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Vol. 2 No. 11

March 1987

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this
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10am-4pm Sunday, April 26

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On display for the first time in the UK will be new Atari products that are set to rock the micro world.

Star of the show will be Atari's IBM PC compatible, offering a radically new design at a price that will revolutionise the PC marketplace. There, too, will be the latest models in the ST range - the Mega ST workstations. Plus the remarkable Atari laser printer, the machine that has broken the price barrier in desktop publishing.

All of these - along with breakthroughs for the ever-popular 8-bit range and hundreds of new software packages - will be on display at the April Atari Computer Show.

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Atari Show launch for new PC model

65XE makes its bow

WITHIN 48 hours of Atari UK's new 8 bit level entry machine taking its bow, it attracted advance orders for 76,000 units.

Known as the 65XE, it was shipped from America to make its spectacular sales debut at the London Toy Fair.

In its basic form it is a games machine but can be upgraded to a 1300E compatible computer.

Offered in a grey case like the ST range, the 65XE is to be sold for £99.95, the price including a joystick and a games cartridge.

Interface

However it does not have a built-in cassette as previous reports from the States indicated, but simply a cassette interface.

The upgrade kit, which costs £40, adds a keyboard, lightgun and cassette recorder to convert it into a true 8 bit micro.

Atari had previously planned to replace the successful 7600ECS games machine over here with the 7600ECS.

However officials at Atari UK persuaded their American cousins that the British market would benefit from a machine that could run cassettes - not just cartridges as in the case of the 7600.

"We feel that this offers the users over here the best of both worlds", said an Atari spokesman.

It has now been confirmed that the April Atari Computer Show has been selected as the UK launch pad for the company's IBM PC compatible machine.

At the same time it was made official that the event has been chosen for the official unveiling of the revolutionary priced laser printer and the latest in the ST range - the Mega ST workstations.

Company officials had previously considered releasing all these breakthroughs at the Which? Computer Show.

However it was subsequently decided to hold over until the April event, so providing Atari users with the opportunity to see the machines first.

"We felt we owed it to our faithful army of Atari fans out there", said a company spokesman.

"This will transform the event into a never-to-be-forgotten occasion".

Such is the importance now being placed on the show that chairman Jack Tramiel and a gang of wife's will be jetting across the Atlantic to attend.

But even long before it was known that there would be major launches at the show, demand from exhibitors had been at an all-time high.

And a large number of these are reported to be preparing to release further new products.

While most companies involved would not divulge details before the show, Atari UK managed to unearth several who would.

On the ST front, Precision Software is to introduce a multi-file relational database. Known as Superbase Personal, it is designed for use with Gem and is likely to carry a price tag of around £165.

Highsoft also has a new package for the ST in the form



Alan Jones, Atari UK's new 8 bit level entry machine will be there.

of a basic compiler. Compatible with Microsoft Basic, the price has yet to be decided.

Nor will 8 bit users be overlooked in fact it would appear that on the software front new titles for this range will overshadow those for the ST.

Real Hat Software has three new games - Asteroid, Death Racers and Forbidden Island - all costing £7.95 on tape, £9.95 on disc.

And on the budget title scene, Tynesoft will be offering a range under its new Micro value label all priced at less than a £1.

"This show is shaping up to be the most significant event ever in the Atari calendar", says Derek Meakin, head of organisers Database Exhibitions.

The Atari Computer Show takes place at the Newgate, HammerSmith, London from April 24 to 26.

Doors open at 10am each day and close at 8pm on Friday and Saturday, 4pm Sunday.

A names saving advance ticket order form can be found on Page 53 of this issue of Atari User.

In-depth manuals plan

FULL operations manuals - many in excess of 100 pages - are now to be offered with the Atari 8 bit range of packages from MicroProse.

The in-depth publications are already the hallmark of the giant American software house's 16 bit simulators.

But in a move to strengthen its position as the market leader MicroProse will now issue the extensively researched booklets with its lower priced packages - including those costing just £9.95.

The glossy covered works contain not only detailed operational instructions, but also historical background information, notes from the designer and advice on further reading material on the subject.

"We pride ourselves on

authentic and accurate simulations that provide not just a few hours of enjoyment but hundreds", says Stewart Bell, managing director of MicroProse in the UK.

"So that every player can get the most out of our simulations, we've decided to issue manuals with all our products".



The 65XE system includes keyboard, printer and light gun.

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Teleconferencing, £1.80 for up to 100 users. An illustrated programme card for meetings, telefaxing, etc. costs no more. The following suppliers to Britain first post the following details: Dominion mail, 29p (Germany, Denmark, N.Y. USA, Canada, Australia, Singapore, Hong Kong, India) for Post £.044 characters. For additional £.044 characters, 1p and 1p.

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Atari keeps eye on Parliament



Roy Goring

Problem solving service

A HAMPSHIRE man has started running a correspondence course specially devised and priced for young Atari users who want to learn how to write programs.

Roy Goring bought an 800X, four years ago to teach himself Basic and machine code.

He is now an expert in Atari Basic and has devised his own style of structured programming which is simple to write and debug.

"My correspondence course is run on a very personal basis", Goring told Atari User. "Each lesson is tailored to the needs of the individual because no two people learn at the same speed."

"I sell only one lesson at a time - priced £2 - because this allows individuals who follow the course to save up and buy each stage when they can afford it."

"I've also included a problem-solving service because when I was programming and got stuck I had no one to turn to for help."

"I deal with people's problems on a personal basis for a minimum fee of £1, rising in accordance with the amount of work I have to do in order to help them."

"Although my correspondence course is relatively new it has already proved popular".

A NEW publication which monitors Parliament's activities in relation to health is being produced with the aid of an Atari 1040STT.

Healthcare Parliamentary Monitor appears fortnightly while Parliament sits.

It aims to provide a non-partisan account of all health care developments at Westminster and at the DSS.

The newsletter is distributed to companies and individuals with a specific interest in Healthcare - health authority managers, family planning clinics, community health councils, pharmaceutical companies, pharmacists, medical equipment manufacturers and suppliers, and medical academics.

It covers debates in both Houses, parliamentary ques-

tions and answers, government and Private Members' Bills, and select committee meetings among other topics.

Editor Rodney Deane told Atari User: "The most important criteria for me when I was evaluating different news systems was to get the right balance between price and performance."

"The best value for money was definitely supplied by the Atari ST. It is important for me to upgrade the system shortly, and I am already looking into different desktop publishing packages as well as laser jet printers."

"I've found the ST indispensable in the task of putting the newsletter together. At the moment I'm using HabiWrite, HabiView and HabiMerge and find them extremely easy to use".



New option

ATARI 8 bit users have a new joystick option available to them - the Phaser One from Britannis Software.

Its design incorporates a pistol grip trigger action, with the joystick placed on top of the device to permit equal dexterity by both left and right handed users. Price £12.95.

Adventure for all

AMERICAN publisher Strategic Simulations has converted Phantasie for the Atari 8 bit machines and Phantasie II for the ST.

Phantasie is a multiple role-playing game where a party of up to six characters is assembled to search the Isle of Dorian for nine rings that will rid the land of the Dark Lord.

Players can create an elf who is a wizard, a dwarf who is a fighter, or combine in creative ways the eight races and six classes of characters which include humans, elves, dwarves, gnomes, warriors and wizards.

More than 80 types of monsters oppose the player in a total of 18 dungeons.

Phantasie II takes players to the Isle of Fenestra, a place of beauty and magic teeming with evil power from an embankment only controlled by Nihilodermis, the Dark Lord.

Players gather a group of adventurers to sail to the island, use spells and weapons to invade it, escape dungeons and destroy the demons.

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Getting rid, Atari!

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Volume 17 issue Oct



The parting of the ways ...

FOLLOWING an overwhelming response from our readers after the recent survey in *Atari User*, it has been decided that the magazine will say goodbye to its younger cousin - *Atari ST User* - which from now on will be published as a magazine in its own right.

Starting with the April issues, *Atari User* will return to being wholly aimed at owners of 8 bit Atari computers. There will be lots of room for more utilities, games listings and tutorial series.

Atari ST User will at least double in size and this extra space will allow us to support ST users better than ever before. Forthcoming

features include detailed reviews of all the latest software and hardware and a major new series on Gem programming which will include details of everything from dialogs to windows.

Publishing two Atari magazines every month will allow us to give much greater coverage to all that's happening in the rapidly expanding world of Atari.

Whether you own an 8 bit, ST or both, we're sure that you will welcome both magazines and we look forward to your comments and suggestions on ways you would like to see them develop in the future.

■ To take out an annual subscription to *Atari User* or *Atari ST User* please use the subscription form on Page 53. If you are already a subscriber to *Atari User* and wish to transfer your subscription to *Atari ST User*, please write (giving the name and address to which we send the magazine) to: *Subscriptions Dept, Atari User, Europe House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.*

Talk your Atari into action

CURE those trigger-finger blisters by adding a voice-operated fire button to your favourite joystick. Awaken your friends with a talking head, whose lips move when you speak into a microphone.

Or keep track of vibration from any source — fridges, washing machines, TV speakers or even major earthquakes. Or just train your computer to do tricks when you whistle. This gadget can do it all.

Since you can trigger it by touch or by blowing gently across the mike, it could find a less frivolous use in Passover-type systems to help severely disabled people open curtains, answer the door or switch the TV on and off.

It can also be easily adapted to accept inputs other than sound, but more about that later.

You can't connect a microphone directly to the joystick port for two main reasons. Firstly, the output from most mikes is very small — a few thousandths of a volt at best — and the computer isn't sensitive enough to detect it. Secondly the signal is AC, which the internal hardware can't handle.

We need to amplify the mike's output and convert it into a DC signal

which switches cleanly between 0V and 5V. Then it can be connected to any of the five on/off input lines on your joystick port.

Figure 1 shows the circuit. It's not the simplest possible design, but it is very versatile and costs only a few pence more than a rudimentary sound switch.

Stage 1 is a fairly conventional AC amplifier which converts the microphone output into a respectable voltage swing at C3.

Stage 2 is less conventional, built around an ordinary quad 2-input NOR gate chip. Two of the gates are wired as a monostable, which converts brief

input pulses into output pulses long enough for the computer to detect.

The remaining two gates form a Schmidt trigger, which ensures a clean on/off transition at the output. Stage 2 is in fact a self-contained analogue-to-digital switch which behaves in the following way:

The input (point A) is normally held above 2.5V, by the action of V1 and R5. In this state the output is held at 0V (Fig 1).

