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Woolworths to stock Atari budget titles

There is good news in store for Atari budget software buyers. Woolworths is ending its exclusive arrangement with Mastertronic, and stocking a selection of Firebird titles as well.

And there is a strong possibility that the High Street giant will also find shelf space for the fast-moving Code Masters games.

Boots is also expected to rearrange its Mastertronic-dominated shelves and give more exposure to Firebird and Code Masters titles.

A company source said there are plans to deal with all its budget software suppliers on an equal basis in future.

Meanwhile, Activision has agreed to let Mastertronic handle its entire catalogue of hit programs under the newly-created budget label Ricochet.

Atari 8 bit versions will cost £1.99 on cassette and £2.99 on disc.

The vast Activision range includes the Lucasfilm titles and classic hits like Ghostbusters — which will be one of the first Ricochet releases.

A Mastertronic spokesman told Atari User: "We're delighted to do this deal. The Activision range reinforces our policy of only releasing the very best quality product on the Ricochet label!"

Activision's Rod Cousins said: "The agreement really demonstrates the importance of secondary marketing opportunities and of building a catalogue that has a worth over a period."

"In a business where shelf life may be short lived, the ability to recycle programs through budget labels is beneficial to all concerned".

Virgin races ahead

Virgin Games moves into the fast track this year with motor racing sponsorship.

Driving its entry in the Formula First championship will be Mark Smith, author of interactive adventure books that have provided the inspiration for several computer games.

From those books Virgin Games has produced Falcon, the Renegade Lord and will soon release Duelmaster, Challenge of the Magi, Gremlin Graphics has published Way of the Tiger and plans a second Duelmaster adventure called Blood Valley.

Mark will be sponsored for the Top Gear Formula First series at Brands Hatch — and Atari users will have plenty of chances to see the distinctive Virgin Games logo flashing around the track because the races will be covered by BBC 2's Top Gear programme.

Case settled

FOLLOWING an injunction and court case involving Telecomsoft and Hewson, Firebird has won the right to publish Morpheus and Magnetron this year.

The titles came under contention when Steve Turner, boss of Graftgold and author of Magnetron, signed a long-term programming contract with Telecomsoft for all future products and separate contracts for Morpheus and Magnetron.

Prior to this deal, Graftgold had published all its hit titles through Hewson which objected to Turner's new arrangement.

It could be several months before the dispute is finally settled, but in the meantime the courts say Telecomsoft can go ahead and publish the two contentious titles.
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Double helping from Red Rat

A DOUBLE helping of entertainment is being served up by Red Rat Software with the release of two twin-pack games for the Atari.

Both titles come on a single cassette or disc and feature high resolution graphics and scrolling animation.

The first release contains Mad Jax and Planet Attack. Mad Jax is a wild car game where you have to guide the vehicle through the desert on route to the city.

It may sound simple, but planes and heavily armed monster cars are out to get you.

In Planet Attack the object is to destroy enemy alien tripods on a distant planet. Following take-off from your landing pad you have to drop bombs and fire lasers to destroy the targets.

However, hostile flying saucers attempt to thwart your mission.

The other double pack from Red Rat (£01-835 1055) features Space Wars – a good old shoot-'em-up in the style of the classic arcade game Astroblaster – and Dreadnought.

From deep space to the deep blue sea, Dreadnought follows the theme of the lost city of Atlantis: Aliens are trying to destroy the remains of the city and it is your job to stop them.

All double packs are priced at £7.99 on cassette and £9.99 on disc.

Zeppelin takes off

A WEALTH of new games titles for Atari computers are on the way following the recent formation of Zeppelin Games (091-281 4401).

The company was launched last November and boasts a team of highly talented young programmers.

Zeppelin's software director, Brian Jobling, aged 19, already has some impressive titles under his belt, including Phantom, Winter Olympics, and Who Dares Wins II. His latest offering for the Atari is Speed Ace, a motorcycle simulation in which two players can compete against each other or 19 computer riders.

The game features some of the world's best known race tracks, such as Silverstone, Brands Hatch and Monza.

Colliding with any of the other riders on the track results in losing temporary control of the motorcycle at simulated speeds of up to 130 mph. Price £2.99.

Mastertronic dominates this month's chart. Not only has it dislodged Firebird's Decathlon from the number one position – replacing it with the excellent Henry's House – the company also has seven titles in the Top Ten.
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8 Atrio User February 1988
JUST let me ease off these seven league boots and soak my aching tootsies in this bowl of hot mustard-water and I'll be with you. Ahhh! That's better. You see, I've just been playing in the All Dwarfs 26-a-side crystal ball kicking championships and my toes are now the size, colour and consistency of a bunch of over-ripe bananas.

