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ATARI USER

Vol. 2 No. 10

February 1987

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this
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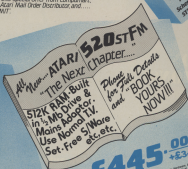
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News

Our news team report on the rapid developments now taking place in the world of Atari.

7

Gadgets

Hardware whiz Len Gilding shows you how to build a 16 channel controller for your Atari.

10

Adventuring

Barely recovered from a reading of Yogan poetry, Brilling answers your adventure related queries.

15

Reader Survey

Want to win a prize? Want to help shape Atari User? Fill in our reader survey and your wishes could come true.

16

I/O Channel

André Willey continues his examination of the 8 bit's I/O channel.

18

Five-Liners

Extra large text, a game called Wormy and a machine code to string converter form February's selection of short programs.

21



Software Reviews

Molecule Man, Crystal Raider, Up and Away, Trailblazer, Caverns of Eriban and Rick Hanson come under scrutiny from our team of reviewers.

22

MicroLink News

Our monthly update on Britain's fastest growing on-line database for micros.

27

Glossary

Confused by technical jargon? Try reading this helpful glossary for beginners.

33

Menu Maker

Spoilt for choice? Make your discs easier to handle with this useful program.

35

Keyboard

We show you how to enter those elusive graphics characters into your programs.

38

Mailbag

All your moans, groans and praises put into print.

41



Destroyers

Destroy the enemy ships in this Atari version of the classic game.

28

Atari ST User

3 ST Roundup

Mike Cowley reports on all that's new in the ST universe.

9 ST Software

Activision's Shanghai, Trivia Challenge and Mercenary are played and evaluated by our ST reviewers.

13 Advice

More answers to the queries you send in about ST problems.

14 Speaking Clock

Turn your ST into a speaking clock with our Fast Basic listing.

15 ST Five-Liners

Mandelbrot Set generator and Logo Polys command make up our offer of ST mini-programs.

19 Star Trek

Confirmed Trekkie André Willey previews Beyond's superb game.

21 Graphics

Andrew Bennett explains in detail how the ST's screen modes work.

25 American Scene

Our American correspondent, Ed Shark, reports on the latest news from the State-side world of Atari.

27 Degas Elite

André Willey reviews this enhanced version of Degas.

Don't miss this launchpad for all that's new in Atari computing

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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

ATARI 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 5.25in disc drive, integral power supply, and detachable IBM XT-style keyboard.

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

The machine comes with \$125 of ram, expandable to 640K 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 (Gem, 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 \$299 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 3 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 stunning 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 moves back to where it all started – the plush surroundings of the Novotel's Champagne Suite.

Enthusiasts 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 8pm on Friday and Saturday, 4pm on Sunday.

A money-saving advance ticket order form is on Page 8 of this issue of Atari User.

TURNOVER HAS DOUBLED

ATARI has successfully silenced its critics in the USA by bouncing back into profit in a big way. In the two years since Jack Tramiel 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 \$80 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 26, 1985.

Paul Fialberger of the *Financial San Francisco Examiner* described the

results as "the biggest surprise of the year in the personal computer industry". Nor was he sitting in his guise of chairman Jack Tramiel. "He has already accomplished more than the pundits expected", he wrote.

Now Atari is well and truly in the black, American analysts are predicted that the sky will be the limit for the company during 1987.

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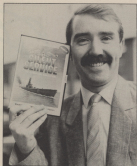
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Simon Bernard... seeks top writers

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 Australasia.

Royalties

"Our titles literally remain at the top of the UK 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 looking to more than replicate 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 7800 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 tape driven".

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 7800 console may well be sold in the States, it will not now be shipped here.

This is good news for the 250,000 Atari 8 bit users as it will precipitate a flood of new

software titles. "This will prove a real injection for the 8 bit scene", says Bob Stedrove, 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 enthusiastically 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 late.

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

Nor is this just a company view.

John Arandel, marketing manager of Biles 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 - to demonstrate the extent of existing support.

Interface to total control

HERE'S a simple interface which allows your computer to scan 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 two ground lines. 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 5, though it could equally well go to the other one at pin 6, provided you modify the software.

The programs described use port number 2, leaving port 1 free for an output device, such as the mains 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 2 and 3 show the printed circuit board 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 4867 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 initialises 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 as an input, change the PORE 04016,255 to PORE 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.

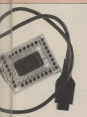
Line 50 stores the chosen sensor's value in the array, and line 60 completes the loop. Lines 70 to 80 print out all 16 values, then start the process again.

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 siren, for example—you will have to fit these 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 1—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 run alongside 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



the computer's analog-to-digital converter.

With very little effort we can ensure that the chosen analog value is stable and valid by the time it is read, so there's no need for any delay loop. This routine updates each sensor's value about three times every second.

Now let's look at a practical burglar alarm system. Figure 16 shows the simplest DIY layout using normally closed switches on windows and doors. They are wired in series, so if any is opened the circuit is broken and some kind of warning device sounds (in this case, a bell).

This approach has some drawbacks: it cannot tell you which switch has been opened, an enterprising burglar can easily bridge the switch terminals using a jump lead, and if a fault occurs it can be very tedious to trace.

Figure 11 shows how our gadget can overcome these problems. When a switch is closed, it shorts out the resistor across its terminals, leaving only 150Ω in circuit, which offers a multiple annual TN at address 820.