When a brief negative-going pulse is received from C3, point A falls below 2.5V and the output then switches very rapidly to 5V (Fig 2). The Schmidt trigger action ensures that

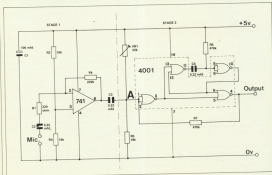


Figure 1. Circuit diagram for the sound-activated switch

the gadget can't send out any intermediate voltage which might confuse the computer.

The monostable holds the output low for about one tenth of a second, no matter what happens at the input, if at the end of this period point A has gone back to 2.7V or more, the output returns to its high state.

Otherwise it remains low until the input voltage rises above the 2.7V threshold. This gap of 0.2V between rising and falling thresholds ensures that the output won't chatter on and off when the input is exactly at one or other of the trigger voltages.

Now let's look at practical construction, if you like to stick your own PCBs, the full pattern is shown at Figure 8.

Alternatively you can buy a ready-stocked and drilled board from RH Design. Use the board as a template for drilling the case before you solder any components.

At the same time, it's a good idea to drill a small access hole so that VRI can be adjusted when the case is assembled. Dimensions are given in Figure 9.

Figure 8 shows the component layout for the basic sound-operated switch. Notice that the 741 IC is inserted "upside down", with pin 1 in the top right position.

This IC needs no special handling precautions, but the 4001 chip is a CMOS device, so treat it with care. Avoid handling it unnecessarily and get rid of any static charge on your hands by gripping an earthed metal appliance before touching the IC pins.

The amplifier (Stage 1) is matched to a microphone impedance of around

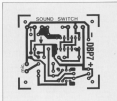


Figure 8: PCB layout — exact size

250 ohms, so a standard cassette mike will work very well.

Telephone inserts also give good results and these are cheaper and more robust, especially for applications which involve tapping or blowing. Crystal and other high-impedance microphones are not suitable.

Connect the microphone and joystick leads to their respective terminal blocks as shown in Figure 8. If the mike has a screened lead, its outer braiding should go to the pin nearest VRI.

We've assumed you will connect the gadget's output to the fire button line at joystick pin 8, but any of the other four on/off input lines (pins 1,2,3 and 4) will work, provided you modify the software.

If you use joystick Port 1, these pins return a four-bit word at address 600, as we have explained in previous articles.

Plug the gadget into Port 1 and run Program 1. Adjust the variable resistor until the number on screen is 0, then advance it until the number changes to 1 and holds there reliably. The test window will also change colour, so it's easy to spot the transition.

Now clap your hands near the mike. The number should change momentarily to 0, then return to 1. Fine adjustment of the variable resistor will set the sensitivity to suit your application.

At its best, the gadget will respond to a snap of the fingers at up to three

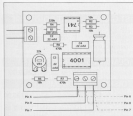


Figure 9: Component layout for the switch circuit

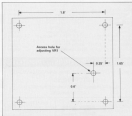


Figure 10: Case drilling template (taken from outside case)

retree distance, or a pin dropping on a hard surface close to the microphone.

To give your joystick a voice-operated fire button, use both ends of the extension cable. Cut the cable to remove a section from the middle leaving you with suitable lengths - about six inches in from each end - of the cable to test.

Strip back the black outer sheath to expose the nine internal wires and join each wire back to its partner, matching the colours. Solder the joints and insulate all except the ones to pins 8, 7 and 6, then connect those three joints to the terminal block as shown in Figure 8.

If you want to disable the joystick's own fire button, leave the socket and all wires disconnected.

Plug your joystick into the extension socket, load up a game and set the gadget's sensitivity low enough to eliminate spurious triggering. Then shoot, stop or whistle to blast away.

There's scope here for some simple fast-moving games if you can stand

the racket. You may need to position the mike fairly carefully, so that it doesn't pick up sound from the TV speaker or other inappropriate sources.

If you would like the output pulses to last longer than one tenth of a second, there are two options. You can increase the value of R8 (10 megohms will give a delay of around three seconds) or you can build a delay loop into your software, as shown in Program 8.

Program 8 is the "talking head" I mentioned earlier. Lines 10 to 80 put a simple face shape on screen, then lines 80 and 70 use the gadget's output to modify addresses 700 and 710, which control the mouth colours.

This gives the effect of eye opening and closing. OK it's a primitive program - but you could use the same principle for a much more impressive multi-coloured display, say in graphics mode 7.

Remember though that inexpensive mice respond best to high frequen-

cies. The gadget will pick up most consonants without difficulty, but it may not detect vowels unless you're very close.

The gadget can easily be modified to accept other types of input - for example, you can trigger it by touching the microphone input, even if there is no cable connected.

It's easy to make a touch-sensitive switch by attaching a wire, or metal pad (for example Magni type HY08), to the terminal pin nearest the mounting hole.

Many types of sensor - such as thermistors, pressure transducers and moisture detectors - change state slowly, so can't be connected directly to the cable input lines.

Others (like photoresistors), can switch on and off so rapidly that the trigger pulses may be long gone by the time your computer gets around to looking for it. This gadget can be used as an interface for both types of signal.

To modify the board, leave out all the amplifier components and fit a two-way terminal block in place of R8.

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Program 1



Program 2



Program 3

as shown in Figure 5.

Connect your sensor to this terminal block - if it's polarised, such as a photodiode, make sure the negative end goes to the left-hand terminal. Adjust VR1 as before so that the gadget triggers at your chosen threshold.

If you want to use a thermistor choose one whose resistance is between 5k and 20k at the desired trigger temperature - type VA1055 is suitable for most purposes.

A rise in temperature will send the output low and it will stay that way until the temperature falls a degree or two below your pre-set threshold.

Any commonly-available photo-diode or phototransistor will work and a very brief flash of light will trigger the output pulse. Steady illumination will hold the output low until the light level falls back below your threshold value.

Now suppose you want it to work the other way round - to make a counting device which increments when a light beam is momentarily broken, for example. That's easily achieved, but it requires a bit of engineering.

Look at the track side of the PCB. Just above VR1 you'll see a pattern of four pads which have not been drilled and below them two arrows.

Break the tracks at the two arrows, drill the four new pads and fit a wire link horizontally - parallel to the terminal blocks - across each pair of holes.

This reverses the positions of VR1 and VR2, so the terminal block will now be connected between point A and +5V instead of point A and 0V.

If your sensor is polarised, make sure its positive lead now goes to the left-hand pin. In all other respects, the gadget will perform exactly as before.

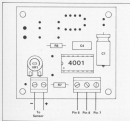


Figure 5
Modified board
layout for use
with alternative
input devices

PARTS REQUIRED FOR SOUND-ACTIVATED SWITCH

	Maplin codes	
1	µA741 8-pin Op Amp	012374
1	4001 Quad 2-input NOR gate	030116
1	8-pin DSI IC socket	81171
1	14-pin DSI IC socket	81182
1	3-way PC terminal block	PT368
1	3-way PC terminal block	PT373
2	Cable 'T' clips 318"	1R644
2	0.22 mfd Polyester layer capacitors	WR607
1	100 mfd 15v Axial Electrolytic	PR46C
1	Small plastic box	LH140
1	200 ohm cassette microphone (eg Maplin MB21.0, or tele phone insert)	

Miniature resistors:

1	220 ohm (red, red, brown)	MS208
2	10k (brown, black, orange)	M102
1	10k (brown, grey, orange)	M108
1	320k (red, red, yellow)	MS205
2	470k (yellow, violet, yellow)	MS470K
1	22k Horizontal sub-miniature preset	WR58P

Approximate cost £1.20 plus postage

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

Maplin Electronic Supplies
P.O. Box 3
Rushleigh
Essex
SS6 6LR
Tel: 0782 552611

Printed circuit board (order code 08P7) available from:

R.H. Design
137 Stonehill Avenue
Hamgate
North Yorkshire
YO22 7N5
Tel: 0423 588888

Price £7.45 including VAT and postage

...and/or extension lead available from Family stores (code 236-1378) or from large computer shops. Price around £3.30.

On your bike

Program: *BMX Simulator*
Price: £1.99 (casualist)
Supplier: Code Masters, 7
Stratford Business Cen-
tre, Stratford Close,
Smisbury, Oxon OX12 9HT.
Tel: 0205 66406

BMX is another action-packed game involving head-to-head competition against the computer or a friend.

The title is a little misleading - it's not a true simulator since the view is from above, but that shouldn't detract from what is a fairly good game at the price.

Your task is to race your BMX bike round a track, avoiding various obstacles. There are seven different courses, each more difficult than the last, and with less time allowed to complete

each race.

A steady hand and a level head are needed here. The courses can be learnt gradually over a period of time, so even the worst games player sees a marked improvement as he plays.

Richard Darling, author of the *Commodore 64* original, has also incorporated an action replay feature, complete with slow motion, which is unique for a game of this type.

The graphics aren't best, but I've seen better. The courses are appropriately laid out, and the "burns", as they're called, slow you down on the way up and help you speed up and turn on the way down.

There are ramps and rough ground to traverse, and obstacles which stop you getting back on the



course if you wander off line.

As the view is from above, the bikes appear quite small, but if you crash the rider flies over the handlebars and bike and rider are revealed quite realistically.

The music, written by David Whitaker, is catchy and pleasant, and includes a short fanfare at the end of each round. Sound effects include pedalling and thuds as you crash.

If you're a BMX fanatic, or prefer racing to speeding, then this game is right up your street - and it's cheap enough to buy without leaving too great a dent in your pocket money.

Bob Anthony

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

Fine quartet

Program: *Shoot 'Em Up*
Price: £8.99
Supplier: US Gold, c/o JCL,
Rushford Way, Rushford,
Birmingham B61 1AR.
Tel: 021-358 2288

COMPILATION packages abound these days, and that is generally good news for both software houses (who get extra mileage from agency games), and Joe Public (who gets the benefit of buying games at very much reduced prices).

Critics might say that they are an excuse for jolting out otherwise unmarketable games on the back of one big sell.

While that may well be true in some instances, it is definitely not so with this latest offering from US Gold.

The four games in the package are *Super Zaxxon*, *Blue Max 2001*, *Fort Apocalypse* and *Droptone*. Instructions in compilations

are sometimes a little skimpy, but US Gold has provided a comprehensive and well detailed set for all four.

Super Zaxxon is a fair representation of an old arcade favourite. You fly over enemy fortresses and through tunnels in glorious 3D, dodging force fields, shooting, bombing and battling with fire-breathing dragons along the way. Graphics and sound are both satisfactory, and although the pace is a little slow it remains very playable.