My team—the Adventuring Allsorts—lost 75-1 nil in the final to the Rough Diamonds—a mixed team of giants and ogres from over the western hills. They were bigger than us—about 15 feet to be precise.

Goodness knows how they were admitted to the competition. They must have bribed the committee with one of their famous dinosaur pies.

Still, enough of my pastimes. Let's get on with the real business—adventuring. I have exciting news of three great new games, all of which may well be on sale by the time you read this column. First, following up the superb Guild of Thieves, comes Jinxter from Rainbird and Magnetic Scrolls.

This lighthearted and humorous tale is set in Aquitania, a land soaked in luck and happiness where nothing nasty ever happens: A land protected from the naughty Green Magicians by a charm bracelet of magical powers.

But someone has been removing the charms from the bracelet, with the result that the Greenies are gaining power, and luck is at a premium. Your task is to recover the missing charms and so restore Aquitania to its former state of well-being.

Written by Michael Bywater and the Magnetic Scrolls development team, Jinxter is a far cry from being another run-of-the-mill adventure. You won't find any obsolete Orcs, washed-up wizards or hammy Hobbits in this one.

What you will find is an adventure that provides puzzles and giggles in abundance. For instance, a guardian from beyond the realms of time is not a cloaked and bearded figure of awesome demeanour, but a morose, reluctant, time-serving bloke in a herringbone overcoat—a sort of Arthur Daley of Aquitania. "What's the point of wosssname, immortality," he grumbles, "if you can't get a decent bit of cheese in your sandwich, narmean?"

And he's pretty naff at helping you learn the magic spells you'll need to succeed in your mission. "Just find the watchercallist, say the doodah and thingie's your wosssname. Charm. Word. Bob. Uncle. Narmean?"

The supporting characters are no less strange. The gardener is a certifiable megalomaniac and the village postmistress thinks she's Calamity Jane. And what is the relationship between her and the thick-witted postman? What is going on in your best friend's cellar and what's that pong? Why is everybody so unwilling to give you speedy and polite service? These and many other pleasures await you in Jinxter—an adventure in which you can't die, except perhaps by laughing yourself silly.

The other two games are new releases from Infocom—they certainly seem to be churning them out these days. The first, Beyond Zork, is a little different from Infocom's usual offering. It combines the traditional type of Infocom text adventure with elements of role-playing.

You can allocate a set number of points between attributes like strength, intelligence and so on, which thus determine how you will fare in certain situations.

The adventure includes combat, and I believe there is even an on-screen mapping feature—a new departure for Infocom.

The second Infocom title is Border

Turn to Page 10 ▶
Zone, their first tale of international intrigue. The plot concerns a rash American spy, a KGB agent and a happy-go-lucky businessman. The trio becomes ensnared following the assassination of a diplomat and their paths cross as each carries out his particular assignment.

You see the story from the three differing viewpoints, and to help you on your way on-screen hints are available — another new feature.

Written by Marc Blank, author of such illustrious adventures as Deadline and the original Zork, Border Zone promises to be a treat for all adventurers. Watch these pages for a detailed review of all these new products in the near future.

And now to your letters, most of which concern The Pawn. Dan Proops from London and Jonathan Evans of Pretoria, South Africa, cannot get past the boulders. See the Hints section for instant enlightenment.

Among other problems, Jonathan doesn't know what to do with the floorboards in the tree and has found that the Guru does not want any Perrier water — what does he want? Help is at hand.

Mark Powell of Lewes in Sussex has completed Hollywood Hijinx and I am pleased to publish some of his hints for that adventure since many of you are still struggling gamely with it.

Donna Thresher of Hockley, Essex, says she has lost the novella which came with The Pawn and now can't load the game as she doesn't remember the passwords. I'm not surprised you can't recall the passwords — potentially, there as many of them as there are words in the novella.

Rainbird use the novella as a sensible and effective anti-piracy measure, the reasoning being that if someone hasn't got the documentation they probably didn't buy the original game.

It's bad luck on any genuine owner who loses the essential documentation, though. The only thing I can suggest, Donna, is that you write to Rainbird explaining the position and enclosing proof of purchase and perhaps they will be kind enough to let you have another copy of the novella. Better take good care of such documentation next time, because all Rainbird adventures use this password protection method.