[illegible][illegible]

1000

[illegible]

Q	Q	Q
Q 1000000	Q 1000000	Q 1000000
Q 1000000	Q 1000000	Q 1000000
Q 1000000	Q 1000000	Q 1000000

Abstract

Opening the switch puts an extra 150Ω in series and the number goes to around 150. Cutting the wire will return 238 and holding the switch

40	Count	%	total
41	Percent	%	total
42	Percent	%	total
43	Percent	%	total
44	Percent	%	total
45	Percent	%	total
46	Percent	%	total
47	Percent	%	total
48	Percent	%	total
49	Percent	%	total
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100	Percent	%	total

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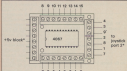
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This ability to distinguish four separate states is a clear advantage and the system can easily be adapted to work with normally open switches, such as pressure mats.

Plasma 500 mg/kg, 100 mg/kg, 50 mg/kg, 25 mg/kg, 10 mg/kg



Figure 1. The effect of the concentration of the solution on the adsorption of the dye.



Abstract 88: Cardiovascular benefits of ACE

[illegible]

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 these faults vary 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 of lights that were for needed to



Figure 5b: A simple security system

be switched on.

To measure temperature, use a thermistor whose resistance at room temperature is between 100k and 400k – 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 5c shows how you can wire these sensors into the system, using terminal blocks.

As for other uses, well, you could connect 16 keyboard switches to make



Figure 5c: A temperature switch for use on doors and windows

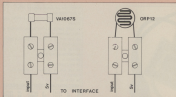


Figure 5d: Temperature and light sensor units



Figure 5e: 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 fitting moisture sensors in the soil beside your favourite conservatory plants? A couple of soft 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 attach the rods in alloy rain, leaving just the ends showing, they will make a rain or flood detector which returns 255 when it's dry and between 0 and 126 when it gets wet.

If you're content to use simple on/off devices, you could connect the PCB common line to pin 8 at port 2, 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, so a basic program will work quite well.

With suitable software and three interface boards you could use joystick pins 5, 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 8)

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

	Maplin codes
1 406788 analog switch IC	QW427V
1 24-pin IC socket	RS208R
1 8-way PC terminal block	PC388R
1 4-way PC terminal block	PC330Q
1 3-way PC terminal block	PC373P
1 Cable 'T' clip 318"	LR440

Approximate cost £16.66 with terminal blocks, £3.99 without.

A joystick extension lead is available from Tandy stores (code 204-1866) or from large computer shops, priced around £3.25.

All components, including the author's design mentioned in the text are available from:

Maplin Electronic Supplies
P.O. Box 1
Rayleigh
Essex
SS8 8LB
Tel: 0202 552911

Printed circuit board (order code

08P6) available from:

R.H. Design
137 Stenett Avenue
Harrrogate
North Yorkshire
HG3 1NG
Tel: 0423 506355

Price £1.99 including VAT and postage



MIKES COMPUTER STORE

Code	Product Name	RSP Inc. VAT	MCS Inc. VAT
5205TFM1	Atari 5205TFM Computer	£399.95	£399.95
5205TFM2	520 5TFM+ 6M125 B/W Mon.	£499.95	£492.95
5205TFM3	5205TFM+ Philips 8533 Col. Mon.	£714.99	£692.95
1040STF1	Atari 1040STF Computer	£599.95	£594.95
1040STF2	1040STF+ 6M125 Hi-Res. B/W Monitor	£599.95	£646.95
1040STF3	1040STF+ Philips 8533 Colour Monitor	£814.99	£838.41
SF354	Atari 500K Disk Drive	£149.50	£134.55
SF314	Atari 1Meg Disk Drive	£200.10	£189.09
SF304	Atari 20 Meg hard Disk	£899.55	£847.95
SM125	Atari High Res. Monitor B/W	£149.50	£134.55
CUM1MEG	Cummins 1 Meg Disk Drive	£159.00	£143.10
CUM1TWIN	Cummins Twin 1 Meg Disk Drive	£269.00	£242.10
PH833MON	Philips 8533 Mod. Res. Mon.	£314.95	£283.46
PH831MON	Philips 8331 Low Res. Mon.	£243.95	£218.55
EP505PRN	Epson LX-80 120 cps Printer	£119.25	£294.83
LX80-TR	Epson LX-80 + Tractor Feed	£299.25	£299.85
EP55HSSET	Epson LX-80 Sheet Feeder	£93.25	£94.80
LQ600	Epson LQ-600 24 pin Printer	£284.25	£299.85
LQ600TR	Epson LQ-600 Tractor Feed	£49.00	£41.40
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WS4000	Miracle WS4000 Modem	£172.49	£154.55

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HELP is at hand for David Perle of Cardiff who has been ensnared by Professor'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 where you, as the older self, will suddenly cease to exist. Get it? You will if you go on to decode the clues below.

Can anyone help J.C. Bradbury of Sheffield (Glasch blaster for the second month's ranning) who wants to know how to find the correct combination to the jewel case chained to the cellar

The question of existence

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

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

Eric Nolan from Dublin has multiple troubles. He cannot find the gate from below ground in Zork I and although he has listened to the poem he is unable to get the plaster in Hish-Hiller'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 quotation marks though.

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

By Brillig

suit 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 obvious.