Blue Max 2001 owes much to *Zaxxon* for its style, there being many similarities in the gameplay and appearance.

Again you must bomb or shoot anything that does or doesn't move, progressing to the next level after a precision bomb run on a special target.

While *Fort Apocalypse* is let down to a certain extent



by blocky graphics, the game itself is excellent and thoroughly addictive.

Your task is to rescue stranded prisoners in your helicopter, dodging and shooting floating mines, tanks and helicopters, ultimately blasting the very heart of the fortress.

Droptone is to my mind the best of the collection, and perhaps the best all-out blaster I have seen for the Atari.

The graphics are superb, the sound excellent and the action smooth, fast and furious.

Your moon base is attacked by aliens and you

must gather in your comrades to the relative safety of the base.

Apart from the aliens you'll have to watch out for molecular acid clouds, proton lightning bolts and erupting volcanoes. This game is sheer chaos and destruction from start to finish.

All in all, *Shoot 'Em Up* lives up to its name.

Nick Reynolds

Sound:	2
Graphics:	2
Playability:	2
Value for money:	20
Overall:	2

Rambo rampage

Program: Gun Law
Price: £1.99 (casualist)
Supplier: Watkinson, 8/32
Paul Street, London EC2A
6JA
Tel: 01-377 6880

THE sales hype on the Gun Law pack starts off: 'Four months of bloody alien attacks have taken their toll...'

However anyone buying this game and expecting to see aliens is going to be in for a surprise and possibly a disappointment.

There you are in your smart blue army uniform at the bottom of the screen, brandishing your machine gun, ready to seal out the invaders from outer space. But hold on, these are soldiers shooting at you. In fact they are identical to you in every respect, but for the fact they are wearing green

instead of blue. Whatever happened to the aliens? I certainly never saw any.

Anyhow, the aim is to run up the screen with the background scrolling vertically downwards, fending off your attackers.

Various objects can be used as cover from enemy fire, such as trees, fences, rocks and buildings.

Due to some programming business, grass, ponds and small obstacles will also stop speeding bullets.

Once you reach the end of the cone (no easy feat) you must negotiate a flashing electric fence and then go through the same exercise in the next zone. Naturally your enemies are better armed and there are more hazards to contend with. So it goes on until you reach the fifth and final level.

The graphics in Gun Law are adequate, though they

do have some oddities.

For example, an alien walking in front of your Rambo character is masked out as if it had gone behind.

The animation of the figures is minimal and movement is limited to up, down, left and right. The game would have been improved by the inclusion of diagonal movement.

With the high standards attained by many of the budget games around these days, I had expected a little

more from this game.

It has nothing to particularly recommend it, but neither does it have any serious faults.

Gun Law is a no-frills budget shoot 'em up and as such still represents fair value at under £2.

Paul Mills

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

Bandits ahead

Program: Spiffie 40
Price: £9.99 (casualist/132.00
share)

Supplier: Microverk, Maxwell House, 38 Moorgate Street, London EC2A 3JH
Tel: 01-377 6880

"SCRAMBLE! Scramble! Bandits coming out of the sun at one o'clock."

"He's all yours, Singer, and try not to ping it in the lobby this time."

New that's the sort of guff he'd sling when I was hoping would be generated by this Spiffie flight and combat simulation program. Also, it was not to be.

While Spiffie 40 is quite a good little simulation it didn't quite have the ope and excitement I had anticipated. Perhaps it was because I felt that much better use could have been made of the sound potential of the Atari.

The main screen is, as you would expect, a view straight ahead from your seat in the cockpit.

Not much to see, really, except areas of green grass and miles of the wild blue yonder.

Pressing the speaker toggles you to and from the instrument screen. This shows fuel gauge, airspeed indicator, artificial horizon, VSI, engine rev indicator, alt and turn indicators, compass, altimeter, rudder and pitch indicator.

A further screen provides a map of South-East England showing your position and three areas which can be examined in more detail by a zoom feature.

You control the Spiffie using either a combination of joystick and keyboard or keyboard only.

Spiffie 40 lets you choose a practice flying session or to go straight into combat.



Unlike many simulators, getting the plane off the ground and keeping it up there is pretty easy.

In combat mode a number of enemy craft will appear, sometimes ahead, sometimes in your rear view mirror.

You give chase and manoeuvre your Spiffie to line the enemy up in your sights.

When you fire you hear the rat-a-tat-tat of your eight Browning machine guns and see the bullets spraying out from below both sides of your cockpit.

If the enemy craft is hit it

immediately but silently disintegrates and disappears.

Response to joystick and keyboard is a fraction slow but not so much that it spoils the gameplay.

Not quite the spiffing show I'd hoped for, old bean, but jolly fair nonetheless. Cheers, Dave!

Bob Chappell

Sound	4
Graphics	2
Playability	2
Value for money	4
Overall	4

Fight to survive

Program: Red Max
Price: £1.99
Supplier: Code Masters, 1 Beaumont Business Centre, Beaumont Chase, Bishops, Oxon OX10 3BT. Tel: 0285 68402

THE screen shots on the inlay card looked promising and I had high hopes for Red Max. After 22 minutes loading my enthusiasm was beginning to wane slightly, but thankfully it loaded first time.

The storyline revolves around the survivors of Earth's Global War who have colonised the moon.

They become a little concerned on discovering that the sun is about to explode, so they fit the moon with a few anti-gravity orbs, catapult it from the solar system, and kip down for 1,200 years – planning on waking up long after the sun has gone nova.

Things start off well enough for the fugitives, but unfortunately a band of renegade Death Lords take a ride in order to sabotage the power plants.

It is your job to get on your lunar motorbikes, find the mines they have planted and de-activate them.

Having disabled the mines you progress to the engineering level, turn on the backup nuclear cooling systems and shut down the main power plants.

Lastly you must descend to the liberation complex and wake up nine crew members. You have an aerial view of the whole operation.

Controlling the bike with the joystick is simple. The only controls, apart from left and right, are acceleration and deceleration, achieved by pressing and releasing the fire button.

You must avoid collisions with buildings and walls



while negotiating flashing laser fences and gates.

To neutralise the mines, collect fuel, temporarily disable laser fences and switch off reactors, you'll have to ride over certain key objects.

I found the game very pleasing visually, with smooth movement and detailed graphics.

There are complaints, however. In particular the bottom two thirds of the screen is taken up by the motorbike console which shows speed, fuel, and the state of your shields.

There is also a small prompt screen that tells you what to do next and warns of low fuel levels.

The console looks very pretty, but actually contributes little to the game.

Despite this, Red Max is one of the best budget games I've seen.

Paul Mills

Sound	4
Graphics	4
Playability	4
Value for money	4
Overall	4

Trickier Willie

Program: Jet Set Willy
Price: £7.99 (suggested) £12.99 (retail)
Supplier: Tynesoft, Unit 2, Astoria Industrial Estate, Blyton, York and West YO31 4TJ. Tel: 019-434417

JET Set Willy was originally written for the Spectrum and remains one of the all-time greats of computer gaming.

Tynesoft have now produced it under licence for the Atari, nearly three years after it was originally published by Software Projects.

The story so far: Minor Willy has returned home from his adventures and throws a party to celebrate.

However Maria his housekeeper won't allow him into bed until he has gone around the mansion and collected all the glasses. You move Willy through

the house and grounds, down stairways, up trees, swinging over obstacles on ropes, making jumps that require great precision and avoiding the many and various obstacles that are out to get him.

The game remains faithful to the layout of the original, but unfortunately loses in the translation.

The graphics on the Spectrum are bright, lively and have a great deal of humour and charm.

Tynesoft seems to have made the conversion too liberally. With the Atari's superior graphics capabilities I had expected a riot of colour and fast moving action.

I got neither, the graphics being lacklustre, cartoonish sluggish and the movement too slow.

Tynesoft has very def-



initely improved one part of the game – the music is superb. It can be switched off if necessary, but I really enjoyed it and kept it on.

If the music is switched off you are left in total silence, with none of the bells, sleeps and burlings that denote jumping, falling or whatever.

No great loss perhaps, but I do feel they would have added to the atmosphere. In its own right, the game is playable and more lively to

get through than the original.

The coordination and accuracy required to clear the perimeters and obstacles is considerable and the game will still appeal to those who like this sort of pixel-scraping challenge.

Nigel Reynolds

Sound	4
Graphics	4
Playability	4
Value for money	4
Overall	4

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MicroLink application form: Page 8

By Brillig

The Payoff goes something like this

JUDGING by the number of letters received on the subject, one of the most frequently played adventures seems to be *The Payoff*, so it's not surprising that I should get more requests for assistance with this than with most others.

Conrad Wilson of Uxbridge knows that you have to change the bit in the drill but cannot find the exact combination of words to do it.

He is also having some difficulty getting the bolt and wonders who has the key to the car.

On the same adventure, Donnell Gode from West Lohian has almost finished but cannot help triggering the alarm when he drills through the door of the vault.

GLITCH OF THE MONTH

Stewart Parsons from the Isle of Wight has spotted a cunning glitch in, of all things, Infopost's Spellbreaker. To get the cube from the wizard's hat, you're supposed to collapse the hat by using the *Casidy* spell.

However, if instead you *CAST PROTECTOR CUBE* then *EXTINGUISH CUBE*, the response begins "taking the cube first" . . . which leaves you nicely in possession of the cube. Mod done, Stewart, that's a tricker.

Perhaps you're trying to get in the wrong way, Donnell—have a look at the hotel hints.

Staying with *The Payoff*, Stewart Parsons from Cowes would like to know the exact words for getting through the window.

Stewart would also like some advice on how to get the cube from the Mad's nest in Infopost's Spellbreaker and how to get the alloy wheel in Level 5's *The Price of Magic*.

Finally, F. Chassell of Brighton is anxious to know how to solve a couple of problems with *Lords of Time* from Level 5.

He wants to know how to overcome the troublesome Pirate Pete and what to do in the colossal Habidroma.

That's all the help for this month. Be sure the YTS groans are bare by keeping those letters rolling in. After all, they are being paid two ounces of Todi's gold a week and must have something to do besides plagiarize all my test spells. Exciting adventuring!



CLUES CORNER

Read these clues backwards if you're really stuck

THE PAYOFF

Want to use a new bit in the drill?
TROT P'

Is the bolt causing you to despair?

TLUA JNEW TRPT NROT TERS LP
TSD MOON EHTT SICH GR

How do you get the key to the car?

GRAP RACE HTN' TERE MTSN HECW EREY T

ROPT KOP EDEY AERY TNOR PMSO EHTM HREY M

Window smashing causing you pain?

