you'll encounter is a boy throwing stones. If one hits the balloon it will pop and you'll plummet to earth.

More perils lie ahead. White clouds turn black and lightning hits the sky,



tearing your balloon to ribbons if a flash strikes it.

Rites need to be dodged and a passing eagle tries to drop something unpleasant on your balloon.

A whirling windmill will suck your craft down if you're not careful and a lunatic aerobatic display flyer may cause some discomfort.

There are four skill levels and a practice mode. The graphics are fairly simple by

today's standards and, although there's no music, there are a few sound effects.

Not bad at all, but I would have thought that it would have been priced a fraction lower given its age.

Bob Chappell

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

Mono moments

Program: Molecule Man
Price: £7.99
Developer: Mastertronic, 2
Paul Street, London EC2A
4JH
Tel: 01-277 6660

HERE you, the Molecule Man, looking not unlike a Corona bubble having failed its fiscal, are lost in the middle of a 3D maze.

Your goal is to escape via the teleporter, which can be found somewhere within the 256 rooms. However in order to use the teleporter you must collect 16 circuits from around the maze.

At the off, the clock ticks the seconds by and radiation starts gnawing away at you.

Protective pills must be found quickly, or you'll be an so-bubble inside a minute. They can be bought from dispensers found along the way, using money

conveniently lying around on the floor, though often hidden by the blocks of the maze.

Taking the money, you must then locate a dispenser and buy protection. Your protective units increase by 20 for each coin used, up to a maximum of 95.

After you have obtained 90 units the dispenser will still take your money, but so further protection is bought.

Bombs can also be bought from similar dispensers and used to blast through some parts of the maze that block your way, but not all.

If you are low on cash you will have to decide whether to spend on explosives or an extra lease of life. Holdings of pills, bombs, coins, circuits and time remaining are shown at the bottom of the screen.

The graphics are nicely done, but the game does



lose out for not using colour, being drawn in white on a black background. There is a large blank border, meaning that a considerable proportion of the screen remains unused, which was again, a slight annoyance.

The numbers and positions of any or all of the graphic characters within the game are redefinable, including your starting position. Although setting the maze is easy enough, if a little long-winded, it is a worthwhile extra.

I do feel the game could be improved by the use of colour, better use of sound and a more consistent pace to the play. Even so, Molecule Man is still very enjoyable and at under £2, better than many available at five times that price.

Mark Reynolds

Sound	5
Graphics	7
Playability	8
Value for money	9
Overall	8

Logic unclear

Program: Crystal Raider
Price: £1.99
Developer: Mastertronic, 2
Paul Street, London EC2A
4JH
Tel: 01-277 6660

The card insert says this is not an arcade adventure, but a set of logic problems. Well they could have fooled me.

To my mind Crystal Raider is basically a platform game in which you need to collect crystals which give you extra lives.

I think anyone who buys this expecting a set of logic problems may well feel disappointed, although the six screen shots on the cards faithfully portray the game style.

I really can't see why Mastertronic feels the need to imply Crystal Raider is something it isn't for the game is quite able to stand

on its own merits.

As platform games go this is a tricky one and you will have to plan your route through the screens carefully, and time your jumps well.

Movements are left, right and jump, the latter being maintained as long as the fire button is held down or until you hit a ceiling.

Throughout the jump your Raider (who more closely resembles a porly naffie than the macho Indiana Jones character on the cassette cover) can be moved left or right, whether moving upwards or downwards, and indeed this extra coordination is necessary to get through many of the screens.

You can select day or night play and opt for solo or duo roles.

The night game is very tricky, as apart from the crystals and naffies, only a



small adjacent area is visible, the rest of the screen being at black.

Selecting dual play, one player controls left and right movement, the other times the jumps, offering an opportunity for ending many a long standing friendship.

The graphics are adequate, though repetitive, with little variation in the rooms apart from layout.

Perhaps recognizing this, Mastertronic changes the rooms' background colour each time the Raider expires

through lack of oxygen or contact with a nasty) and for each new room.

On the whole this is a fair variation on the platform theme. If I had paid £70 for Crystal Raider I may have been disappointed, but at £1.99 this is good value for the platform fans.

Mark Reynolds

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

Quality adventure

Program: Robi Hansen
Price: £14.95 (incl.)
Publisher: Robico Software, 2
 Fairview Close, Llanwrda,
 Gwent, NP23 5DQ
Box:
 Tel: 0447 207064

GENERAL: Garanto is threatening to subvert the world if we don't give in to his demands. And that's why I'm standing at this deserted railway station, awaiting further instructions.

Robi Hansen's the name, and I guess you could call me a special agent.

I'm a tough, no-nonsense detective with a gritty determination and nerves of steel (but I just hate spiders!).

I've walked around a few text adventures in my time, including the classic type which is what this is, so you could say I know what I'm talking about.

And what I'm talking about is quality with a capital Q which is what this one has in spades.

Sure, there's plenty of footers, the parser's ace,

the response time is fast and the puzzles are neat — but that don't necessarily make it the best's knees in my book.

where it brings home the lesson is in the quantity, detail and atmosphere of the descriptions. No threebars and-leaves from Robico — what they give is nothing less than fulsome and relevant prose coupled with a slick smattering of humour.

So there I was at the station. Being Robi Hansen, my first thought was to peep around outside the entrance to see if I'd been followed. I had.

A suspicious character dodged behind a parked car, and then somewhere above, a redwood boke.

In the time it took to look up, there was the crack of gunfire and a bullet ripped through my chest, hurling me to the floor.

Some you win, some you lose. I restarted and this time began exploring the station. I found a tape recorder which told me to get my tail over to the inn in



the next village where I would be contacted further about my mission, which was to assassinate Garanto.

The recorder self-destructed — the Chief thinks of everything. My tail was hanging in at the time. This was not turning out to be my lucky day.

Once more into the breach. I just had to find some way out of the station. A goods train passing under the bridge offered distinct possibilities and apart from a fracas with the guard, I had no more trouble until I reached the village outskirts.

There was plenty to explore here and it seemed my task had barely begun.

One final interesting point, I've never before been sent on an assignment where one of the ways you can get yourself killed is by missing yourself to death!

Robico promises two more Robi Hansen adventures in the future. They'd better hurry up or I might just have to visit them with a small helping of knuckle pie.