Mark Powell from Leves 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 Morlan's Quest. 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 Wintemley of 13 Millington Way, Wigan WN1 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?
NOIT ANISM OCEH TMIH EVIS
MOOR DETH ALSE HTOT TEOR EVEN LUW RHIS WIRE
HTO
PLUS PIEL OERM DEED MACA NLOS TEOR O

ZORK I

Can't unlock the grate?
WOLE SMOOR FTR COUM U
EDAM EHTN HTI WMOH RENS HTA ROEH T

For fun:

THIN ERTT OHSI TIME HWEP RER KATO TYRT
THES ERPE BASE YIKI HTOS NEHW EDAM EHTN ER
HPOE AJOT YRT
ERIN KYTS URIN TEBU DTYR T

EROMANTER

For fun:

PLUH SHH OFMI RENA HT
TAVR HTS GARD NWYE HTOT UDYN OLLO PHER UTHN
YDRE HTER AM
LUSP SDAC LUKE HTTS ACME HT

MYSTERY FUN HOUSE

Want the coin from the grating?
HOKA RORND MUKH DTS NERT MUGW SHC
HOKA BERT HARK OCTE O

Stumped by the merry-go-round?

PMUJ NERT PURO OLLO GPDO ERRO HOER PHEM DO

GLITCH OF THE MONTH

Sheffield man Jon Bradbury has found a beauty in Andrew's Lepus 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!

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

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☒ 286 ☒ 386

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Post to:
Reader Survey, Atari User, Europa House, Chester Road,
Russett Grove, Stockport SK6 5RT

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,A,L,"":POKE 838,
PEEK838:POKE 839,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 \$040 (\$02 decimal), which means that the POKEs to 838 and 839 changed the value of IOCB0 plus 8 and IOCB0 plus 1.

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 \$280 (\$A4), the POKEs to 858 and 859 return the equivalent two locations for the printer handler 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 LRT command in Basic. They may be POKEd 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 CIOV 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 300 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 1. Don't forget to adjust line 280 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,A,L,"":
```

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 ICAR1 and ICAR2, thus the values of 8 and 8 are 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-sized 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 \$1334

IOCB Zero	\$040	(002)
IOCB One	\$280	(A4)
IOCB Two	\$300	(B0)
IOCB Three	\$320	(B6)
IOCB Four	\$340	(BA)
IOCB Five	\$360	(BE)
IOCB Six	\$380	(C2)
IOCB Seven	\$3A0	(C8)

Figure 2: IOCB start addresses

Address	Label	Bytes	Description
IOCB = 0	ICB0	1	Index into HATABS
IOCB = 1	ICB1	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	ICBAUH	2	Buffer or Sleeps address
IOCB = 6,7	ICPTUH	2	Address of Put-Byte routine (-7)
IOCB = 8,9	ICBLUH	2	Buffer data length (unbuffered)
IOCB = 10	ICAR1	1	Auxiliary byte 1
IOCB = 11	ICAR2	1	Auxiliary byte 2
IOCB = 12	ICAR3	1	Auxiliary byte 3
IOCB = 13	ICAR4	1	Auxiliary byte 4
IOCB = 14	ICAR5	1	Auxiliary byte 5
IOCB = 15	ICAR6	1	Auxiliary byte 6

Figure 1: IOCB structure

would be stored as \$02 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 500. This may seem a little odd, but if you think it headacheful 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 IOCB is thus prepared, you may jump to GIOV with the JSR command. Before returning to your code, CIO will set a special switch inside the 6802 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 IO operation all you need to do is perform a BNE instruction straight after your JSR. This means "Branch if Minus", and acts 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 700. 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. Ascii code 10 - otherwise known as the carriage return.

As before, we use the low-high format to store the address of the message, and use the IOCOM 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 5. As the X register will not have been altered since the last time we set it, we can just call CIO again, and follow it with the same error test we used earlier.

Finally, store the Close command (13) in IOCOM and call GIOV 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 PRINT "HELLO THERE", but don't forget that there are many things that CIO is capable of that Basic

```

1000 (Example of the use of CIO to
1010 send "HELLO THERE" to the
1020 printer)
1030 (By Andre Killion, Atari User Feb
1040 '87)
1050 :
1060 (Set equates for CIO addresses)
1070 :
1080 CIO0 = $0250 (see IOCB one)
1090 :
1100 ICX10 = CIO0+0
1110 ICX00 = CIO0+1
1120 ICX000 = CIO0+2
1130 ICX10 = CIO0+3
1140 ICX00 = CIO0+4
1150 ICX00 = CIO0+5
1160 ICX10 = CIO0+6
1170 ICX00 = CIO0+7
1180 ICX10 = CIO0+8
1190 ICX00 = CIO0+9
1200 ICX10 = CIO0+10
1210 ICX10 = CIO0+11
1220 ICX10 = CIO0+12
1230 ICX10 = CIO0+13
1240 ICX10 = CIO0+14
1250 ICX10 = CIO0+15
1260 :
1270 CIOV = $0250 (CIO Vector
1280 address)
1290 CH = 100 (Carriage Return
1300 character)
1310 :
1320 (Open channel zero to printer)
1330 :
1340 LDA #0 (OPEN command)
1350 STA CIOCOM
1360 LDA $F0304000 (Address of
1370 address low byte)
1380 STA CIOA0
1390 LDA $F0304020 (Address of
1400 address high byte)
1410 STA CIOA0
1420 LDA #0 (Output mode)
1430 STA CIOX1
1440 LDA #0 (Half value)
1450 STA CIOX2
1460 LDA #0 (Set 0 for
1470 channel one)
1480 JMP CIOV (Jump to CIO

```