PLAU NEHT REPA FOWE' NROF TDEL CAWR ROAR WPS

SPELLBREAKER

Cube in the mad's nest immovable?

TRYS BASH CONW EMTD BASH WTSE NEHT OTAG

TSEW SATED PFTU DRWE NARD FARGO BBA SWTN BAA
DAME HTOT OG

PRICE OF MAGIC

Need the alloy wheel?

NRLE EREN TNOR FTAB SWTD EFWU DP

SGOR DEAT GWS LITE SIO RPTW

LORDS OF TIME

Pirate Pete a pest?

RLU T EGOT GRW NDT TADC BURE MG

SGM BAW DMBAL SOTR UCHO LD

Unkappe in the Habidroma?

LLAH GWC REYN INAM REBY CTMG P

REY AEWB ACCH TMS TOMO RNOF O

SMF, YBAR AOTM STOM OREN IMAX E

CIO devices:

Easier file handling

In the first two parts of this series we looked at the theory behind data input and output on the 8 bit Atari, and at the operation of the Central Input/Output system. We've also tried CIO from a simple program which used CIO from machine code. Now it's time to look at the other facilities that CIO has to offer.

We have so far seen three CIO commands in use - Open, Put Text and Close - but we didn't go into any real depth on how they worked, or look at the other options available.

There are actually seven general commands available to CIO, plus a whole host of other device-specific instructions. The main commands are: Open, Get Text Record, Get Binary Record, Put Text Record, Put Binary Record, Status and Close.

They all have different uses with different types of device, and not all are applicable for all devices. For example, it is nonsensical to try to Get data from a printer or Put data to the keyboard.

Some commands, most notably Open and Status, may need to operate very differently each time you call them.

With Open, for example, you may wish to create a new disc file, open a long-gone mode cassette file for reading or even set up a channel to a

particular graphics screen.

If you remember from last time, we said that each channel has its own control block of data - known as an ICCB - which you must set up before calling the CIO system (See Figures 1 and 2).

Thus each time you use the Open command you need to set the relevant ICCB's bits to 3 and the buffer address (CBAL and CBMH) to point to the string containing the device name (such as "D:PRIN" or "C:").

Part 3 of André Willey's series on the Atari's input/ output facilities

The buffer length pointer (CBLL and CBUL) is rarely used with Open, but in order to handle such a wide variety of functions the command does make full use of the first two auxiliary data bytes.

ICAX1 is used to specify the mode you want the device to adopt. If you

require input, for example, you would use 4 and output would be 8.

Some devices are capable of doing both at the same time, so the two are added together to give a value of 12 for use with an input/output file.

Sometimes a device is capable of much more - such as the screen handler, which most know what graphics mode you want, and the disc and RS232 handlers which both allow various special options. These facilities are selected by using both ICAX1 and ICAX2. A full list of the options is given in Figure 3.

If you examine the screen handler entries very carefully you will spot the answer to last month's puzzle - remember, the two numbers after the channel number is an OPEN statement are stored as ICAX1 and ICAX2 - so all the line did was to simulate the GRAPHICS 7 command using CIO.

After Open, the next four CIO operations control the actual transfer of data to and from the channel, with two commands for input and two for output. Obviously, if you try to output to a channel you've only set up for reading you will get an error.

The two modes of input and output are Line (or Text) and Binary, both of which actually operate in a very similar manner.

A binary record is a block of characters or data of fixed length, while a text record is a set of characters terminated by a Carriage Return byte (ASCII code 13). Text is normally dealt with in line mode - as BASIC does with 80 strings, for example - whereas raw data is often processed as a binary record.

Command 8 will output a text string

Address	Label	Bytes	Description
ICCB + 0	ICRNO	1	Index into NATABS
ICCB + 1	ICRNO	1	Device number (eg. D1., D2)
ICCB + 2	ICCOM	1	Command type (eg. OPEN, CLOSE)
ICCB + 3	ICSTA	1	Current Status of Device
ICCB + 4, 5	ICBALH	2	Buffer or filepos address
ICCB + 6, 7	ICPTLH	2	Address of Put-Byte routine (0)
ICCB + 8, 9	ICBLLH	2	Buffer data length sent/returned
ICCB + 10	ICAX1	1	Auxiliary byte 1
ICCB + 11	ICAX2	1	Auxiliary byte 2
ICCB + 12	ICAX3	1	Auxiliary byte 3
ICCB + 13	ICAX4	1	Auxiliary byte 4
ICCB + 14	ICAX5	1	Auxiliary byte 5
ICCB + 15	ICAX6	1	Auxiliary byte 6

Figure 1: ICCB structure

ICCB Zero	0040	0032
ICCB One	0200	0040
ICCB Two	0360	0040
ICCB Three	0520	0040
ICCB Four	0680	0040
ICCB Five	0840	0120
ICCB Six	09A0	0070
ICCB Seven	0B00	0040

Figure 2: ICCB start addresses

ICCOM	Command	Notes	ICCOM	Command	Notes
3	Open	ICBALH = Pointer to file spec; See Figure 18.	36	Lock (L)	ICBALH = Pointer to file spec
5	Get Text	ICBALH = Buffer address; ICBLUH = max. length	36	Unlock (U)	ICBALH = Pointer to file spec
7	Get Binary	ICBALH = Buffer address; ICBLUH = length If ICBLUH = 0, use single-byte A-register mode	37	Point (P)	ICAX2=Sector LSB, ICAX4=Sector MSB, ICAX5=byte no. ICAX3=Sector LSB, ICAX4=Sector MSB, ICAX5=byte no.
9	Put Text	ICBALH = Buffer address; ICBLUH = max. length	38	Format (F)	ICBALH = Pointer to drive spec (eg. "D1:");
11	Put Binary	ICBALH = Buffer address; ICBLUH = length If ICBLUH = 0, use single-byte A-register mode	17	Drawto (D)	Draws line to ROWERS (ROW), COLORS (COL)
12	Close	No parameters needed	18	Fill (F)	Fills from ROWERS, COLORS with FLOAT (SPFI)
13	Status	ICBALH = Pointer to file spec (if not open) Results in ICSTA, plus optional ICVSTAT (ICVA)	20	Special (P)	Output partial block: See Atari 800 manual
22	Rename (R)	ICBALH = Pointer to file spec (eg. "D:OLD,NEW")	24	Special (P)	Control RTS, KMT, DTR: See Atari 800 manual
23	Delete (D)	ICBALH = Pointer to file spec	26	Special (P)	Set baud, stop bits & word size: See Atari 800 manual
			28	Special (P)	Set Ascii/Word mode: See Atari 800 manual
			40	Special (P)	Enable concurrent IO mode: See Atari 800 manual

Figure 19: CIO command options

reason why you shouldn't place it into a string just as easily. The run address is 1500 and the parameters are as follows:

1. Address of machine code (1500)
2. The channel number (which you should have already opened for input or output)
3. The command number (1 for input, 11 for output - used by ICCOM)
4. The buffer address in memory (ICBALH)
5. The number of bytes to transfer (ICBLUH)

The MSR routine will also return the actual number of bytes transferred. This might be different to the number you actually asked for if the file ended early or the disc was full.

There are just two more major commands to cover now, the first of these being the Status routine. When called, this will return a value to ICSTA for the device in question.

Most devices do little with this facility, but it is especially useful for the printer and the floppy drives.

The cassette, keyboard, screen handler and editor simply return a taken value of 1 to the ICSTA register. The disc system returns a simple set of codes - 1 for normal file, 181 for locked file and 198 for file not found.

Both the printer and the floppy driver return a block of four bytes of status data and store it in a special location called ICVSTAT (Device Status) which is located at \$26A (\$46

decimal). For more information on its contents, consult your floppy manual.

Finally we have the Close command, the simplest of them all. All you need do is place the value 12 into the ICCOM register and call CIO. No other parameters or data are needed.

Some devices - such as the disc, screen and floppy handler - also have their own unique commands. These are not normal CIO commands but are designed to handle the extra functions supported by that particular piece of hardware or software.

For disc files, command 22 does a Rename, 23 is Delete file, 36 and 38 Lock and Unlock files, 37 and 38 are Note and Point and 24 will format the disc.

Some of these do not need the channel to be previously Opened as they contain the full file spec themselves, pointed to by ICBAH and ICBAH. The Dos manual gives more information on these commands.

For the screen handler (S:) you can use command 17 to draw a line and 18 to fill part of the screen - again, more information is available in the manual.

The floppy driver supports command 32 for sending an in-control block of data, 34 to control the hand-shake lines, 36 to alter the baud rates, word size and number of stop bits, 38 to change the Ascii translation mode and finally 40 to start the concurrent IO mode.

Those of you who have used the CIO command from Basic will by now have realised that CIO is in fact a simple way of calling the CIO system.

The normal format of the CIO command is:

```
CIO cmd, channel, max1, max2,
filepec
```

The first parameter is the command number (coded in ICCOM). Next comes the channel number (which is converted to the IOB number).

The two auxiliary data bytes are stored in ICAX1 and ICAX2 and the filepec is accessed by setting ICBAH and ICBAH to point to it.

All the CIO commands we have been discussing are listed in full in Figure 19, but if you want to read up some more on the subject take a look at the Operating System User's Manual, which is part of Atari's Technical User Notes.

This month's IO question is: Why can't we use the very useful CIO command to access the Binary Put and Get functions from Basic, rather than using a special machine code routine to do the job?

■ If I let you know the answer to that one next time, when we'll start looking at how to make up your own machine code device driver programs, how to patch them into the CIO system and what rules to follow to make them Respawn.

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WWE) you ever sat at your keyboard, gazing at a blank screen, and cursed the woad-like pace with which Basic runs your programs? I doubt if you're alone in this activity — most of us go through it from time to time.

The obvious solution is to write your programs in machine code instead, as this runs hundreds of times faster than Basic and is very much more flexible.

However, machine code is not as easily mastered as Basic and it requires considerable time and effort to create quite small sections of code — you only need to look at the 80 line machine code equivalent to the Basic LIST statement last issue to see the problem.

Let's take a look at the reasons for the speed differences, and at one possible solution.

Firstly, you must understand that the computer always does its internal work in machine code, no matter what language you decide to write your programs in. So if you use machine code for the computer is given the job in an easily digestible form and can thus function that much faster.

Basic is itself a very sophisticated machine code program which takes your input in simple English-like words and converts them into machine code that the computer can understand.