This is one reviewer of an adventure, so good that Level 9 had better hold tight to its laurels. Here's looking at you, kid.

Bob Chappell

Presentation	5
Atmosphere	5
Playability	5
Value for money	5
Overall	5

Kamikaze caverns

Program: Caverns of Tribes
Price: £3.99
Publisher: Fighting Mag-
 ington House, Upper St
 Martin's Lane, London
 WC2E 8RN
Box:
 Tel: 01-279 0760

THE object of this game is to refuel a whole series of underground mining installations using supplies obtained from surface supply stations.

However this task is not as easy as it first appears, since each mine is protected by vicious defenses which include falling water droplets, saw-blade spinners and fireballs.

Further difficulties are

placed in your path is that your ship has limited fuel which must be replenished on the surface.

Your manoeuvring has to be very precise since being a mere one pixel out can cause the destruction of your ship.

You can carry up to five supply loads and each surface supply station holds only this number. Each mine needs a load, indicating this by a flashing beacon. To either leave or collect supplies, you must land on the yellow landing strip that forms part of every mine and supply station.

A strange sort of pseudo-gravity affects your steering, causing swerveiness creases



against the sides of the caverns. On later levels swerve gravity appears, making manoeuvring even more difficult.

Fortunately you are given seven ships to play with, so it is very easy to lose them.

The graphics are well drawn, but when moving at speed through the caverns the scrolling is slow and

jerky.

An interesting budget game let down by overly difficult play.

Stephen Foster

Sound	2
Graphics	2
Playability	5
Value for money	2
Overall	5

NEWSLETTER

For sale

PEOPLE at the Ford Motor Company have discovered a new "showroom" for selling their cars - MicroLink.

Bob Hancock, a process engineer at Ford's Dagenham plant, used MicroLink to advertise his own V registration plate when he recently moved to a job which qualified him for a company car.

He knows all about the system's speed and efficiency through his regular telex and tele-message contacts with other engineers in the US and Europe.

And Bob is also familiar with MicroLink's ability to reach a wide audience, having previously used the bulletin board to successfully advertise a music centre and a camera.

After swiftly disposing of the £3,700 diamond white Fiesta XR2, Bob said: "MicroLink is the best system of its kind without a doubt".

CHURCH of Scotland minister Martin McKean's days are spent in the quiet old market town of Cumnock in the farming county of Ayrshire, an area which hasn't seen much excitement since the days of the Covenanters.

But in the evenings the town is his playground thanks to MicroLink.

"Computing has been my hobby and relaxation since school days", he said. "MicroLink lets me see what's going on elsewhere in the field of computer communications".

FOR five years the Shetland Smokehouse on the island of Skelbo has been supplying salmon, Shetland lamb, silver eel - and of course kippers - to a mainly local market.

But a recent major expansion has boosted production, which means their quantity as well as quality now to meet demand from the mainland.

Managing director David

Computers, comms and the clergy

Martin has already had a good browse around the giant American database Minematics which was coupled to the MicroLink system recently.

"I was disappointed at not finding a section on religion - it seemed to cover just about everything else", he said.

"I'd like to see a section on MicroLink for clergy-

men like myself to share news, views and ideas for widows - and to discuss our shared interests in computers and communications.

"I am already communicating regularly with a Roman Catholic priest in Manchester via MicroLink and I'd be delighted to hear from other clergy on MAG 30319".

TELEX FOR KIPPERS

Hammond said: "As an expanding business entering new markets we have to be competitive.

"In business you have to get things done in black and white or risk making mistakes - the telephone just won't do.

"Letters take about five days and it's extremely di-

flcult to get a dedicated telex line installed in an isolated place like Skelbo.

"But with MicroLink we have immediate access to telex links with our clients and, as a bonus, an entry to all kinds of fascinating databases which could be useful for marketing purposes".

Shop electronic

MICROLINK has started yet another great consumer service for home computer owners.

Shop Window is Britain's latest, and could become the biggest, computerised shopping service - a convenient 24 hours a day, seven days a week electronic emporium.

It provides the opportunity to do your shopping without leaving the comfort of your fireside.

And while other tele-shopping services restrict themselves to a limited range of products like pro-

cessors or household goods, there are no such constraints on Shop Window.

Although its initial catalogue of companies is mainly concerned with computer products it will soon to eventually include all manner of goods and services on a nationwide basis.

There are even classified "exchange and meet" type sections for bargain hunters.

And its motto from day one has been: "Top brands at lowest-ever prices".

On the road

As RAC services manager for Yorkshire, Dennis Dewey covers the organisation's biggest geographical area - North Humberside, South and West and North Yorks and Cleveland.

His department is responsible for road patrol, directional and warning signs, motorway service centres, the RAC base garage and emergency control room.

Naturally he can use all the help he can get, which is where MicroLink comes in. Dewey is using the

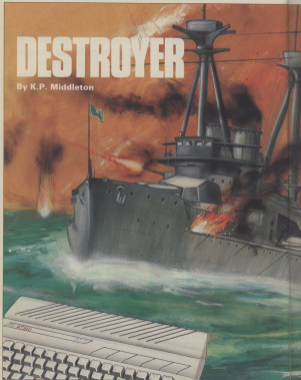
system's electronic mail facility to tell Yorkshire folk all about the RAC's famous road sign service for special events.

These are the familiar blue-and-white pointers to the best routes for getting to and from everything, from the local church fete to the Lonsdale RAC Rally.

Dewey wants everyone to know that signposting an event only costs an average £75 - even though it involves expert input from the RAC professionals, police and relevant local authority.

DESTROYER

By K.P. Middleton



DUST off your admiral's cap and uniform for a sea battle against your Atari. Destroyer puts you in command of a fleet of war ships which must be protected while you try to destroy the computer's craft.

The game starts by asking you how many ships should be in each fleet and then battle commences on two grids set side by side on the screen.

The squares where you have fired shots are clearly shown on the computer's grid while the positions of your ships are shown on your own.

You cannot see where the computer's ships are - and it cannot see yours. At least that's what it claims. You should check the listing carefully to make sure that your computer isn't cheating!

The Atari gives itself one more ship than you, but to make up for this you have a special salvo of missiles which

destroys everything on the target square and the eight squares surrounding it.

The battle continues until one side has destroyed all the ships in the opposing fleet.