Arvin Norris of Cwmbran is having a spot of difficulty with Ultima IV. He would like to know the exact position of the mandrake root using the sextant and requires the correct order of the three parts of the word of passage. Can any reader help?

Alternate Reality — The Dungeon is causing some anguish to Dave Hall. In his own words he's "a somewhat frustrated, droopy-eyed adventurer from Sheffield".

He wonders how you can get a city character into the dungeon without getting him killed off immediately. Why does the oracle tell you of quests that cannot yet be completed? What are the answers to the gargoyles' riddles? And why does the ferryman insist on taking Dave downstream contrary to what the manual says? A tall order — can any player assist? I'm afraid I've changed my mind about giving a rundown of how all the points are scored in The Pawn. I realised after mentioning it in the December issue that to do this in one go would mean giving too much of the game away and spoiling it for players still wrestling with it.

Instead, and starting now, I am providing a serialised partial solution — so you'll still have some work to do and you won't get all the help at once. My thanks for possible solutions going out to many readers, but especially to Jason Murphy of Manchester, Phil Latham of Macclesfield and Mark Sarul of Barwell. Leics. Farewell for now. Keep those lamps bright!
According to the book Inventions That Changed The World, the present Gregorian Calendar began to be used on Friday October 15, 1582 when Pope Gregory XIII revised the old Julian calendar. This then became the standard for most of Europe, although Britain did not begin to use it until 1752.

Bringing Pope Gregory up to date, this program will print — on-screen or to an Epson-compatible printer — a monthly calendar from October 1582 to any future date you care to enter.

When the program is first run you are asked to enter the month and year you wish a calendar for. The month must be entered as a number from 1 to 12: For example, if you want January you must enter 01, and so on. The year must be a four figure number greater than 1582, this being the date of the newly recorded calendar.

Once the date has been entered you are asked to enter the size of the calendar you want to print — (S)mall, (M)edium or (L)arge. You also have the option to have no printer, which means that the calendar is only displayed to screen. This is achieved by pressing any other key other than one that chooses size.

When the size is chosen the program will calculate the new calendar. If at this point you change your mind, just press C to start again, or press P to print the calendar.

The program works by counting the days interval between the year 1200 and the date entered — the year 1200 is taken as starting point to simplify calculation. The days are then converted into weeks and the remaining days — obviously a number not divisible by seven — determine the position of the last date in the calendar.

To check the accuracy of the program I have used it to check many well known historical dates, and found it to be accurate every time.

**Calendar maker**

Othman Abdul Hamid takes a look backwards and forwards in time

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**FEBRUARY 1988**

<table>
<thead>
<tr>
<th>Sunday</th>
<th>07 14 21 28</th>
</tr>
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<tbody>
<tr>
<td>Monday</td>
<td>01 08 15 22</td>
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<td>Tuesday</td>
<td>02 09 16 23</td>
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<td>Wednesday</td>
<td>03 10 17 24</td>
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<td>Thursday</td>
<td>04 11 18 25</td>
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<tr>
<td>Friday</td>
<td>05 12 19 26</td>
</tr>
<tr>
<td>Saturday</td>
<td>06 13 20 27</td>
</tr>
</tbody>
</table>

**Program Variables**

- **LINES**: Screen lines to be dumped to printer
- **MONTHS**: Names of the months
- **DAYS**: Names of the days
- **MONTH(N)**: Number of days in each month stored in an array
- **MONT**: Month of the calendar
- **Y**: Year of the calendar
- **MDAY**: Number of days between January 1 and the last day of the month
- **LPYEAR**: Number of leap years since the year 1200
- **LCENTURY**: Century years (such as 1200, 1600, 2000) which are leap years
- **YRDAY**: Number of days since the year 1200
- **LEAP**: Extra days in leap years
- **TOTAL**: Actual number of days since the year 1200
- **LAST**: Number to determine position of last date in the calendar

---

**Program Breakdown**

- 70-200 DIM strings, reads and checks inputs
- 230-310 Counting days, adding extra days in leap years
- 340-350 Convert days to weeks, calculate positions of dates on the calendar
- 370-460 Print calendar on screen
- 490-570 Make selection: Restart or hard copy
- 550-690 Trap lines, data and printer codes

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Turn to Page 12

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February 1988 Atari User 11
MUCH MORE THAN A MAGAZINE

PAGE 6 has been supporting Atari computers for 5 years – coverage now includes both 8-bit and ST. Get the latest copy from your local newsagent or by subscribing.