However, because you will often be adding and deleting parts of your program, Basic only does this conversion when you finally RUN your new masterpiece.

Each line the computer comes to is translated into a machine code form and then executed, then the process starts all over again for the next line.

While the machine code itself is very fast, the conversion process takes time — and this is where the speed problem lies.

The ideal situation would be to write your program in a straight forward English-like language and then have the computer convert the whole lot into machine code in one go.

The result would resemble almost as

A compiler's the if you want fast

quickly as it would if you had written it in machine code in the first place, because no more complex conversions need be carried out at run time.

Is there an answer to this pipedream? Luckily, there are quite a number of these type of languages — known as Compilers because they compile your program into its machine code equivalent.

These include C, which is also very popular on the ST range, Pascal, Fort, Lisp and many others.

These are all languages which were designed with much larger machines

one of the simplest, but nonetheless most powerful alternatives to Basic.

The language comes as a special type of cartridge known as a Super-Cartridge, which is a way of packing 768 of information into an 8K slot in memory using a technique called bank switching.

It consists of four main segments — the Editor, Monitor, Compiler and Library.

The Editor is rather like a word processor and is in itself very flexible. It is here that you create your Action! programs in the same way as you

ANDRÉ WILLEY considers Action! a fine second language for the advanced Basic programmer

in mind and can thus be quite amenable to use on an 8 bit micro such as the Atari. They also tend to produce much larger files than a pure machine code author would generate.

A few years ago, a Californian firm called Optimised Systems Software decided to produce a compiler written especially for the 8 bit Atari.

Unlike Fort, Lisp and the others this would have the advantage of being similar in style to Atari Basic but should also be able to create very fast, compact machine code.

This Action! was born.

Written by Clinton Parker, Action! is the result of many months of hard work and is now widely regarded as

would type a letter into AtariWriter.

There are no line numbers, and no LIST command — you simply use the cursor keys to move about your whole program at will.

Full search and replace options are available, and any line may be up to 128 characters long — and each line for the whole screen can be scrolled across the normal 48 column screen.

Two windows containing completely separate programs are available and you may cut and paste between them with ease.

Once your program is complete you can return to the Monitor, which allows you to control the system. From here you can select the various options and compile and/or run programs.

The Compiler itself is extremely fast — often completing programs many hundreds of lines long in less than a second.

This is the business end of the language and it turns your program text into very compact machine code ready for the 6800 to execute. This code may then be run or saved to disc for later use.

The final module, the Library,

Benchmark	Basic	Basic XL	Action
1	3.02	1.99	0.02
2	6.94	3.32	0.026
3	18.08	5.52	0.02
4	22.14	7.84	0.06
5	26.24	8.60	0.08
6	39.24	19.52	1.08
7	68.36	23.88	1.06
Average	29.87	9.48	0.86

Note: Benchmark 8 is not applicable since Action! does not support floating point.

e answer t action

contains pre-written routines to take the hard work out of programming.

It provides all the features you are used to having at your disposal from Basic, such as input/output operations, graphics and sound, string handling and so on.

This is one way in which Action manages to create such tiny machine code files (otherwise known as object files) - all these space-consuming functions are contained within the cartridge instead of cluttering up your final program.

This does have the drawback that your programs may only be run with the Action cartridge present, although it is possible to buy a Run-Time Library, which effectively adds this set of routines on to your final object file.

Once this has been done, your program is completely free-standing and may be run on any Atari with or without the cartridge.

Since there are no line numbers, structuring your work carefully is most important. You write your programs as a set of small modules - called Procedures - which may call each other at will.

Each time you call up a procedure you may pass information and variables to it in the form of parameters, which are illustrated in Program 1.

There are limits to the ways in which you may use procedures, however - the most important being that you can't forward-reference them, meaning that a given procedure must be defined before you try to access it.

Variables must also be defined before you use them, either at the start of the whole program (global variables) or at the start of a procedure (local variables).

Globals may be used anywhere in the program but a local variable may only be called from within its own procedure.

To speed up the computer's job, variables are stored only as whole numbers since fractions take a lot of

Program 1

```

; Description of Action Procedures
; N.B. Comments after a ';' are
; ignored by Action

```

```

;*****
GET1 NUM ;Get Number 1

```

```

GET1 TMP ; define TMP as a temp value

```

```

PRINT "Please enter a number: "

```

```

TMP=INPUT

```

```

; INPUT simply takes in a GET1 value
; from the keyboard

```

```

; Now return the value to the GET
; of the program which called this
; routine, with ...

```

```

RETURN TMP

```

```

;*****

```

```

PROC PrintNumber(BYTE Num)
; Routine to print a byte number and
; some text

```

```

PRINT "The number you typed was: "
PRINT Num

```

```

; The 80 after the PRINT statement
; calls Action to print a byte 80
; followed by a carriage return - or
; (chr(13)=line 1)

```

```

RETURN

```

```

;*****

```

```

PROC MAIN
; Main routine which will be run first

```

```

BYTE VALUE,
COUNT=10

```

```

BEEP=COUNT

```

```

COUNT=0 ;Add a nice background...

```

```

PRINT Num;Number 1
; Number like a 0000 to 999999

```

```

PRINT Num;Number 2
; Prints the number we typed in

```

```

RETURN ; end of prog.

```

Program 2

```

; Description of Action prog.

```

```

; line control

```

```

PROC MAIN

```

```

BYTE VALUE,
COUNT

```

```

PRINT "Enter a number: "
VALUE=INPUT

```

```

; VALUE=100 TEST
PRINT "That's a small number!"
LINE#1 VALUE=100 TEST
PRINT "That's exactly 100!"
LINE
PRINT "That's a big number!"
LINE

```

```

; BASIC FD calls Action that the IF
; statement is used

```

```

; Now three ways to print all numbers
; up to the one 10000...
; Note that the nested loops are
; contained within 80 ... 80 lines,
; which makes a loop very easy to
; identify

```

```

; *** | ***

```

```

PRINT " ; Print a blank line
PRINT using FOR ... NEXT loop"

```

```

FOR COUNT= 1 TO VALUE
80
NEXT COUNT=100
80

```

```

; *** | ***

```

```

PRINT "
PRINT "Now using WHILE loop"

```

```

COUNT=0

```

```

WHILE COUNT<=VALUE
80
PRINT COUNT=1
COUNT=COUNT+1
80

```

```

; *** | ***

```

```

PRINT "
PRINT "Now using DO ... UNTIL loop"

```

```

COUNT=1

```

```

80
PRINT COUNT=0
COUNT=COUNT+1
UNTIL COUNT=VALUE
80

```

```

RETURN ;end of program

```

time to calculate – and besides, most programs simply don't use them.

If you do need to use real numbers then a floating point package is available as a set of procedures to include within your programs.

Variables may be defined as BYTE (a value between 0 and 255), CARD (two bytes, a value between 0 and 65535) and INT (two bytes again, but also allowing for negative numbers, -32768 to +32767).

It is also possible to set up arrays of any of these types, or indeed arrays of arrays. A string is defined as an array of characters – or an array of BYTES to be more accurate.

One of the most powerful features of the Action! language is that variables may be set to point to any location in memory.

You could, for example, define the variable BACKGROUND to be stored at memory location 710, the background colour register. This would be achieved very simply with:

```
BYTE BACKGROUND = 710
```

Programs are mainly made up of loops and conditional statements. These are the equivalent of Basic's

FOR ... NEXT and IF ... THEN commands, but you have a lot more flexibility in Action!

Loops may be controlled by the FOR ... NEXT, WHILE and UNTIL statements. Conditional operations are likewise improved with the fundamental IF ... THEN being supplemented by ELSE and ELSEIF. All of these control operators are demonstrated by Program 11.

It is interesting to note that there is no direct equivalent to the GOTO statement since all flow control is handled by loops and procedures. This encourages you to write good, readable software.

If you compare the listing in Program 11 with a normal Basic program you will probably find the former much easier to read and understand, even though you have probably never seen the language before.

The real power of Action! comes in everyday usage. Things which were complex and awkward in Basic can be accomplished with ease and speed in an environment which also encourages you to explore the system's potential in ways that Basic's PEEKs and POKEs prevent.

So powerful is the language that many commercial programs have been written in it – the obvious examples being Home Plus, the integrated word processor, database and communications package.

The Action! editor is so flexible and simple to use that it has been used as the core of a number of word processors.

In short, Action! is probably the nearest thing to a perfect programming environment that you are likely to find on the 8 bit Atari, though it is perhaps a little pricey for the pocket money programmer.

It is extremely fast, yet simple to learn and use for everyday applications – though complete mastery will obviously take a little time.

In fact, it is probably a better second language for the advanced Basic programmer than machine code.

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KYAN Pascal from Kyan Software gives you a full Pascal compiler and programming environment which could easily replace Basic as the main language on the 8 bit Atari.

This implementation of the famous language opens a wide new world to the Atari programmer. Complex data structures, recursion and a host of powerful commands provide you with capabilities Basic could never hope to match.

Pascal was written by Kathleen Jensen and Niklaus Wirth of the Institut für Informatik in Zurich and was named after the 17th century mathematician Blaise Pascal.

It was first published in 1971 and then ran only on the Control Data 6000 series of computers, the most powerful of their day.

Jensen and Wirth had as their goal the invention of a new structured general purpose language that would be ideal to teach the concepts of programming as well as suitable for use in commercial software houses.

A structured language, Pascal allows the programmer to write his code in separate building blocks that can be linked together to accomplish a set task. Because of this approach, Pascal programs are also self-documenting.

Anyone knowledgeable in the lan-

A language that offers far more than bare Basic

JOHN ALSBROOKS reviews *Kyan Pascal*, a package that enables Atari users to greatly broaden their scope

considerably more powerful in that they allow the use of local variables and recursion.

Local variables have meaning only within a procedure or function, unlike Basic where all variables are global and so can be used anywhere in the code.

Recursion is the ability for a subroutine to call itself repeatedly - a valuable ability in many mathematical problems. Pascal excels at this as its

IF-THEN-ELSE-WHILE, CASE, REPEAT and FOR-TO and the option to define variables and records beyond the character string options of Atari Basic, poor old Basic seems hopelessly limited.

As an example of Kyan Pascal, Program 1 is a solution to the famous Towers of Hanoi puzzle:

What exactly do you get when you buy a copy of Kyan Pascal? First of all, you get a standard Pascal, not some unique dialect.

This means that any programs you write, with the exception of those that make use of sound or graphics, should run on any other Pascal system from mice to mainframes.