Each section of the program is well documented with REM statements so you can follow the flow with ease. See the accompanying chart for the program breakdown.

Once you have typed in the game, don't forget to save a copy on disk or tape before you run it.

And if you have any problems typing it in, don't forget to use our Get It Right! checklist program (which can be found in the August 1985 issue of Atari User).

Alternately you can download Destroyer from Mindlink, where all our monthly games and programs can be found.

Line breakdown

1-38	Initializes the program and sets up the variables.
38-60	The main loop which calls the computer shots and player shots routines.
60-205	The computer's shot routine.
205-640	The player's shot routine.
640-678	Fires the special salvo of missiles.
678-725	Calculates random positions for the computer's ships.
725-875	Gets the player's ships' positions.
875-880	Sets up the main screen.
880-1050	Shows the computer's ships when it wins.
1050-1130	Plays the computer's winning tune.
1130-1225	Offers you another game when you win.
1225-1310	Plays the player's winning tune.
1310-2090	Displays the instructions.
2100-2760	Redefines the character set.

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1 REM *****
2 REM * BATTERIES *
3 REM *   "   "   "
4 REM * K.P. Modulator *
5 REM *   "   "   "
6 REM * OTHER DATA *
7 REM *   "   "   "
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This is one of hundreds of programs now available FREE for downloading on **MicroLink**

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A

ASCII: Stands for American Standard Code for Information Interchange. It is a way of representing letters and digits inside the computer. Atari's own brand of ASCII for the 8 bit range is called Atari ASCII or ATASCII.

ANIRC: The name of the 8 bit Atari graphics chip which generates display list interrupts.

Assembler: A program which translates assembly language instructions into machine code.

B

Bank switching: The method used on the 800XL and 1000XL to switch in and out various banks of memory so that the CPU can have access to more memory than it would normally be able to handle.

Basic: Beginners All Purpose Symbolic Instruction Code is the computer language which comes with your Atari. It is one of the easiest to learn.

Bit: Another name for a binary digit. One digit in binary can hold either a one or a zero.

Bug: A small error in a program which causes it to crash or work incorrectly.

Byte: Made up of eight bits.

C

Cassette: Stores programs and data from your Atari. It is far slower than a disc.

Chip: An integrated circuit which can hold information or control some of the operation of your computer.

Compiler: Turns a program written in a language such as Basic into machine code.

CPU: The Central Processing Unit is the main chip inside of a computer which is responsible for its computing capabilities such as mathematics and decision making.

Crash: Your Atari may crash when it encounters a bug in a program. A crash might fill the screen with gibberish or freeze the keyboard. Crashes can always be cured by turning the computer off and then on again.

Cursor: The small square on the screen which you move using the arrow keys.

D

Data: Information that the computer operates on.

Debug: To remove the bugs from a program.

DUI: Display List Interrupts enable you to design the way that your Atari builds its display screen. Using DUIs it is possible to have up to 256 colours

KNOW YOUR NYBBLES . . .

All an aid to those of you who are new to computing or Atari Users, we have collected together explanations of some of the terms which we often use in the magazine.

on the screen at once and to mix screen resolutions.

DOS: The computer's Disc Operating System which allows the use of commands to manipulate data stored on the disc.

Download: When you download a program you receive that program via a cable or telephone line from another computer.

E

Eight bit: When we refer to the older Ataris, such as the 800XL, as 8 bit computers we mean that the largest amount of memory that they can move in one operation is eight bits, or one byte.

F

Floppy disc: A flat piece of magnetic media on which programs and data can be stored using a disc drive. Discs are far faster than cassettes and can hold more information.

G

Get It Right! When you type in a listing from the pages of Atari User, you will find a strange looking table of numbers next to the listing. This table is produced by our checksum program Get It Right!. A checksum is the sum of all the characters in a line of program.

When you have finished typing in a listing you pass it through Get It Right and it produces a checksum table. You then check each entry in the table against the one in the magazine, and if it matches, you have typed that line in correctly.

Any difference in the sums and the line is incorrect and must be retyped. Get It Right! was last published in the August 1988 issue of Atari User.

Graphics mode: A method of describing how a screen is displayed. A change in graphics mode might affect character size, the resolution or the number of colours available.

GTIA: The Graphics Television Interface Adapter is a chip which controls graphic modes 8, 10 and 11 and Player Missile Graphics.

H

Hard disc: A sealed clay drive which is free from dust and is far faster and can hold much more information than a floppy disc.

Hex: Short for hexadecimal which refers to numbers in base 16.

I

I/O: An abbreviation for Input/Output which refers to the exchange of information between the computer and its peripherals.

K

Kilobyte: Often written as k, a kilobyte is 1024 bytes of memory.

L

Language: Computers can be programmed in a variety of languages including Basic, Pascal, Forts and machine code.

M

Machine code: The computer's natural language and the one that it runs fastest.

Megabyte: A megabyte is made up of 1024k or 1,048,576 bytes of memory.

Modem: Short for MOdulator/DEModulator. A modem is a small box which allows you to attach your Atari to the phone line to communicate with distant information services such as MicroLink and bulletin boards.

Monitor: A monitor is a high quality display screen for your Atari.

N

Nibble: A nibble is made up of four bits or half a byte.

P

Parallel: A method of transferring

data between a computer and a peripheral in which data is sent along several wires so that entire bytes can be transmitted together rather than one bit at a time.

Peripheral: An external device which plugs into the computer. Peripherals include disc drives, printers and modems.

PA: The chip responsible for control of joysticks and bank switching on XLS and XLSx.

Pixel: One dot on the screen.

Player/Missile Graphics: Atari's own version of sprites — special graphics shapes which can be moved around the screen quickly and smoothly.

POKEY: This chip handles serial input and output and the sound channels.

Port: A name for the socket into which you plug peripherals.

Printer: A peripheral which prints out program listings and documents on to paper.

Program: A set of instructions for the Atari to perform.

R

Return-Key mode: Automates the Atari's program editor so that you

don't have to press Return at the end of every line.

Read-Only Memory: Is the type of memory which stores the programs which allow your Atari to function. When you enter a Basic line or press a cursor key, programs interpret what you are doing and control the Atari.

These are the programs which are stored in rom. Although you can look at the contents of rom, you cannot alter it — hence its name. The information stored in rom is permanent and is not lost when the computer's power is turned off.