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Gunfight at the corral – OK!

Program: Gunslinger
Price: £14.95 (disc only)
Supplier: Datasoft/US Gold, Units 2 & 3 Halford Way, Halford, Birmingham B6 7AX.
Tel: 021-356 3388

In this graphical text adventure you play Kip Starr, an unemployed Texas ranger who has just received two telegrams from his old buddy, James Badland.

The first tells you that Badland is in a jail south of the border and, if this isn't enough, the second informs you he is about to hang in two days.

Not wanting to let your old friend down you pack your bags and your trusty six-shooter and get ready to leave. Then out of the blue, yet another nasty telegram arrives.

This one is much more sinister: "We've escaped from jail. Just a warning for you and that buddy of yours. Signed: The Dalton Brothers (all six of us)".

Your prospects don't look so bright when you find yourself stranded in the desert after riding your horse to death. But things pick up when a traveller comes across you and offers you a ride into Dawson City.

So there you have it: All you have to do is break into and out of jail. Then you must keep your appointment at the OK Corral for a shoot-out with the six Dalton brothers. Simple.

You arrive in a gold-rush ghost town, an Indian village and a US Army fort, all generously scattered on your way to Mexico to save friend James from the hangman's noose.

Many other diversions stand in your way in the form of crooked poker games, runaway mine cars, dangerous waterfalls and ambushes. These are all presented using more than 100 very effective hi-res picture screens.

You can enter commands from the keyboard - in a fashion all keen adventure players should now be familiar with - or use a combination of joystick and keyboard inputs: A novel approach and fun.

The screen shows your location on the left and a menu of verbs, nouns and prepositions on the right.

You can also bring a compass onto the screen by moving the on-screen arrow into the area just to the left of the command screen. You can save a game at any time by highlighting the SAVE command in the verbs box. Whatever you do, don't save a game on a master disc.

If you are new to this form of entertainment here are a few hints: Always save at regular intervals - the West is very dangerous and you can be killed at anytime. Make a map - it's always useful to know where you're going. Also watch out for the Indians - they have a habit of collecting scalps.

All the items you find will be used for something, so don't go dropping them. A horse can make all the difference, so be careful where you leave one, and remember stealing one is a hanging offence.

If you encounter a dishonest character - and there are a few - remember this is the West and your gun speaks the only truth. For example, when I went into the saloon for a game of cards the man opposite me cheated. I didn't ask him to apologise: I just shot him dead - and he turned out to be Jessie Dalton - only another five to go!

This adventure is one of the largest I have ever played. The pictures are excellent, and I especially liked the one of the card player staring at me over his hand just before I shot him.

It's very playable and quite humorous in parts. Although not the most intriguing game ever, some thought is needed if you want finish and save James.

If you like adventures and fancy something a little different, Gunslinger is a must. It's originality and ease of use makes it a winner.

Neil Fawcett

Presentation................. 8
Atmosphere.................. 7
Graphics.................... 8
Puzzlement.................. 6
Value for money............. 8
Overall....................... 8

February 1988 Atari User 13
Snazzy but slow

Program: Transmuter
Price: £1.99
Supplier: Code Masters, Lower Farm House, Stoneythorpe, Southam, Warwickshire, CV33 0DL.
Tel: 0926 814132

IN the past Code Masters has only released two games on the Atari - Red Max and BMX Simulator. They are both graphically excellent, sonically superb and packed with playability. So it came as a welcome sight when I spotted the company's latest offering - Transmuter, a horizontally scrolling shoot'em-up.

The story? Well, it seems that in the future the Sun becomes a red giant, and the extreme cold makes everybody go underground to keep warm. Up top, sentry robots and attack droids are kept in place to defend from possible invasion.

Time passes, and using Earth's resources, the remaining humans build ships and travel out to the stars, seeking a new home.

Settled in their new planet, people wonder what became of the Earth, so a single man is sent back to the home world in a new fighter carrying, at its core, a matter transmuter. This is a device capable of transforming energy into separate forms for use in attack or defence.

You are that man, and on reaching the Earth you are attacked by the outer defences left a millennium ago. Activating the transmuter, you fly into battle - attack being your only chance of escape.

This story line covers what is actually a version of the Konami arcade game Nemesis. Yes, they're all there - speedups, missiles, double 45 degree shots, lasers, multiples and shields - all the features of Nemesis.

All except one thing - speed. And unfortunately all the snazzy features in the world can't help if a game is slower than the proverbial tartoise.