Perhaps more importantly, the fact that Kyan has produced a package that conforms to the International Standards Organisation (ISO) standard for Pascal means that the vast amount of Pascal code already in existence can be used on your Atari with little or no modification.

You also get a complete Pascal environment, including compiler, editor and macro assembler.

The editor is a very capable part of the package. All the standard cursor controls used in Basic still apply, along with the addition of control codes to allow search and replace, cut and paste and full file manipulation.

If, however, you prefer MacWrite or some other word processor, you may wish your code on that system for compilation runs.

At the heart of Kyan Pascal are the Pascal compiler and the 8800 assembler. The former takes the Pascal source code you write and produces assembly language source

```

Program 1 (Input, output)
  (Effectively solves the towers of Hanoi problem. Moves disks
  from A to C.)

var Height: Integer; (Hill variables must be defined)

procedure Move (Height: Integer; FromA, ToA, ToB, ToC: Char; From
  variable: Integer);
  (Recursive procedure for determining moves.)
  begin
    if Height = 1
      then writeLn ('Move a disk from ', FromA, ' to ', ToA)
      else
        Move (Height-1, FromA, ToA, ToB, ToC, ToA);
        writeLn ('Move a disk from ', FromA, ' to ', ToB);
        Move (Height-1, ToB, ToA, ToC, FromA, ToB);
        writeLn ('');
    end;
  end;

begin (Main Program)
  writeLn ('How many disks are you going to start with?');
  readLn (Height);
  Move (Height, 'A', 'C', 'B')
end. (Main)

```

Program 1: Kyan Pascal listing

guage should be able to pick up a piece of code and understand what is going on relatively quickly. And the compartmentalisation of tasks reduces the likelihood of changes to one section of code adversely affecting another.

The two keys to Pascal's building block approach are procedures and functions. Both are roughly analogous to the subroutine in Atari Basic but use

of local variables allows it to keep track of how deeply it is layered on itself.

By defining your own procedures and functions, you can tailor the language to your specific applications and at the same time build a library of functions and procedures for use in other projects.

When you have Pascal's powerful program control statements such as

Review

code. The assembler then takes the compiler output and produces an executable machine code file.

As a bonus, Ryan has added extensions to the compiler for both sound and graphics, as well as random file access — capabilities not normally supported in other Pascals.

Nothing is perfect, but my only complaint is that the compiler is painfully slow. Program 1 takes 86 seconds to compile and makes the disk drive whir and grind like a 1961 Morris Minor running without oil. Even loading the compiler takes over 26 seconds.

There is some respite, however, if you own a 1300SE. You may load the compiler, source code, standard library and so on into the ramdisk. Loading now takes less than three seconds and compile times are cut in half.

There is nothing wrong with the code the compiler produces though. Unlike some other versions of Pascal for micros which produce an interpreted language known as p-code,

the Ryan package produces native 6800 machine code which runs extremely quickly — some five to ten times faster than Atari Basic.

If this increase isn't enough for you, Ryan has thoughtfully allowed the programmer to place assembly language routines right in the middle of his program. I found this feature a lot easier to use than thrashing about with the Assembler/Editor cartridge.

A little bit less than 2% of ram is available for your program and so far nothing I have written has come close to using up over half the available memory.

In the event that you need to write a program that would exceed the size of your computer's memory, you can chain two or more programs together and allow them to share variables between them as they execute.

The documentation that comes with Ryan Pascal is extremely good. The 374 page manual contains sections on using the package, assembly language programming and an excellent tutorial that leads you by the hand as

you explore the capabilities of Pascal. Additionally, there is a comprehensive index, something all too rare nowadays.

There is also an optional bi-monthly newsletter available from Ryan with articles on Pascal and assembler programming, handy procedures and functions to add to your own library, and a forum for users' letters and questions.

Ryan Pascal comes on both sides of a single density, unprotected disc. Included with the compiler, editor and assembler are Dos 3.5, utility files and a few example Pascal programs (both source and object). It will run on all 8 bit Atari with 68K or more ram.

Ryan Pascal is a real Pascal. It puts you on a par with every other Pascal user and breaks you some ways beyond Atari Basic. I highly recommend it.

Product: Ryan Pascal
 Price: \$99.95 (USD)
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TEXT and graphics cannot be easily mixed on an 8-bit Atari. This is because, unlike the ST range, it does not have a bit mapped text screen.

Display lists can be used to good effect, but this puts certain constraints on the programmer as they cannot be displayed on the same horizontal line - only further down the screen.

To overcome these problems I have written a machine code routine which also has two additional features - Different text sizes and the ability to have the foreground and background in any colour.

The Write routine is called by using:

```
A←MEMADR(WRITE,XPOS,
YPOS,INK,PAPER,KSCALE,
YSCALE,ADR(TEXT),NUMCH)
```

WRITE contains the machine code program.

XPOS and YPOS are the x and y coordinates of where to start printing the text.

INK is the text colour and PAPER is the background colour of the characters.

KSCALE and YSCALE define the size of the characters. These have a

Mixing it with text and graphics

RICHARD PARKES gets round that bit mapped text screen snag

maximum value of 255 but are limited by the number of pixels on the screen. NUMCH is the number of characters to be displayed.

The text between the quotes is printed in the desired colour and size at the requested position.

Type in the program up to and including line 140 and then LIST it to disk or tape. You can then easily

merge the Write routine into your own programs using the ENTER command.

Now type in the rest of the listing which is a demonstration program to show you what the Write routine can do.

If you have any difficulty typing Write in, you can check it using Get It Right!, our checkpoint program, or you can download it from MircyLink.

```

0 MEM ADDR WRITE DATA PROGRAM
10 MEM ADDR WRITE DATA PROGRAM
20 MEM ADDR WRITE DATA PROGRAM
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40 MEM ADDR WRITE DATA PROGRAM
50 MEM ADDR WRITE DATA PROGRAM
60 MEM ADDR WRITE DATA PROGRAM
70 MEM ADDR WRITE DATA PROGRAM
80 MEM ADDR WRITE DATA PROGRAM
90 MEM ADDR WRITE DATA PROGRAM
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710 MEM ADDR WRITE DATA PROGRAM
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AUTO BOOT CASSETTE from STEPHEN HILL

If you've ever wanted to create auto-run cassettes or discs, then this five-liner could be the answer. It will create a file from a machine code program which will load on power-up. To create an auto-run disc, you will have to change the OPEN command in line 40 to:

```
OPEN #1,128,"D:AUTORUN.SYS"
```

and change the second PUT command to:

```
PUT #1,255
```

If you are using a cassette, you must press the Start key as you turn the computer on so that the program will auto-run.

Line Breakdown

- 20 Sets up screen.
- 30 Inputs the start and end addresses and calculates the header bytes.
- 35 The start and end addresses are converted to their high and low components.
- 40 A save file is created and the header bytes are written to it.
- 50 The contents of the memory block are written to the cassette or disc.

```
10 GRAPHICS OFF:PRINT "*****"  
20 GET START AND END ADDRESSES  
30 GET HIGH AND LOW COMPONENTS  
40 GET FILE NAME AND EXTENSION  
50 OPEN FILE FOR WRITING
```

```
60 PRINT "*****"  
70 FOR I=START TO END  
80 PUT I TO FILE  
90 PRINT "*****"
```

```
100 GET HIGH AND LOW COMPONENTS OF  
110 START AND END ADDRESSES  
120 GET FILE NAME AND EXTENSION  
130 OPEN FILE FOR WRITING  
140 PRINT "*****"  
150 FOR I=START TO END  
160 PUT I TO FILE  
170 PRINT "*****"
```

```
180 END  
190
```



10 12700	20 12750	30 12800
40 12850	50 12900	60 12950

THE COLOURS from MARK WILEY

THIS clever program produces 256 colours on the screen without using the usual Display List Interrupts. It merges colours to produce the large number displayed.

Line Breakdown

- 10 Sets the screen to graphics mode 11 and starts the main loop.
- 20 Draws the horizontal lines.
- 30 Sets the colours of the vertical lines.
- 40 Draws the vertical lines.
- 50 Looks back to line 30 so that the screen remains unaffected.

```
10 GRAPHICS OFF:PRINT "*****"  
20 GET MODE AND SCREEN SIZE  
30 GET NUMBER OF COLOURS  
40 GET START AND END ADDRESSES  
50 OPEN FILE FOR WRITING  
60 PRINT "*****"  
70 FOR I=START TO END  
80 PUT I TO FILE  
90 PRINT "*****"
```



10 1210	20 12150	30 12200
40 12250	50 12300	60 12350

CONTROL LINE from HASSAN NEGAMET

THIS small routine adds a 255 line at the top of the screen using display list interrupts. Even if you don't know anything about DLI, you can easily incorporate Control Line in your own programs.

Line Breakdown

- 10 Gets the DU address and the low and high screen pointers.
- 20 Reads the data for the DU and POKES it in.
- 30 Puts the test into the control line.
- 40 Repositions cursor and screen pointer.
- 50 DU data.

```
10 GRAPHICS OFF:PRINT "*****"  
20 GET DU ADDRESS AND SCREEN POINTERS  
30 GET LOW AND HIGH SCREEN POINTERS  
40 GET DATA FOR DU AND POKES IT IN  
50 GET CONTROL LINE DATA  
60 PRINT "*****"  
70 FOR I=START TO END  
80 PUT I TO FILE  
90 PRINT "*****"
```



10 12050	20 12100	30 12150
40 12200	50 12250	60 12300

MAGIC SQUARES from ROGER WILLIAMS

MAGIC squares have been of interest to mathematicians for centuries. The magical property of a magic square is that each column, row and diagonal adds up to the same number. This small program creates magic number squares quickly and simply.

Line Breakdown

- 1 Inputs the number of rows in the square and initializes the main array.
- 2 Sets up the main loop for row by row calculation and calculates the elements on the diagonals of the square.
- 3 Calculates column elements adjacent to the top left-bottom right diagonal.
- 4 Calculates column elements adjacent to the top right-bottom left diagonal.
- 5 Increments the main loop until

completion and then displays the square.