RAM: Random Access Memory is the part of your Atari's memory which stores your programs and their data. You can not only look at the contents of this memory, but alter them as well.

RAM is called random access because you can look anywhere in ram and don't have to start at the beginning. The contents of ram are lost when you turn off your Atari.

Resolution: A method of describing the number of pixels on the screen. A resolution of 320 by 200 means a screen made up of 320 pixels horizontally and 200 pixels vertically.

80000: The 16 bit CPU inside the ST models.

65000: The 8 bit CPU which controls the older Atari models such as the 800XL and 130XE.

16 bit: We often refer to the STs as being 16 bit computers. This means that the largest amount of memory that they can move in one operation is 16 bits, or two bytes.

S

Serial: A method of communication between the computer and a peripheral in which bits are sent one at a time down a wire.

Statement: A single computer instruction.

T

Touch tablet: Also called a graphics tablet, this is a device which allows you to input information, such as sketches, into drawing programs.

U

Upload: When you upload text or a program, you send that text or program via a cable or telephone line to another computer.



STOR
SOFTWARE



ATARI

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All disks have anti-static coating, are coated 100% prior to use and guaranteed for life. **5 1/4" 5 1/4" DISK** disks are manufactured to double density on any single sided disk from any ATARI Commodore, Thomson, etc. brand. Double sided disks supplied with 5 1/4" double density.

	10	25	50	100	16 in Plastic
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5 1/4" 5 1/4" 5 1/4"	N/A	£15.00	£24.00	£42.00	N/A
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CENTRONICS INTERFACE



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If these two numbers are both 255, then File Menu II opens the file and calls Dos vector \$079 using the LDR function, and then disables Basic.

If the two numbers are anything but 255 or 256, then File Menu II assumes that the file has been stored in listed form. To get around problems this may cause, the program uses Return Key mode to erase itself before entering and running the file.

Type in Program I and save it. If you have any problems with the characters in lines 2226, 2070, 2029 and 2026, leave these lines out and save Program II's disc. Type NEW and type in Program II. Save and then RUN it, it will create a file called LINES.LST.

Type NEW and load Program I. Now type:

ENTER "O LINES LST"

and save the complete program to disc as MENU.MAS.

Now type in Program II which creates an AUTORUN.DYS file which will automatically run MENU.MAS when the disc is loaded.

If you have any problems when typing in File Menu II, don't forget that all our listings can be checked using Get It Right, or downloaded from MicroLink.

MARK COCKER presents a versatile utility that will banish all those long loading commands

Program 1

```

00 1000 476
00 1000 1040 01040111,01107 4760,10
0070 07 1000 100
00 00 007007 00 007007 00 007007
00 0011,0070007 1000 10
00 00 002020 00 00 00000000 00,0070 10
00 000020 07 10070000 000000
00 0000 000,000000 000000 00,0,0 70:
00 00000000
00 0000 000,00 70 0010 0000 100000