```

subroutine)
1490 BNE ERROR (Test for an
1500 error)
1510 : (If ok, jump to
1520 CIO0)
1530 :
1540 (Tell CIO where in memory to
1550 send message to print)
1560 :
1570 LDA #0 (PRINT line
1580 command)
1590 STA CIOCOM
1600 LDA $F0304000 (Address of
1610 message low byte)
1620 STA CIOA0
1630 LDA $F0304020 (Address of
1640 message high byte)
1650 STA CIOA0
1660 JMP CIOV (Jump to CIO
1670 subroutine)
1680 BNE ERROR (Test for an
1690 error)
1700 : (If ok, jump to
1710 CIO0)
1720 :
1730 (Close channel one again)
1740 :
1750 LDA #12 (CLOSE command)
1760 STA CIOCOM
1770 JMP CIOV (Jump to CIO
1780 subroutine)
1790 BNE ERROR (Test for an
1800 error)
1810 : (If ok, jump to
1820 CIO0)
1830 :
1840 (Continue your
1850 program here...)
1860 :
1870 FILE BYTE "P1",20 (Filespec for
1880 printer)
1890 :
1900 MESSAGE BYTE "HELLO THERE",10
1910 (start to print)
1920 :
1930 OPEN #0,12+"P1",#0 (
1940 : .... Comes here
1950 if an I/O error occurs)
1960 :
1970 :END

```

Program 1

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

■ After much work for providing a full list of these other commands, and how each works, in the meantime,

consider the results of the following:

```
OPEN #0,12+"P1",#0
```

Print: P1C0X1 is set to 0 for read data, and 0 for write data, what right it means? And what do you think the + is for? See what happens without it.)

More
£25
winners!

Send your
solution in to us at:
FreePress, Apple User,
Europe House, 80 Chester Road,
Hazel Grove, Cheshire SK7 9TY.

Five liners

MACHINE CODE TO STRINGS from HOWARD MORLAN

This latest machine code routine
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=USR16261

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

X=USR(ADR(P1))

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 112
bytes long. You can convert longer
strings by breaking them up into sec-
tions 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 IF POKING(12,1) THEN GOTO 14:0
  :POKE(14)=1,5,5,0,5:POKE(5)
  :POKE(14)=1,5,5,0,5
```

Line breakdown

1 Input the routine's name, **ADR**

- address and length of the string.
- Input the file name and reads the
machine code into the string.
- Creates the small program
containing the string.
- Saves the string to disc or tape.
- Deletes the savepage.

```
1 GOTO 1000:ADR=USR16261:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
```

```
2 INPUT GET P1:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
```

```
3 IF POKING(12,1) THEN GOTO 14:0
  :POKE(14)=1,5,5,0,5:POKE(5)=1,5,5,0,5
  :POKE(14)=1,5,5,0,5
```

```
4 IF POKING(12,1) THEN GOTO 14:0
  :POKE(14)=1,5,5,0,5:POKE(5)=1,5,5,0,5
  :POKE(14)=1,5,5,0,5
```



Line Number		
1	1000	1
2	1010	2
3	1020	3
4	1030	4

WORRY by M.J. TREBLE

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

- Draws the screen and initialises
variables.
- Draws the flower and updates the
score.
- Draws the worm, reads the joystick
and tests for death.
- Erases old flower.
- Prints the score at the end of the
game and restarts.

```
10 INPUT GET P1:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
```

```
2 INPUT GET P1:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
```

```
3 IF POKING(12,1) THEN GOTO 14:0
  :POKE(14)=1,5,5,0,5:POKE(5)=1,5,5,0,5
  :POKE(14)=1,5,5,0,5
```

```
4 IF POKING(12,1) THEN GOTO 14:0
  :POKE(14)=1,5,5,0,5:POKE(5)=1,5,5,0,5
  :POKE(14)=1,5,5,0,5
```

```
5 IF POKING(12,1) THEN GOTO 14:0
  :POKE(14)=1,5,5,0,5:POKE(5)=1,5,5,0,5
  :POKE(14)=1,5,5,0,5
```



Line Number		
10	1000	1
20	1010	2
30	1020	3
40	1030	4

BIG TEXT from MARK GOSFREY
COPYING large characters on a
graphics II screen is normally impos-
sible, but this routine shows you how
to do it. The program reads the
character's definition from the char-
acter table and then POKEs this
directly to the screen, moving it up as
necessary.

Line breakdown

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

```
10 INPUT GET P1:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
```

```
20 INPUT GET P1:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
  :ADR=ADR+100:ADR=ADR+100:ADR=ADR+100
```



Line Number		
10	1000	1
20	1010	2
30	1020	3
40	1030	4

Moon eclipsed

Program: Moonmist
Price: £24.95 (also £10 or £7 club)
Supplier: Infocom, c/o
 Ardmore, 23 Park Street,
 Manchester, London NW2
 2PW
 Tel: 01-427 1127

MOE 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 may be 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 family goings-on at Trevelyan Castle.