```
1 GET NUMBER OF ROWS AND COLUMNS  
2 INITIALIZE MAIN ARRAY  
3 GET START AND END ADDRESSES  
4 GET HIGH AND LOW COMPONENTS  
5 OPEN FILE FOR WRITING  
6 PRINT "*****"  
7 FOR I=START TO END  
8 PUT I TO FILE  
9 PRINT "*****"
```



1 12050	2 12100	3 12150
4 12200	5 12250	6 12300

FRUITS!

By
DAVID WHITE



FRUIT machine programs will never be the same again since you've seen Fruits. With graphics which would put many an arcade fruit machine to shame, this month's type in game will let you gamble your time away, but still leave the contents of your wallet intact.

Using an impressively redesigned character set, Fruits turns you'll hit Atari into a one armed bandit complete with sound effects, badge

control, smooth scrolling windows and a separate score screen.

Type in Listing 1. If you use a cassette for storage, then make the changes given in Listing 2 making sure to delete line 2000. Be sure to save the program to disc or tape before you run it.

Now place a newly formatted disc in the drive or blank cassette in cassette deck and RUN Fruits. An auto-run version will be placed on the

disc or cassette. It will take about 10 minutes to complete, then the normal Ready message will appear on the screen.

If you get an error message, check the offending line. An error message in line 2730 means that you will have to check the DATA statements carefully.

You can now run Fruits by placing the disc in the drive or tape in the cassette deck and booting your computer without Basic.

If you have any problems typing in Fruits, you can check it using our checksum program Get it (right) which was last published in the August 1986 issue of Atari User. Alternatively you can download Fruits from MicroLink.

Happy gambling!



Listing 1

```

00 1000 000000
00 2000 0000 0000 - 0000 100
00 3000 00, 0, 0, 70, 000000, 000, 0000 00
00 4000 0000 00000
00 5000 0000 0000 0000 000 000 00000000
00 6000 0000 0000 0000 0000 0000 0000 0000
00 7000 0000 0000 0000 0000 0000 0000 0000
00 8000 0000 0000 0000 0000 0000 0000 0000
00 9000 0000 0000 0000 0000 0000 0000 0000
00 10000 0000 0000 0000 0000 0000 0000 0000
00 11000 0000 0000 0000 0000 0000 0000 0000
00 12000 0000 0000 0000 0000 0000 0000 0000
00 13000 0000 0000 0000 0000 0000 0000 0000
00 14000 0000 0000 0000 0000 0000 0000 0000
00 15000 0000 0000 0000 0000 0000 0000 0000
00 16000 0000 0000 0000 0000 0000 0000 0000
00 17000 0000 0000 0000 0000 0000 0000 0000
00 18000 0000 0000 0000 0000 0000 0000 0000
00 19000 0000 0000 0000 0000 0000 0000 0000
00 20000 0000 0000 0000 0000 0000 0000 0000

```

```

00 21000 0000 0000 0000 0000 0000 0000 0000
00 22000 0000 0000 0000 0000 0000 0000 0000
00 23000 0000 0000 0000 0000 0000 0000 0000
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00 28000 0000 0000 0000 0000 0000 0000 0000
00 29000 0000 0000 0000 0000 0000 0000 0000
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```

```

00 51000 0000 0000 0000 0000 0000 0000 0000
00 52000 0000 0000 0000 0000 0000 0000 0000
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00 76000 0000 0000 0000 0000 0000 0000 0000
00 77000 0000 0000 0000 0000 0000 0000 0000
00 78000 0000 0000 0000 0000 0000 0000 0000
00 79000 0000 0000 0000 0000 0000 0000 0000
00 80000 0000 0000 0000 0000 0000 0000 0000

```

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- Sector SKIP is now no longer required to obtain Hi-speed or with US Doubles.
- Other special features are: Slow down, Fast write, Fast read, Drive write lock, Slow on/off, Fast formatting.
- Fast write with verify. This system is faster than other systems which write without verify.
- A double sided operating system disk is supplied which offers the following:
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- Will run off available disk operating systems (Good including: Spandrel, Happy wrap speed Doc, and other HiSH speed systems).
- With this system, up to sixteen drives can be connected and used.
- A comprehensive 30 page bound manual is supplied. This includes fitting instructions.
- All registered owners will be supplied with any software updates etc for the price of Disk and return postage.
- All this is available for ONLY \$99.95 (inc post/packing and Twelve months guarantee). Whilst every effort is made to ship the product by return, please allow 21 days for delivery.

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A WINNER ALL THE WAY...

I AM writing to let you and other Atari users know about my experience recently when I bought a new Atari setup as a result of a nice little win on the pools (nothing dramatic, but enough to go to an Atari supplier and say "one of them, two of them, two of them, one of them" and so on). A very nice feeling indeed.

I decided to stick with 8 bits for a variety of reasons, so the order was for a 1000E, two disc drives, 1027 printer, 1029 plotter, a touch tablet and various other bits and bobs.

According to the advertisements in your magazine, this amounted to around £800 worth.

Acting on advice from a colleague who got a decent discount for cash on a BBC printer, I rang round the four Atari suppliers within a reasonable range of Sheffield asking for a quote for the lot paid for with cash.

Two suppliers made terrible offers and one actually jacked up the price by 17% and offered me a discount which brought the price back to the original. I don't know who they were kidding?

However, there was a firm which made me an offer which I could not refuse.

So it came to pass that I got the setup. The day after I collected it I sat down and started to use it. After about two hours one of the disc drives and the 1027 broke

down.

Naturally I got in touch with the suppliers at once, with the result that they swapped them straight away, no quibbles. They were friendly people to deal with and even apologised for my inconvenience - I was impressed.

I therefore nominate Component of Loughborough for a For On The Head award. - J.E. Colley, Sheffield.

Technical queries

COULD you help me in trying to interface a non-Atari printer to an 800XL?

The printer has a serial interface, but during my investigations it appears that the computer is sending out some data and expects a reply from the printer. When it doesn't get one it aborts with a timeout error. What am I doing wrong?

Also, could you tell me the price and a source of supply for the Atari technical manuals and pages to fit the serial port. I have a fairly good knowledge of

computer systems and electronics generally. - J. Connolly, Reading.

■ You need to use an RS232 interface to run your printer, the best being the Atari 850 module, though you might find others that work. The Atari serial port is an internal standard running at 19,200 baud with its own protocol and command frame system.

You would need to be an expert machine code programmer to alter this and it would be far easier to use an 850 anyway.

Don't forget that you would also need to check your software is capable of sending to RS232 rather than the P1 printer port. SuperScript does this, but not AtariWriter for example.

Your own home grown software could be easily made to use either port, of course.

Manual dexterity

I HAVE recently purchased an 800XL, but have found the manuals to be far from helpful. I was searching *Atkins, Finkel and Brown's Atari Basic* book from my local library, when I discovered Atari User.

It is a very good magazine, but I am having problems with the *Star's* charts game in the December 1988 issue. I keep getting an error 7 on line 20710, but line 20720 seems to be correctly typed in. Can you help? - T.B. Pottle, Gosport.

■ Error 3 simply means that a number the computer has come across is outside the range it expects. In this case it is most likely that the variable CHBASE is the

guilty party, being either too large or too small.

After the error has occurred, try typing PRINT CHBASE, which should give a positive number no greater than 65535. In actual fact, it will be within a much smaller range.

Since CHBASE is calculated from another variable, RAMTOP, the problem might lie in line 20550 which sets up RAMTOP in the first place. Don't forget to use *Get It Right!* to check the lines before you run the program.

Loading errors

I HAVE been unsuccessful in loading *Football Manager*. I keep getting errors 740 and 742. I would be grateful if you could explain these errors and advise me on the correct way to solve them. - P.E. Malton, Preston.

■ These are known as checksum errors and occur because data from the tape has been corrupted before it reaches the machine. This may be caused by a bad tape, or a fault in the recorder or the computer.

When a tape is recorded, each block of 128 characters is followed by a special extra digit which is basically a total of all the character numbers preceding it.

When loading the tape back in again, the computer does the same additions on the data bytes as they come in and checks the new value off against the one from the tape.

In much the same way as our *Get It Right!* checksum, the computer can then tell if the data it has loaded was

8 bit interfacing

I WOULD like to congratulate you on your articles on interfacing the 8 bit Atari computers.

I am interested in inter-facing such machines and require information on the bus connections on the XL machines. Unfortunately I have been unable to find such data anywhere.

Do you know of any books which contain this information and where could I

obtain them? - Steven Truss, Nottingham.

■ The connections you require are listed in the revised edition of *Making the Atari*, from Computer Books, but from then on you will need a good technical knowledge of electronics to proceed.

Perhaps Atari will soon see fit to update its excellent Technical User notes to cover the XL and XE.

the same as that originally saved. If any discrepancies occur, the computer will signal an error — normally a 140 or a 160 — and stop the load.

Exploring possibilities

FOR the past 12 months my son has had an Atari 800XL. We have only used the machine for games up until now, only occasionally trying other features.

I now think it is time to explore the possibilities of the computer, the graphics and writing simple programs and so on.

If you could pass on any advice on this we would be very grateful. And if you have the name of any book we could buy which defines all the computer jargon this too would be very helpful.

Do you advise us to get a disc drive or stay with cassette tapes? — David and Michael James, Mowbray.

■ For now a tape will suffice. Though a disc is much faster and more reliable, it is fakes to programming, it will very quickly find that waiting for a tape to load or save is very frustrating indeed.

We often run articles in Atari User helping new users to find their way around the machine and you will certainly find many of the features and series in our first few issues of benefit. Why not order some from our back issues department?

Increasing word power

I RECENTLY visited the Christmas Atari User show and whilst there I purchased an Atari 1320 dot matrix printer and a copy of AtariWriter Plus for my 800XL.

I had not used a word processing program before, but I found it really quite

ATARI USER Mailbag

We welcome letters from readers — about your experiences using the Atari mines, 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:

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easy to use. This letter is my first full length attempt at using the program and I have found it and the manual to be excellent. My only complaint is that there are only two print modes available — normal and double width.

Would it be possible to review some of the other word processing packages for the 8 bit range? — Mick Smith, Ashford, Kent.

■ We have covered some other word processor packages in previous issues — notably the SuperSerial program in the March 1988 issue.

80 column cartridges

I WOULD greatly appreciate it if you could tell me of a way I could have 80 column cart with my AtariWriter cartridge word processor. I use my 800XL for translations for the Ministry of Foreign Affairs of Greece.

I own an LX-80 Epson printer, 1080 disc drive and a Wintester floxy monitor. Although I also have Letter Perfect I find the cartridge based word processor is extremely easy to use and a perfect partner for my work.

The only problem is that with 40 columns I have to produce my documents and make corrections at the cost of valuable time. — J.M.D. Menthakis, Athens, Greece.

■ The answer is simple — you will soon be able to purchase an update of AtariWriter, called AtariWriter 80, which will work with the new KEP-80 88 column module. Until then you're stuck with 40 columns I'm afraid.

Getting It Right!