```

MENU.MAS

```

00 1000 100
00 100110000000000000 00 10 000000
000000 0
00 001100000000000000 00 10 000000
000000 0
00 000000 1,0017 10000 000 10 0000
0000000000000000 100
000 000 107 10000 1000 0,0017
1000000 00000000000000000000
00000000000000000000 100
000 000 100 00000 000 0000 001,0000
1000000 000 00000000000000000000
00 00000000 1,0017 10000 000 0000
00 1000 000 000 0000000000000000
00 00000000000000000000 100
00 00000000 100 1000 000 00000000
00 00000000000000000000 100
00 00000000 00 0000000000000000
00 00000000 00 0000000000000000
00 00 00000000 00 00000000000000
00 00000000000000000000 100
00 00 00000000 0000000000000000
00 00 00000000000000000000 100
00 00 00000000000000000000 100
00 00 00000000000000000000 100
00 00 00000000000000000000 100
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```


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At PAGE 6 Magazine we recently had a readers survey. Here's what some of our existing readers said.

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"I like the magazine because it is so interesting and exciting!"

"I like the magazine because it is so interesting and exciting!"

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"I love the layout and the way the magazine is put together."

"I like the magazine because it is so interesting and exciting!"

"I like the magazine because it is so interesting and exciting!"

"The magazine is great!"

"The magazine is great!"

"The magazine is great!"

"The magazine is great!"

"The magazine is great!"

"I like the magazine!"

"I like the magazine!"

"I like the magazine!"

"I like the magazine!"

"I like the magazine!"

"The magazine is great!"

"The magazine is great!"

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"The magazine is great!"

"The magazine is great!"

"The magazine is great!"

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PAGE 6 - COMPLEMENTING AND EXPANDING THE WORLD OF ATARI

Typing tutorial

ONE thing we get asked about time and time again is how to type in some of the special graphics characters in our listings. Here is a full list of ALL the special characters, along with their ASCII codes, and how to type them in.

Control and Shift, where indicated, should be held down as you press the key indicated. For example, Control-equals would be entered by holding down the Control button and pressing the equals key.

Where INV is indicated before a key sequence you should hit the inverse video key before pressing the keys. This is the Atari-Logo key on older machines and the half-blank/half-white key on the lower right of the XL or XE keyboard. Don't forget to press the inverse key again after you've typed your inverse characters in order to set it back to normal again.

Where we have indicated "Esc ..." you should press the Escape (or Esc) key before pressing the key combination. For example, Esc...Control-equals would mean press the Esc button, then hold down Control and press the equals key.

Don't forget that you will sometimes need to type in a line that is slightly longer than the normal three line maximum. To do this, simply type MORE END before you start entering your program in order to reset the margin to the very edge of the screen.

You can also use abbreviations with many commands to save space, usually taking the form of a couple of letters followed by a fullstop.

A guide to correctly typing in the special graphics characters in Atari User listings

ASCII code

Description

8		Control-scrub
9		Control-A
10		Control-B
11		Control-C
12		Control-D
13		Control-E
14		Control-F
15		Control-G
16		Control-H
17		Control-I
18		Control-J
19		Control-K
20		Control-L
21		Control-M

22		Control-N
23		Control-O
24		Control-P
25		Control-Q
26		Control-R
27		Control-S
28		Control-T
29		Control-U
30		Control-V
31		Control-W
32		Control-X
33		Control-Y
34		Control-Z
35		Esc ... Esc
36		Esc ... Control-minus F10
37		Esc ... Control-equals (Down)
38		Esc ... Control-plus (Left)
39		Esc ... Control-asterisk (Right)
40		Control-fullstop
41		Control-semicolon
42		Shift-equals
43		Esc ... Shift-C (Clear)
44		Esc ... Control-backspace
45		Esc ... Control-Tab
46		INV Control-scrub

Common Atari basic abbreviations

CL	CLOSE	NO.	NOTE	ST.	STATUS
C	COLOR <td>O.</td> <td>OPEN <td>T.</td> <td>TRAP </td></td>	O.	OPEN <td>T.</td> <td>TRAP </td>	T.	TRAP
D	DATA <td>PL</td> <td>PLOT <td>X.</td> <td>XIO </td></td>	PL	PLOT <td>X.</td> <td>XIO </td>	X.	XIO
DR	DRAWTO <td>P.</td> <td>POINT <td></td> <td></td> </td>	P.	POINT <td></td> <td></td>		
ODG	ODGSR <td>POS. <td>POSITION <td></td> <td></td> </td></td>	POS. <td>POSITION <td></td> <td></td> </td>	POSITION <td></td> <td></td>		
G	GO TO <td>T</td> <td>PRINT <td>CS.</td> <td>CLAVE </td></td>	T	PRINT <td>CS.</td> <td>CLAVE </td>	CS.	CLAVE
GR	GRAPHICS <td>RES.</td> <td>RESTORE <td>L.</td> <td>ENTER </td></td>	RES.	RESTORE <td>L.</td> <td>ENTER </td>	L.	ENTER
I	INPUT <td>RET. <td>RETURN <td>L.</td> <td>LIST </td></td></td>	RET. <td>RETURN <td>L.</td> <td>LIST </td></td>	RETURN <td>L.</td> <td>LIST </td>	L.	LIST
LOC	LOCATE <td>SR</td> <td>SETCOLOR <td>L.</td> <td>LOAD </td></td>	SR	SETCOLOR <td>L.</td> <td>LOAD </td>	L.	LOAD
LP	LPINT <td>SD</td> <td>SOUND <td>S.</td> <td>SAVE </td></td>	SD	SOUND <td>S.</td> <td>SAVE </td>	S.	SAVE
N	NEXT <td></td> <td></td> <td></td> <td></td>				

128		INV Control-A	143		INV Control-N	157		Esc ... Shift-Insert
130		INV Control-B	144		INV Control-P	158		Esc ... Control-Tab
131		INV Control-C	145		INV Control-R	159		Esc ... Shift-Tab
132		INV Control-D	146		INV Control-S	-----		
133		INV Control-E	147		INV Control-T	204		INV Control-Folding
134		INV Control-F	148		INV Control-U	-----		
135		INV Control-G	149		INV Control-V	201		Control-semicolon
136		INV Control-H	150		INV Control-W	202		INV Shift-equals
137		INV Control-I	151		INV Control-X	203		Esc ... Control-2 (Del)
138		INV Control-J	152		INV Control-Y	204		Esc ... Control-backspace
139		INV Control-K	153		INV Control-Z	205		Esc ... Control-Insert
140		INV Control-L	154		Esc ... Shift-backspace			
141		INV Control-M	-----					
142		INV Control-N	156		Esc ... Shift-backspace			

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• Read (checksum)	0.7
• Calc benchmark	0.1
Standard BYTE magazine benchmark (May 1985)	
• Elong benchmark	2.8
• Reference time (800) prints	7.2
• Create 1000 bytes sequential file and read it by bytes (Memory disk environment)	
• Optimization demo	19.0
• Screen output 1000 strings of 70 characters	15.8

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I AM writing in utter desperation. I bought a copy of Graphics Art Department about two months ago and I cannot get to grips with the DLJ option for the extra 128 colours.

The problem is that I start by using one colour register and one DLJ, but if I then use a second DLJ from the same colour register and then overlap the colour of the first DLJ it changes to the colour of the second DLJ.

This causes problems when you are trying to create a number of different shades around the same area of the screen using one colour register.

Am I doing something wrong, or is it that you cannot use two or more DLJs from the same colour register on the same horizontal line? — Philip Tucksbury, Clonville, Dublin.

■ The colour registers may only contain one value at a time, and a DLJ allows you to change that value on consecutive lines of the display.

This means that each time you use a DLJ the contents of that colour register will be changed until either the bottom of the screen is reached or another DLJ changes it to yet another value.

So you can have four new

GETTING DLIs TO DISGORGE COLOURS

colours on each new line, but you will lose the old ones.

If you write in machine code it is theoretically possible to "scan" along the line after a DLJ has taken place and change colours part way along, but the timing required is so critical that you would have to turn everything else (including the keyboard) off.

The more advanced assembler programmers might like to tackle this one.

on the printer choice made at the printer option stage.

This strange behaviour is only experienced when the graphics mode setting on the Xerox interface is set off.

With the graphics mode set to on, the printer works in the normal 10ppm mode, but prints all the control characters embedded in the text.

It is frustrating having dished out a lot of money for something which doesn't do the job for which it was bought. Can you help? — J.T. Abbotson, London.

■ This is an odd one. We have heard a couple of cases of the Xerox interface giving slightly unusual results, but we're not sure of the cure for this particular one. Perhaps a reader can help?

Peculiar printing

I HAVE an Atari 800XL, Atariwriter, a Brother M1020 printer and a Xerox Graphics Interface. I cannot get the printer to print in the normal 10ppm mode irrespective of the G setting in the word processor.

The printer either prints in the expanded or compressed mode, depending

String along with 800XL

I OBTAIN an Atari 800XL and recently have been learning about string handling at school.

None of the small programs that we use at school work correctly on my Atari. It doesn't seem to like direct input into a string.

Could you tell me what I'm doing wrong and if there are any books which will explain how to use strings properly? — David Teather, Bradford, W. Yorks.

■ Atari string handling is a little different to that on most machines.

The biggest difference is the lack of string address, as ASCII does not mean the 10th string called AS, but rather the portion of AS from character five onwards.

Also DIM AS(100) means reserve 100 characters for AS, not 100 full strings called AS.

You can input directly to a string with INPUT AS or INPUT #1,AS.

If you want to input to a portion of a string — a substring — then you must input to a temporary work string first. For example:

```
INPUT #1,TEMPS :
ABS,101=TEMPS
```

Help for adventurers

I WOULD like to thank you for a really brilliant magazine which I have bought since October 1985.

The only criticism I have is the lack of an adventure help page where readers could help each other with adventuring problems. — Christopher Walker, Oldham, Lancs.

■ Well, our adventure columnist has recently started his lifetime, which should meet your needs. We have passed your Zork II problem to him.

Looking into Logo

I OBTAIN an Atari 800XL and have recently obtained an Atari Logo package. With it came a booklet called David Referencio Guide, but unfortunately it isn't much help for a beginner like myself.

Can you tell me if the Atari Logo package should have included another manual or if other books are sold

Commands on keypad

I RECENTLY bought a 1000E and was interested in Len Quinlan's article in your October issue about building a new keypad.

The article states that new keys can be programmed to duplicate any key combinations. So is it possible to program each key with a basic command such as ROW, LIST and so on? — Peter Amos, Dagenham, Kent.

■ Not with the program as listed, but by adding a few more bits of machine code there is no reason why it couldn't be done.

At present there is a verti-

cal blank routine which simply dumps the single character you require into the keyboard character press register at location 164.

You could extend this routine to make the vertical blank dump a new character every 50th of a second until the text is complete.

This would give basic time to detect and read each character as it is placed into the register, not knowing that your vertical blank routine was typing them in rather than the user.

Let us know how you get on.

operately? — **Zalifer Aaven, Israel.**

■ Two fairly thick books that go with the Logo package used to be packed in a separate, smaller, box to the cartridge. They should have been included in the purchase price, so contact your dealer and find out where the books vanished to.

1029 printer facts

DO any of your readers who own the Atari 1029 printer have any useful programs or information for this machine? — **R.J. Sandercock, Haverfordwest, Dyfed.**

■ Can anyone help Mr. Sandercock?

Bug in the Data Editor

REGARDING your Data Editor in the October issue of Atari User, I was very impressed by this useful program, but I have found a bug in the Load/Save routine which gives a memory fault error when writing to disc.

The correct version of line 888 should be:

```
888 IF (X1)-LN THEN 840
```

— **Andrew Yates, Oswestry, Shropshire.**

■ You are quite correct, but perhaps a better version still of line 888 would be:

```
888 IF NOT (X1)-LN AND  
10=4) THEN 840
```

Playfields poser

I HAVE been following Stephen Millamper's articles on Player Missile Graphics and was impressed by Computer Carve II in the November issue.

However, although I have the listing working correctly, have created playfields and

ATARI USER Mailbag

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

The address to write to is:

**Mailbag Editor
Atari User
Europa House
55 Chester Road
Masel Grove
Stockport SK7 5NT**

Have saved them to cassette, when I try to load them to disk I just get Error 3.

The created playfields will automatically reload into Computer Carve II, but I need to know how I can use them in my own programs. Could you help? — **P. Purchess, Truro, Cornwall.**

■ You can't just use LOAD or LOAD "TO-PLAY" to load a data file into Basic — these commands are reserved for programs only, and would throw out any non-standard format.

To reload a saved playfield simply modify the routine on lines 1840 to 1850 of the Computer Carve II program.

Don't forget to initialize the string IOR before you access it — see lines 50 and 1840-1850.

Game maker required

I AM stationed in Germany and therefore don't hear much about new releases until I receive Atari User every month. I have designed what I think is an original platform arcade game. However, I do not have much knowledge of programming.

I have looked around Germany for a game maker style of program which would enable me to write the game myself, but to no

avail. Is there such a program around? — **S. Gratton, W. Germany.**

■ There are some game makers around, but they are not really suitable for the platform-type variety.

Your best bet would be to contact one of the games companies and work with some of their programmers.

Do make sure that you first get a deal which gives you some form of multi-machine royalty agreement on your idea.

Purpose of the port

WHAT is the extension port of my Atari 1300E used for? If it is for plug-in cartridges or peripherals could you tell me what is available and where they can be bought? — **Basel Pegg, Enfield, Middlesex.**

■ There are two connectors on the back of a 1300E, the cartridge socket and the expansion port.

On the old 30, range the expansion port was larger, but when designing the 50 Atari decided that since most of the lines on the expansion port were duplicates of those on the cartridge socket (the address and data lines were present on both) they would make a dual socket instead.

So far there has been little ground to see this new expansion port — which is

really an extension of the machine's parallel data bus — but there must be some companies working on such projects.

If anyone out there knows of any, why not write in and let us know?

Checksum revealed

AS a new reader of your magazine I am mystified by the checksum listing printed at the end of each program.

I should be most grateful if you could tell me where I can get the checksum program and its instructions. — **John Goveysey, Kinross, Tayside.**

I BROUGHT Atari User for the first time last November and I find it a very interesting magazine, particularly the five-fifths, listings and the Mailbag.

I have seen your Get it Right! checksum program mentioned in various parts of the magazine. What is Get it Right! and how can I get a copy? — **Rhian Tombs, Llostrawcoed, Gilderdale, Netherland.**

■ The instructions and listing for our Get it Right! checksum program last appeared in the August 1986 Atari User.

You can order a copy using the form at the back of this issue. If you don't fancy typing in the listing, you can order a copy of the August monthly disc which carries a copy of Get it Right!

Special offer Ninja

IN your November 1986 issue you mentioned a special offer whereby I could order a game called Ninja for only 99p, but when I looked at the order form I found that the price was £12.99.

Could you tell me how I

can buy Atari for 99¢! — A.J. Quilley, Huxley, Maryland.

■ Every month we make special offers for those of you who wish to take out subscriptions to Atari User. If you buy the special offer at the same time as taking a subscription you can get it at the specially reduced price. You cannot buy the special offer on its own.

A subscription offers especially good value when you take into account the fact that you receive a printer copy every month only a day or two after we ourselves receive them from the printers.

Downloading listings

I USE my Atari 800XL MultiView™ software and a Miracle Technology V604000 modem to access MicroLink and Press.

My problem is that I don't know how to download any of the listings mentioned in Atari User. Can you help? — Tony Perry.

■ Well, there is a small problem with MultiView™ which makes this job rather difficult.

All decent terminal programs have what is known as a capture buffer, which allows you to store the text you receive from the host computer in memory.

In many cases this text will be too long to keep intact in RAM, so a download option is provided which allows the computer to speed it out to disc every time the buffer is almost full.

Unfortunately, MultiView™ does not do this properly with text files, so what you must do is save the blocks manually.

To do this, select the download option on MicroLink and turn your Viewterm buffer on just before you press the final Return key to tell MicroLink to send.

When the buffer is almost full the letters BUF disappear to show you the space

Using the XEP-80

I WOULD like to know more about the XEP-80 console chip mentioned in the November issue of Atari User.

Can it be used with Alan Miller to get 80 columns in create and edit modes? — Ian Goodwin, Wrexham, Chwyd.

■ The XEP-80 is not a chip but a separate module which plugs into your computer's second joystick port. It can't be used with AtariUser at present, but

by the time the product is released there will also be an updated version of AtariUser called AtariUser 80 which will support full 80 column use. See last month's issue for an in-depth review.

Protection problem

I OWN an American LGDF and an Intell disc drive. I have found your magazine extremely informative and have recently subscribed, taking advantage of your Messenger 2nd City offer.

The package arrived promptly, but in my dismay I am unable to load Messenger.

Upon booting I get four beeps from the Intell and the track counter stays at 00. The drive then spins until the computer is switched off. I have numerous other games and have never had any other problems. Can you give a solution? — M. Thompson, Coertan, Herts.

■ The problem almost certainly involves the INTSC computer which won't read the protection tracks on the disc correctly so the program reacts as if it would to a pirated version.

Try contacting Navigan, publishers of the product, and see if they have any suggestions as to a way round your problems.

Missing manuals

EXACTLY 12 months ago, while I was on leave from the forces in Germany, I bought an Atari 800XL and also drive from Germany in Slough.

On return to Germany I unpacked the various boxes to find that the disc drive user's guide, Basic manual and DOS disc were all missing. I wrote to Discos and never received a reply to my letters.

I tried contacting Atari UK

and Discos again, but with absolutely no luck. Could you help in this matter as my enthusiasm for everything Atari is diminishing fast.

Also, could you tell me whether Adventure International has gone into liquidation? — S. Day, Preston, Lancs.

■ Try contacting Atari Germany, Atari (Germany), Postfach 1000, 8090 Raunheim, Germany. Tel: (010) 490 142 41081.

Adventure International has indeed folded. The firm was caught up in the stock and to the computer boom a couple of years ago and never really recovered.

Ramban has it that Scott Adams has formed another company so that he can continue to produce adventure games for the Questprobe series.

Looking for Asteroids

COULD you please tell me where I might be able to buy Asteroids for my son's 800XL? My local shop has told for a week and has not found it. — Mrs. E. Madala, Brecknell, Berks.

DO you know of any Basic compilers which will enable me to write machine code speed programs without the brainache?

Also could you review some of the games which were available before Atari User started, so that new owners can find out which titles are worth buying? — David Hicklin, Darby.

■ To find out about the best of the old games look no further than our Games Old and New article in the December issue.

You should be able to find an old copy of Asteroids if you try some of the larger

→

mail order companies, but if they want more than £1.99 for it, forget it! It's not exactly the best game ever to be released.

Books on machine code

I OWN an Atari 800XL and would very much like to learn how to program in machine code.

Do you know of any good books which are for beginners and are tailored for the Atari? — Nick Miller, Pughy, Warwickshire.

■ A number of good machine code books are available for the Atari, the best of which is probably from Computer — Machine Code for Beginners at £17.95.

There is also a good book called the A & C of Machine Code, and numerous others.

If you plan to start writing in machine code you will also need an assembler, the best of which is MASM8 from OSS, but this is rather expensive.

You may prefer to start out with the rather slower and less powerful Atari Assembler/Editor cartridge.

Also try to get hold of a copy of an excellent book called Mapping the Atari from Computer again which you'll quickly find will be worth its weight in gold.

Brighter headlines