Apparently a ghost, the White Lady, has started some mighty persecutions 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 Flathead.

If you try to arrest someone 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, Westklinger (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 judding, 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	4
Playability factor	4
Value for money	7
Overall	7

Worth an airing

Program: Up Up & Away
Price: £3.99
Supplier: BugByte, Victory
 House, Leighton Place,
 London WC2H 9NR
 Tel: 01-439 6666

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 Hild song you may not have realised that it's all about hot air ballooning.

No, this isn't a flight simulation, 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 lighting the gas or hurling out sandbags or down by releasing hot air.

There are scintillating 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 fills the sky,



tearing your balloon to ribbons if a flash strikes it.

Rises 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 aerobically display their mad capers 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	4
Graphics	4
Playability	7
Value for money	7
Overall	7

Mono moments

Program: Molecule Man
Price: £1.99
Supplier: Mastertronic, 2
Paul Street, London EC2A
4JA
Tel: 01-377 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 grizzling away at you.

Protective pills must be found quickly, or you'll be an ex-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 on some lease of life. Holdings of pills, bombs, coins, circuits and time remaining are shown at the bottom of the screen.

The graphics are nicely drawn, 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 editing 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 Paynolds

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

Logic unclear

Program: Crystal Raider
Price: £1.99
Supplier: Mastertronic, 2
Paul Street, London EC2A
4JA
Tel: 01-377 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 card do 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 porcupine 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 nights.

The right game is very tricky, as apart from the crystals and nuzzles, only a



small adjacent area is visible, the rest of the screen being all 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 recognising this, Mastertronic changes the rooms' background colour each time the Raider explores

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 £10 for Crystal Raider I may have been disappointed, but at £1.99 this is good value for the platform fan.

Mark Paynolds

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

Quality adventure

Program: *Robocon*
Price: £14.95 (share)
Publisher: Robocon Software, 2
 Fairford Close, Llanidloes,
 Wiltshire (Gloucestershire) CV23
 8AD
 Tel: (0443) 870364

GENERAL Garanto is threatening to rule 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.

Robocon'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 sniffed around a few text adventures in my time, including the disc-only 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 locations, the player's acc-

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-fours from Robocon - 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 Robocon, 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 window broke.

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

Some you win, some you lose, I repeated 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 I was holding it 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 this 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 outside.

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!

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

This is one winner of an adventure, so good that Level 8 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 Eridon*
Price: £2.99
Publisher: Pinkish, 144
 Ingon House, Upper St
 Martin's Lane, London
 WC2H 8JL
 Tel: 01-259 0360

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, laser-beam space ships and fireballs.

Further difficulties are

placed in your path in 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 numerous crashes



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

Fortunately you are given seven ships to play with, as 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	2

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 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 telemessage 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 career and a camera.

After swiftly disposing of the £3,700 diamond white Fiesta XR3, 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 world 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".

Computers, comms and the clergy

Martin has already had a good browse around the giant American database Minamatics 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 sermons - 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".

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

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

Managing director David

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 dif-

ficult to get a dedicated telex line installed in an isolated place like Skelb.

"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-

cessor 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 grow to eventually include all manner of goods and services on a nationwide basis.

There are even classified "exchange and mail" 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 Gentry covers the organisation's biggest geographical area - north, north-west, 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 see all the help he can get, which is where MicroLink comes in. Gentry 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, even the local church rate to the Lofthouse RAC Rally.

Gentry wants everyone to know that signposting an event only costs an average £12 - 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 disc or tape before you run it.

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

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

Line breakdown 1-38

- 1-38 Initialises the program and sets up the variables.
- 39-59 The main loop which calls the computer shots and player shots routines.
- 60-355 The computer's shot routine.
- 356-544 The player's shot routine.
- 545-678 Fire the special salvo of missiles.
- 679-725 Calculate random positions for the computer's ships.
- 726-875 Get the player's ships' positions.
- 876-880 Sets up the main screen.
- 881-1058 Shows the computer's winning time.
- 1059-1130 Plays the computer's winning tune.
- 1131-1235 Offers you another game when you win.
- 1236-1316 Plays the player's winning tune.
- 1317-2090 Displays the instructions.
- 2091-2768 Redefines the character set.

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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 A/ASCII.

ANTIC: 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 130XE 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 Unit Interrupts enable you to design the way that your Atari builds its display screen. Using DUI it is possible to have up to 256 colours

KNOW YOUR NYBBLES . . .

AS an aid to those of you who are new to computing or Atari User, 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 sum 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 disc 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, Fort 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 lines 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

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MENU MAKER



If you've tired of typing in all those long commands to load and run your favorite Basic or machine code programs then this is the utility for you!

File Menu II is an automatic menu for your discs. A menu of the programs on the disc is shown and you make your choice with the joystick, keyboard or by using the Option, Select and Start keys.

It can automatically load three different types of files — saved Basic, listed Basic and machine code — thus making it one of the most versatile menu programs available.

The program detects which type of file is being loaded by reading in the first two bytes of the file before loading it.

If these two numbers are both 255, then File Menu II opens the file and calls Dos vector 5075 using the LDR function, and then disables Basic.