I HAD just purchased my first copy of Atari User. I have been looking for such a magazine for over a year and find it very informative.

Please could you tell me how I can operate 'Get It Right!' as it is an obvious pain when typing in programs. At the moment the list of numbers don't mean a thing to me. — G.E. Becher, Sacramento, Davis.

■ The instructions for our checklist program 'Get It Right!' can be found in the August 1986 issue of Atari User which can be ordered using the form on Page 52.

Software compatibility

FIRST I would like to congratulate you on such a great magazine which I have been reading ever though I got rid of my 800XL some time ago.

I am now considering a 1320XL. Could you please tell me if there are any compatibility problems with games for the 800XL? — L.P. Arnold, Littlehampton, Sussex.

■ The 1320XL is really just an 800XL with an extra 64k of memory available. This means that you should have no problems at all with software compatibility between the XL and the 800, although you will still have the same problems as you had with the XL in running some of the older software written for the 400 and 800 machines.

Keyboard inputting

I OWN an Atari 800XL and wondered if cartridges for the earlier 400 and 800 are compatible with it. Also could you tell me how to get input without the user having to press Return? — Neil Evans, Avon.

■ You can use most 400/800 cartridges with the XL and XL machines, but some badly written code will not work properly. This applies as much to tape and disc software as it does to cartridge, so it's always best to check first. That said, the vast majority of software works fine with the XL.

You can get input from the keyboard without requiring the user to press Return by side-stepping the normal INPUT routine.

Use instead the GET command which gets a single character, and build up from there. Don't forget to OPEN a channel to the keyboard first, with:

```
OPEN#1,AB,"R".
```

For example, to get five characters from the keyboard and place them directly into a string, use:

```
10 OPEN #1,AB,"R"  
20 DIM TEXT(5):TEXT=""  
  - FOR I=1 TO 5  
30 FOR CHAR=1 TO 5  
40 GET #1,CH$  
50 TEXT$=CHAR$+TEXT$  
60 NEXT CHAR
```

You could always test BYTE each time in case it was 155 - the code for Return - after which you could drop out of the loop since the user did not want to enter all five characters.

If you wanted the user to enter a number follow the same procedure and take the 'VAL' of the string at the end - for example:

78 NUMBER = VAL(TEXT)

Silicon Dream & Jewels of Darkness

I BOUGHT Rainbird's Silicon Dreams and Jewels of Darkness CD-ROM at the recent Atari User show, but can't get them working.

I have a 486 Atari 400. PDS/700 returns 160 and I have 48 trouble running other 486 software.

I can get to the menu and loading message on both discs, but after the load is finished I get a blank screen full of colorful garbage. I have removed the basic cartridge and all unnecessary peripherals.

In desperation I visited Rainbird and they were most helpful. They managed to run the discs on a 1300E and told me that they had been successfully tested on an expanded 400. Might my expansion board be at fault? - R.S.L. Gillman, Tipton, Essex.

According to Rainbird's technical department, your problem lies with the fact that the program needs at least 64k to run.

Recorder diagnostics

RECENTLY my 1810 data recorder has not been loading my original computer games. I was wondering if a

YOUR HINTS AND TIPS

MEDIATOR

PLEASE could anyone tell me how to get past the first screen of English Software's Mediator?

I have tried bombing the city and sending in various planes, but I always get killed. I am on the verge of throwing the disc out of the window! - Brian, Belgium.

Help is at hand from Ben Park of London 5827, who has written in to tell us that you have to land your craft on the pad between the two columns at Kyle and Phoenix.

BOUNTY BOB

OVERLOAD the cannon in level 22. When the last corner steer, press F then move your man over a platform and press F again. An action screen will appear which will allow you to move to the level of your choice. - Adam Marshall, Perth.

MERCENARY - THE SECOND CITY

If you realized that the Chinese in Mercenary was a fast spaceship, then you might be wondering what

has happened to it in The Second City.

Fear not, it hasn't gone at all, it's simply changed into a cable, which can be found in the Polyar briefing room. You can then use the ship to get the neutron fuel, which is above the colony craft. - Mark Wilson, Angelsey.

SPELLBOUND

I HAVE been playing Spellbound for days and days and I am absolutely stuck. Can anyone help me get past the tower, the wall and the gas room. - Andy Roberts, Little Sutton, South Wirral.

Our thanks to Ben Halligan for this bumper bundle of tips:

MERCENARY

FIXED the aerial and take it to the broken communications room in the underground complex near the hangar at 09-06.

You will be offered an intergalactic craft and if you buy it a rendezvous will be arranged. There is a banger in the restaurant at location 07-26 which may prove helpful.

gradually wear off the backing material after hundreds of passes through the recorder.

Check there out on a known good tape recorder before parting with your hard earned cash for a new unit.

Keeping in touch

IN reading Atari User I am surprised in that a large number of advertisers do not have Email, MicroLink, Telexnet (dial) or telex numbers.

To me, a fairly new user, I feel a software and hardware supplier who does not

RESCUE ON FRACULUS

If an alien boards your ship, put the boosters on immediately, try to shoot the aircraft then turn all systems on.

Put back on your joystick. The ship's instruments will go haywire, but if you have enough power you might make it into space where the alien will die.

DROPZONE

PICK up all the man and deposit them at the base. Keep the last one and go and kill the enemy. If you are killed, collect the man immediately because he prevents you from being killed by the resistance.

ZORRO

DO you keep getting lost in the caves? Always take the nearest exit after collecting the bags of money. When you get to the screen with three flashing icons, go through the top left exit and push the barrels in the mine cart. Then go back, past the lions and up.

use or is not linked to this new exciting way to communicate is doing a disservice to the micro computer business.

After all, the more users of the system, the more they will sell. But if they do not use the technology themselves how can they convince people like me to use it?

I would often like to send for literature via Email rather than by phone. The micro shops are also hardly set up to market this product.

In Edinburgh I went round all the shops to see a demonstration of MicroLink, Faxnet or Telexnet Good, but it was an my third visit to

one shop before they had the system up and running, I would be interested to know if others feel as I do. — Tom Stark, Edinburg.

● Tom sent this message via MicroLink. Don't forget that as well as the usual Atari User postal address, we can be contacted on MicroLink and Telecom Gold at T2/MAG200 and on Prestel at 874888383.

And don't forget to mark your Email "For the attention of Atari User".

You can even send us your articles by Email, as do most of our regular contributors. The whole editorial team of Atari User use MicroLink to send complete features straight from our word processors at home into the office computers — which are linked direct to the typesetting machines.

We write everything on the ST and can thus send our material straight in for typesetting without a single mistake occurring — well, that's the theory, anyway.

Ribbon recycling

OLW apologises to anyone who wishes to contact Acadlink about their printer ribbon recycling service. The address which we gave for them in the January 1987 issue of Atari User was incorrect; it is in fact 4 Harbor Crescent, Eymouth, Berkshire TD14 5AP.

Trak-ball or joystick?

I HAVE been a joystick addict for about four years but as a Christmas present I was given a trak-ball which I prefer for most games.

The only problem is I do not know which games will run in trak-ball mode. Could you give me a list of games which will?

Also, could you give me a short routine which would allow me to read the trak-

ball from Basic? — Richard Taylor, Prestonwick.

● The only game which has a specific trak-ball mode — as opposed to those which can use the trak-ball in the joystick simulator mode — is Missile Command. This is a shame, as such games as Centipede would be great in the trak-ball mode.

You can read the trak-ball in the same way as a joystick — by using the STICK and STROG commands. For the first joystick, STICK0 will return the direction value, and STROG0 will tell you if either of the buttons have been pressed.

If STROG0 returns a zero then the button has been pressed and a one indicates no action.

You can work out the direction from the following table:

Value returned	Direction
14	UP
13	DOWN
11	LEFT
7	RIGHT
10	UPLEFT
8	UPRIGHT
9	DOWNLEFT
5	DOWNRIGHT
15	NO MOVEMENT

Revised opinion

I HAVE a 80800, with revision B Basic and the guarantee has expired. I have been trying to buy a revision C cartridge for some time without success. Could you please tell me where I might purchase one and the cost of it?

I have typed in Data from the January 1988 issue of Atari User and have used Get It Right! to check it. Everything seems OK and a friend has also checked it for me, but I keep getting an error 8 at line 8. Is this something to do with revision B Basic?

Also, is there any way I can stop Get It Right! from changing colours after than by using Control? The last line of checksum also disappears too quickly for

me to check it. — S.D. Rangan, Hastings.

● For a Rev. C cartridge, try Filipe Shop or Software Express — they cost about £9.95.

The error 8 could well be caused by the Rev. B problem, as DM is one of the commands that shows up the bug.

If you want to stop Get It Right! from cycling through the colours, simply add line 101 as:

160 POKÉ TOU

The last line will not disappear if you haven't pressed any keys since the current checksum was started — assuming you are using the updated August 1988 version, of course.

Loading cassettes

I HAVE recently bought a 790 disc drive and an Atari 800II. Is it possible to use a normal cassette recorder to load cassette games, or must I buy the special Atari disc recorder?

Also, could you tell me how to use the COLOR command in different graphics modes? I have tried using this command in various modes, but it doesn't seem to display the number of colour mentioned in the manual.

For example, the manual says that mode 8 should have only one colour, but the COLOR command displays 16! How does the 8000000 cartridge work, as it is not very well explained in the manual?

Lastly, is it possible to have more than one graphics mode on the screen at the same time? — Francis Smeves, Acoeter.

● Firstly, you will indeed need an Atari recorder for use with your computer, or a special adapter which is nearly the same price anyway.

The COLOR and SET-COLOR commands in Atari Basic are quite powerful. In mode 8 you have only one

PEN PALS

Jim, Tommasini, David, Ivo, Parlowe & Kato Adams' 19877, Athens. Games would like to hear from English pen pals. And Fred Swanson, 109 Alton Drive, Scarborough PD, Canada M1W 2T7 is especially interested in hearing from Dutch Atari owners.

colour available, but 16 brightness levels. Thus, COLOR specifies the various brightness scales in this particular case.

For more information on mixing graphics modes see our series on Display Lists in the July to December 1988 issues.

Mercenary compendium

I AM interested in your special reader offer for the February 1987 Atari User for the complete Mercenary compendium, but the "available for" date states Atari 800II.

The question is will Mercenary run on my old Atari 800 — something I would like to know before I order a compendium from you. — Peter Baulter.

● There are two versions of Mercenary which come on the disc or tape. One is for 486 machines, and will therefore work fine on your 800, and one is an enlarged version which has extra features and operates in 64k.

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

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