I RECENTLY bought an Atari 800XL, 1050 disc drive and 1029 printer. I was wondering if there is a desktop publishing program, along the lines of Newslett on the Commodore 64, which would allow the use of different fonts, headlines and even illustrations on my 1029?

I am also a bit confused over the different versions of Dos available. The print program which

YOUR HINTS AND TIPS

KICKSTART

WHELP! creating around on Kickstart by Mastertronik I found an amusing little trick.

When you hear the starting tone, wobble the joystick (as in Demolition) as fast as you can. Then you will start at the top speed and you will knock off at least two seconds from your time. — Owen Birds, Dereham, Norfolk.

BOUNTY BOB STRIKES BACK

Level 1: Take the letter 'p' and press 1 and Start.

Level 2: Take the paint roller (after hitting the alarm) and press 1 and Start.

Level 3: Take the coffee pot and press 3 and Start.

Level 10: Take a pitch fork and press 5 and Start.

Level 16: Set the auction bid number 7 to left, take pie and press 3 and Start. — M. Jones, Wilton, Merseyside.

STANQUAKE

THE names of the train-

comes are Train, Spine, Whore, Minion, Bator, Cassie, Arnie, Quark, Argon, Delta, Crash, Z.A.P., Peris, Atari and Jason.

To get 100 lives hold down the pause keys (Shift+P) after you have lost your last life. Keep them down and receive the soviet clock.

You will be moving very slowly and the enemies will move fast. Get yourself killed, but not keep pressing the pause keys. The reading will say 90, but you will have 100 lives. — Mike Moulton, Castle Bromwich, Halstead, Essex.

AIRWOLF

FOR some extra points, when the game starts, keep firing. — Mr M. Jones, Wilton, Merseyside.

ORIGINAL TIPS

MAV I congratulate you on a brilliant magazine. After the last few issues I thought it was just another "five minute" magazine, but over the months you have got a lot better — Player magazine

graphics, gadgets, enhanced reviews, I love it!

I have prizes, and I have a lot of software which cost me a lot of money and I am proud of it, so the games tips I am going to give are from my originals, not copies.

Here are the first eight passwords for Dem Man and his Grid ...

Level Password
1 PASS START
2 PUZZLE
3 ATAN
4 FINORS
5 GENETIC
6 ZARRO
7 MEGALONIC
8 TONE SOUP

And here are the codes for Diles Foster (Amiga) cart. To start at level 5, type FANGL while playing. For level 10, type FANGL for level 15, type AGARD and for level 20, type DCOM 13 night.

Why don't you devote a page or so to hints and tips on games? I could send in tips, and have about a high score table? I have completed Menzatory in three months, and got 1,000,000 credits! — Colin Kayser, Colbury, Devon.

came with my computer will not save pictures as discs formatted with Dos 3, yet has no facility for formatting a disc itself.

I did try formatting a disc with Amiga File Manager, but saving a picture on it this produced a "We Boom On Disc" error.

I also tried converting it to Dos 3 with the utility on the master disc but this too was unsuccessful.

I have seen advert/announcements for a Dos 4, but you apply to Mr B Powell (see month's Dos 3).

Am very confusing, you must agree. Which Dos should I use and where can I obtain it? A rough idea of

price would also be appreciated.

David McAvoy, Margate, Cambrid.

■ Firstly, Software Express should be able to help you out with some packages from Alcan Software which might ease your keypressing problems.

As far as Dos goes, Dos 2.5 is the current standard. Dos 3 was brought out by Atari but proved rather inefficient and never took off.

Dos 4 is not an official Atari system, though it might have been commissioned for such use some time ago.

Stick with Dos 2.5, and use Dos 3 only if you have

to.

You should be able to pick up a copy of Dos 2.5 for the price of a blank disc from most Atari dealers, and the manual comes as an AmigaDisk text file on the disc.

Using page zero

I AM becoming increasingly interested in machine code programming for my Atari 800XL and have bought two books on 6502 programming.

My problem is that both

books state that page zero will always be available on any computer for zero page instructions and variable storage.

However I also have a memory map of the Atari and it shows clearly that page zero is used by the operating system and Basic.

Could you please let me if it is possible to use page zero, and if so which locations are available.

If not, is there any other way around this problem? — S. Townsend, Goals, North Humberdale.

■ Page zero is indeed available on any computer, assuming you have full control of the 6500.

However the Operating System and Basic use both very complex machine code programs themselves, and as such need their fair share of zero page locations.

In the case of the Atari, 800-BP are used by the OS; 800-BP by OS but are otherwise free; 140-1FF by the display handler and should not be touched; 160-174 by Basic, but are free if you are not calling your machine code from Basic.

800-804 are free for you to use; 804 and 805 are reserved for cartridge use; 806-8FF are used by the floating point routine, and are completely free if you don't plan on calling the FP package from your machine code.

On the whole, unless you KNOW an area to be free, don't use it, the best idea

being to stick to using 808-801 which you should never have any trouble with.

Elusive stripper

PLEASE can you help me where I can get the following games for my computer (800811). Ghosts 'n Goblins by Irem, Ghouls and Gears For Sinix Paker.

I have been looking for ages. I have seen the games but not for the Atari — Jason Swally, Plymouth, Devon.

XIO commands

WOULD it be possible for you to do a series on the unimplemented XIO commands? — S.E. Stupples, Mansfield, North.

I WOULD be interested to read in the November issue of Atari User that it is possible to emulate certain DOS functions using the XIO command.

I have several books on Atari Basic, but they only deal with the XIO function to fit in blocks of memory. Would it be possible to do an article on this subject? — Peter Sandersons, South Tottenham, London.

■ In last month's issue we started a series on using the IO facilities of the 68k Atari, and XIO is one of the areas which will be fully covered over the next few months.

The command is very powerful indeed, but would take up too much space to describe it is full in the space we have here. Stay tuned, as they say.

Phantom beeb blower

I OWN an Atari 8000, without operating system, a 1080 disk drive with a Hyperdrive, a 1010 tape reader and a 1020 printer.

This computer set is just perfect for me and I like it. I'd like to explain a few things about this before going on about my problem.

I got Mr G. Paul's Dual Operating System in December 1988 and with a bit of a search I have a disk in translator. I found this very useful as it saves a lot of loading time.

My Hyperdrive also saves me a lot of time because it is faster on disk as normal 1080 disk drives.

I had a problem in fitting these chips in, but my electronics teacher at school did it very well and everything works better than before — congratulations to Mr J.G. Baker at Aldenham School, Herts.

Anyway, my problem is this, is something to do with my Dos system. When I turn my computer on it beeps, although I'm not pressing start, it only happens a few times but I want to know how I can get rid of it. Have any readers with Mr G. Paul's Dos got the same problem? If so, then please contact me — Takashi Ishikawa, Stanmore, Middlesex.

■ The most likely reason that your computer beeps when you switch on is that the contacts on the Start button are sticking. Drop it into your local dealer to have it checked.

It is unlikely that the new

HELP!

MORDEW'S QUEST

HOW do I get past the empty and the conveyor belt game? — Daniel Nye, Rury St. Edwards, Suffolk.

HOW do I use the transporter? — Owen Stride, Deeside, Norfolk.

SPELLBOUND

HOW do I get past the 4th room? How do I move the 817? How do I get over the wall? — B Hughes, St Ives, Cornwall.

chip has caused this to happen, but taking the computer apart may have caused the contacts to move.

Centronics interface

THERE is a game on the market which costs £99.95 and allows you to connect Centronics printers to your Atari 8 bit.

How about doing a review of it so that we can see if it's as good as it sounds? — D.W. May, Chester.

■ Look out for an upcoming part of our Gadget series which will show you how to build such an interface for yourself.

MicroLink

ALL program listings in Atari User are now available for free downloading on MicroLink, the UK's fastest growing electronic mail service. They join hundreds of programs already available on Britain's national on-line database.

Pen pals round the world

THOSE foreign Atari User readers would like English pen pals:

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Dear Reader,

Software Express is now in its third year, and during this time we believe that we have provided the Atari user with a service second to none. We hope to continue and improve that service in 1987. As always, there will be new and exciting products and the same friendly advice – and here's some for starters:

SOFTWARE EXPRESS HEALTH WARNING

**Buying from discounters may be
injurious to your mental health**

Basically, you get what you pay for these days – if you pay less you get less. So what is it that you aren't getting? Service, knowledge and help usually. Some advertisers will give low prices because they have low overheads (working from a bedroom doesn't incur much in the way of expenses) but can they advise you which database you should be using? Do they actually have the game you want in stock? The answer is usually 'No'. Many have tried to emulate us, most of whom are noticeable for their absence!

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