If the two numbers are anything but 255 or zero, 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 2225, 2070, 2020 and 2030, leave those lines out and save Program IIe-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. New type:

ENTER "G-LINES.LST"

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

Now type in Program II which creates an AUTORUN.SYS file which will automatically run MENU.LIB 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 I

```

10 GOTO 470
20 INPUT "DO YOU WANT TO LOAD A FILE? (Y/N)";A$
30 IF A$="Y" THEN GOTO 50
40 IF A$="N" THEN GOTO 470
50 INPUT "DO YOU WANT TO LOAD A FILE? (Y/N)";A$
60 IF A$="Y" THEN GOTO 50
70 IF A$="N" THEN GOTO 470
80 INPUT "DO YOU WANT TO LOAD A FILE? (Y/N)";A$
90 IF A$="Y" THEN GOTO 50
100 IF A$="N" THEN GOTO 470
110 INPUT "DO YOU WANT TO LOAD A FILE? (Y/N)";A$
120 IF A$="Y" THEN GOTO 50
130 IF A$="N" THEN GOTO 470
140 INPUT "DO YOU WANT TO LOAD A FILE? (Y/N)";A$
150 IF A$="Y" THEN GOTO 50
160 IF A$="N" THEN GOTO 470
170 INPUT "DO YOU WANT TO LOAD A FILE? (Y/N)";A$
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190 IF A$="N" THEN GOTO 470
200 INPUT "DO YOU WANT TO LOAD A FILE? (Y/N)";A$
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230 INPUT "DO YOU WANT TO LOAD A FILE? (Y/N)";A$
240 IF A$="Y" THEN GOTO 50
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260 INPUT "DO YOU WANT TO LOAD A FILE? (Y/N)";A$
270 IF A$="Y" THEN GOTO 50
280 IF A$="N" THEN GOTO 470
290 INPUT "DO YOU WANT TO LOAD A FILE? (Y/N)";A$
300 IF A$="Y" THEN GOTO 50
310 IF A$="N" THEN GOTO 470
320 INPUT "DO YOU WANT TO LOAD A FILE? (Y/N)";A$
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990 GOTO 470

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WHAT ARE YOU MISSING?

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

"The programme isn't the best"

"We love it Great Review"

"Page 6 has been waiting for hours since last week"

"Very good magazine - I've helped to write"

"A magazine that I can't live without"

"Excellent"

"I've helped magazine with reviews for people like you"

"Excellent magazine with lots of news from the Atari world"

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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 Atari 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-sigma would be entered by holding down the Control button and pressing the sigma 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-black/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-equal 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 POKE \$20 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

Atari code

8



Control-sigma

1



Control-A

2



Control-B

3



Control-C

4



Control-D

5



Control-E

6



Control-F

7



Control-G

8



Control-H

9



Control-I

10



Control-J

11



Control-K

12



Control-L

13



Control-M

14



Control-N

15



Control-O

16



Control-P

17



Control-Q

18



Control-R

19



Control-S

20



Control-T

21



Control-U

22



Control-V

23



Control-W

24



Control-X

25



Control-Y

26



Control-Z

27



Esc ... Esc

28



Esc ... Control-minus
(Up)

29



Esc ... Control-equal
(Down)

30



Esc ... Control-plus
(Left)

31



Esc ... Control-asterisk
(Right)

36



Control-fullstop

103



Control-semicolon

104



Shift-equal

126



Esc ... Shift-~ (Clear)

128



Esc ... Control-backspace

129



Esc ... Control-Tab

128



INV Control-sigma

Common Atari basic abbreviations

Q.	CLOSE	NO.	NOTE	ST.	STATUS
C.	COLOR	Q.	OPEN	T.	TRAP
D.	DATA	PL	PLOT	X.	NO
DR.	DRAWTO	P.	POINT		
DOG.	DOGSUR	POS.	POSITION		
G.	GOOD	1	PRINT	CS.	CLAVE
GR.	GRAPHICS	RES.	REM	E.	ENTER
L.	LOCATE	RET.	RETURN	L.	LIST
LOC.	LOCATE	SET.	SETCOLOR	LD.	LOAD
LP.	LOOPT	SD.	SOUND	S.	SAVE
N.	NEXT				

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 DU option for the extra 128 colours.

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

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 DUs to have the same colour register on the same horizontal line? — Philip Tucksbury, Clondalkin, Dublin.

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

This means that each time you use a DU the contents of that colour register will be changed until either the bottom of the screen is reached or another DU 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 "clear" along the line after a DU 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 Atari mode, but prints all the control characters embedded in the text.

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

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 went 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? — Susan Teather, Bradford, W. Yorks.

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

The biggest difference is the lack of string arrays, so ASCII does not mean the fifth string called AS, but rather the portion of AS from character five onwards.

Also DIM A\$(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,TEMP$ :
A$(5,10)=TEMP$
```

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 lifeline, 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 cartridge. With it came a booklet called Quick Reference Guide, but unfortunately it wasn'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 1300P and was interested in Len Golding'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 RUN, 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 364.

You could extend this routine to make the vertical blank dump a new character every 1/60th 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.

separately? — Zaffier Aaron, 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.D. Sandercock, Waverfordwest, 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, Gwent, Shropshire.

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

888 IF MGT (X1=LN AND IO=4) THEN 840

Playfields poser

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

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

**ATARI
USER**

Mailbag

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

The address to write to is:

**Mailbag Editor
Atari User
Europe House
66 Chester Road
Hazel Grove
Stockport SK7 5MT**

have saved them to cassette, when I try to load them to screen I just get Error 8.

The created playfields will successfully reload into Computer Carve, but I need to know how I can use them in my own programs. Could you help? — P. Purchase, Treno, 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 freeze out any non-standard format.

To reload a saved playfield simply modify the routine on lines 1640 to 1650 of the Computer Carve II program.

Don't forget to initialise the string IO\$ before you access it — see lines 90 and 1000-1010.

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? — B. Grotzke, 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 after use of my Atari 1300? used for? If it is for plug-in cartridges or peripherals could you tell me what is available and where they can be bought? — Daniel Page, Enfield, Middlesex.

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

On the old X, the expansion port was larger, but when designing the XC Atari decided that place most of the bus 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 around to use 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 products.

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 figure 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 Gossney, Kinross, Tayside.

I BROUGHT Atari User by 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? — Rghen Toebes, Uithoornse, Gelderland, Netherlands.

■ The instructions and listing for our Get it Right! checksum program last appeared in the August 1988 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 1988 issue you mentioned a special offer whereby I could order a game called Ninja for only 20p, but when I looked at the order form I found that the price was £12.99.

Could you tell me how I

can buy *Time for the 8001* - A.J. Quilley, Huxley, Massachusetts.

■ 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 preview copy every month only a day or two after we ourselves receive them from the printers.

Using the XEP-80

I need it like to know more about the XEP-80 system chip mentioned in the November issue of *Atari User*.

Can it be used with AtariMiner to get 80 columns in chess 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 AtariMiner at present, but

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

Protection problem

I own an American LG01 and an Indus disc drive. I have found your magazine extremely informative and have recently subscribed, taking advantage of your *Moneytree* and *Copy* offer.

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

Upon loading I get four beeps from the Indus and the next screen says 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, Gorton, Hants.

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

Try contacting Navagrah, 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 Express* in Germany, I bought an Atari 8000, 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 3000 89-91, 8090 Kaufbeuren, Germany. Tel: (010) 496 142 41081.

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

Funsoft has it that Scott Adams has formed another company so that he can continue to produce *Adventure* games for Marvel comics in conjunction with the Questprobe series.

Looking for Asteroids

COULD you please tell me where I might be able to buy *Asteroids* for my son's 8000? My local shop has sold for a week and has not found it. - Mrs. E. Madala, Brockwell, Berks.

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

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

■ 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

Downloading listings

I USE my Atari 8000L, MultiViewterm software and a Miracle Technology W504000 modem to access MicroLink and Pressed.

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 MultiViewterm 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, MultiViewterm 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

left. You must press Control-S to stop the computer sending, then go back to the Viewterm menu and save the buffer contents to disc as FILE1.

Then, go back online and press Control-Q which will start the computer sending again. Keep on doing this until the download is finished, saving each segment as FILE2, FILE3, and so on.

Then you must boot up your DOS master disc and append the files together. Append is a special form of the copy function which adds the new file onto the end of an existing one. So, you would type:

C >Return
FILE1,FILE1A >Return

For:

C >Return
FILE1,FILE1A >Return

and so on until you have added all the files on to the end of FILE1. The JA tells DOS to use the append option. FILE1 is then your downloaded program.

If MultiViewterm had a text download option none of this would be necessary, so a phone call or two to Miracle might help hurry them into producing a new version.

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, Pexley, Wiltshire.

■ 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 £11.95.

There is also a good book called the A, B and 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 Mac68k from Q&Q, 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 Agents which you'll quickly find will be worth its weight in gold.

Brighter headlines

I RECENTLY bought an Atari 800XL, 1050 disc drive and 1027 printer. I was won- dering if there is a desktop publishing program, along the lines of Wordstar on the Commodore 64, which would allow the use of different fonts, headlines and even illustrations on my 1027?

I am also a bit confused over the different versions of Dos available.

The print program which

KICKSTART

WOLF crawling around on Kickstart by Mastertronix I found an amazing little trick.

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

BOUNTY BOB STRIKES BACK

Level 1: Take the power pot and press I and Start.

Level 2: Take the paint roller (after killing the alien) and press I and Start.

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

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

Level 16: Set the auction bid number 1 to left, take a pie and press S and Start. — M. Jones, Miral, Mississippi.

STANOUAKE

THE names of the names

comes are Train, Keros, Wholes, Mirrow, Balco, Cance, Alike, Grant, Argos, Deke, Cruth, Z.A.P., Peris, Atari and Saxon.

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

You will be moving very slowly and the monsters will move fast. Get yourself killed, but not keep pressing the pause keys. The reading will say 00, but you will have 100 lives. — Mike Moulton, Gards Wingham, Hatfield, Essex.

AIRWOLF

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

ORIGINAL TIPS

MAY I congratulate you on a brilliant magazine. After the first few issues I thought it was just another "Nec tribute" magazine, but over the months you have got a lot better — Player magazine

graphics, gadgets, enhanced reviews, I love it!

I hate phrases, 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 One Man and his Gold...

Level Password

- 1 PHASE STARTY
- 2 BUBBLE
- 3 ATAN
- 4 FINDERS
- 5 GENETIC
- 6 ZAPPED
- 7 MEGASONIC
- 8 TUNE WARP

And here are the codes for Diles Follies (American). To start at level 5, type FANDS while playing. For level 10, type FANDS, for level 15, type AGARD and for level 20 type FANDS (I thought).

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 contemplated this for three months, and got 1,100,000 credits! — Colin Kayser, Gathbury, Devon.

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

I did try formatting a disc with Home File Manager, but saving a picture on it then produced a "No Room 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 advertisements for a Dos 4, but your reply to Mr R Powell recommends Dos 3.1.

All 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.

Renald McAvery, Margport, Gathbury.

■ Finally, Software Express should be able to help you out with some packages from Altair Software which might ease your hypertext problems.

As far as Dos goes, Dos 3.5 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 3.5, and use Dos 3 only if you have

to.

You should be able to pick up a copy of Dos 3.5 for the price of a blank disc from most Atari dealers, and the manual comes as an Assembler test 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 68000 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 tell 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, Gosle, North Humberdale.

■ Page zero is indeed available on any computer, assuming you have full control of the 6800.

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

In the case of the Atari, 800-83F are used by the OS; 820-83F by GDI but are otherwise free; 840-83F by the display handler and should not be touched; 880-82A by Basic, but are free if you are not calling your machine code from Basic.

800-82A are free for you to use; 800 and 803 are reserved for cartridge use; 804-83F 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, it's best idea

being to stick to using 800-82A which you should never have any trouble with.

Elusive stripper

PLEASE can you tell me where I can get the following games for my computer (800811). Ghosts in Gables by Eric, Claude and Sam For Strip Poker.

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

XIO commands

WOULD it be possible for you to do a series on the undermentioned XIO commands? — R.R. Stupples, Mansfield, Notts.

I WAS 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 in 101 or 102 lines of code. Would it be possible to do an article on this subject? — Peter Sanderson, South Tottenham, London.

■ In last month's issue we started a series on using the IO facilities of the 8 bit 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 OBTAIN an Atari 8000, with dual operating system, a 1080 drive 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 (a December 1989) and with a flick of a switch I have a dual 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 as fast as normal 1080 drive 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.C. Bickert at Altonham School, Ebbw.

Anyway, my problem I think, 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. — Takeuchi 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!

MORGEN'S QUEST

HOW do I get past the empty and the conversation phase? — Daniel Rye, Barry St. Edwards, Suffolk.

HOW do I use the transport? — Owen Stride, Daresbury, Norfolk.

SPELLBOUND

HOW do I get past the game? How do I move the ship? How do I get over the wall? — J. Hughes, St Paul, Cornwall.

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

Centronics interface

THERE is a place on the market which costs £24.95 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, Cheshire.

■ Look out for an upcoming part of our Budget 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:

Romero Daniel Stekolovsky Colima 140 34 (1400) Buenos Aires Argentina. Bart Trommelen Nijmegen 6 506104 Netherlands Holland.

The Atari Users Club 20-473 Lublin 48 PO Box 21 Poland. J.J. Golewyski, Poznan.

Royal Canadian PO Box 20008 Jucua At-Sonagah Saudi Arabia. Max Forster Taitel Amsterdam 8 London Magerford 8 Alpha 400 Rijn Gilden, Netherlands.

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The Second City. Thought you'd got away? Then load in this extra data set and think again! No hints or clues this time - you're on your own!



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Atari XT/ST*	Mercenary Compendium	Tape	£14.95	£12.95	£2.00	£17.95	£3.00
Atari XT/ST*	Mercenary Compendium	Disk	£17.95	£14.95	£3.00	£19.95	£8.00
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TO ORDER TURN TO THE FORM ON PAGE 49

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TO ORDER TURN TO THE FORM ON PAGE 49

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Use the alarm to ring or display a dialogue box.

Diary: Open a page to show a whole day's events. Unique classification feature enables you to search for similar category events.

Notepad: Access up to 32 pages of notes, any of which can be transferred into the application.

Typewriter: Use it to send codes and short messages to the printer while working on other programs.

Printer Buffer: Put aside any amount of the ST's ram as a buffer, allowing long documents to be printed while the computer is still in use.

Address Book: Gives you simple and fast access to names, addresses and other details which can then be used in other programs.

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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!

Software Express supplies dealers all over the U.K. – we would be pleased to advise you of your nearest Software Express accredited dealer.

Our mail order department has just been streamlined and orders placed before 3p.m. we will normally despatch the same day. Phone Martin on 021-328 3585 and he will speed your order through the system. Alternatively, send your order by post, marking the envelope 'Mail Order Dept.'. If you can make it, a personal visit would be much appreciated, particularly by yourself, since you will find yourself surrounded by more Atari software than you have ever seen in one place. Software Express has a reputation for Atari software – don't forget that we also supply hardware, both Atari and third party manufacturers. Disk drives, computers, printers – you name it. We also have the best range of books for the Atari.

1987 will be an exciting year for Atari users with quality software emerging from the software houses on both business and entertainment fronts. Software Express will continue to support the 800XL and 130XE users with the emphasis on the quality software. Our dedication to the ST range is already well known, and we have lots of new ideas for the coming year. Please send for our latest price list indicating what machines you own, or intend to own.

Best Wishes to you for 1987 from all at Software Express.

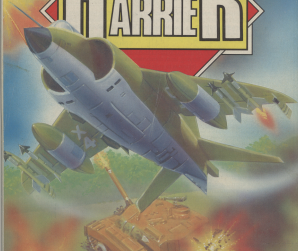
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