Once you complete a level you are confronted with a mother ship, just like in Nemesis. When this is destroyed you have a bonus level with all sorts of starships flying at you.

Yet the game gets incredibly easy if you have speeded up firepower and two multiples, because nothing gets past you...

Graphically, Transmuter is not bad, with average sound and gameplay. Though it's slow, if you really are desperate to play Nemesis on your Atari, at £1.99 I don't suppose it'll burn that much of a hole in your pocket.

Robert Swan

There's a mouse loose

Program: Basil the Great Mouse Detective
Price: £3.99
Supplier: Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield S1 4FS.
Tel: 0742 753423

221B Baker Street is home to the two greatest detectives in the world. Upstairs is Sherlock Holmes, and below in the basement is a mouse named Basil, the most intelligent rodent mind ever.

This keen, sharp-witted mouse and his colleague - the amiable Dr. Dawson - have solved many a crime. But now the evil Professor Rattigan has kidnapped Dawson, and it is down to you as Basil to find and rescue your friend and partner.

As the game loaded, the distinctive tones didn't sound quite as clear as they should, but then up came the message: "Please wait, now loading Basil". What appeared was a shaded loading screen of Basil in action.

What I certainly was not prepared for was the wait - about 20 minutes after loading started the screen advised "Please rewind tape to start of side 2 and press spacebar!". Shades of Gauntlet.

After approximately half an hour the game was in so, picking up my trusty joystick I set about it.

The graphics are in 16 shades of brown for the playing area, and the score area is blue, red, green and yellow. Need I go on? It's incredible.

The programmers of this visual feast have done some really fantastic work using the limited screen palette, and the sprites are cute and well detailed. The display is clear and easy to see, with more than adequate sound. The gameplay is a little difficult to start with - especially finding which items to use and examine - but you get used to it after a while.

What of the baddies? Enemy mice roam the kerbs and gutters of London. Slight contact with them reduces your energy and prolonged contact is lethal.

To reach high places you must leap and bound. Timing the jumps and finding the exact spot to do so takes trial and error - and time.

In fact, my overall impression was one of time: Time to load, time to get used to the controls and gameplay, and time to tackle the game itself.

Basil the Great Mouse Detective looks great, plays well, and should have you stuck to your keyboard till the early hours.

Keith Pattison
THE Dungeon is the second in the Alternate Reality series of role-playing adventure games. It's the sequel to the City, Part One, and is just as much fun.

The package contains three discs, a witty and amusing guide book, a basic map of level one, a letter from Trilorg — another poor soul lost in Alternate Reality — as well as a complete map of the Dungeon.

Though this is of no real use, it looks pretty. However I would advise everyone to read the guide book diligently if they are to understand the game to the full.

The opening sequence which sets the scene is great fun to watch and listen to. As the music plays in the background the words are printed on the screen, and all this on top of a 3D rotating star field reminiscent of Dr Who.

As in the City, the game begins with you being abducted from Earth in a gigantic spacecraft. This all happens on screen with you transported to another planet, an Alternate Reality — hence the original title.

After this you find yourself in a room with only one exit. This faces the Dungeon and is covered by a force field with numbers spinning around above the letters.

As you pass through, the numbers freeze as the Dungeon guide remarks: "As if you had pulled the lever to a cryptic slot machine". Their frozen status — referred to as stats for the remainder of the game — determines your levels of stamina, charm, strength, intelligence, wisdom, skill, health and hit points.

You are now in the Dungeon, which is where the fun starts. In this maze of corridors and sewers you can meet all sorts of creatures — and probably will.

Near the entrance is the Damon and Pythias shop where you can buy almost anything.

And don't forget to barter with the owner — he nearly always gives in.

Scattered throughout the Dungeon corridors are lots of doors, but if you thought doors were just doors you're wrong.

In this game there are magic doors invisible doors — I never saw one — and those that you can only open from one side.

Included in the guide is a grid you can photocopy and draw on — mapping is a must if you don't want to get yourself lost.

Eventually, as you work your way round you encounter a thief, a giant bat, an acolyte and other equally obnoxious creatures. When this happens you have various choices: Charge, run away, transact and so on. Fighting is usually the best option, because if you win you can loot the body for treasure or weapons — macabre but rewarding.

Defeat usually ends in your demise, but you're not really dead — the Dungeon is nice that way and you can be resurrected for a small fee. In addition, if you are low on hit points you can always go to the Retreat to recoup.

Because the Dungeon is so dangerous I found it very useful to save a character at regular intervals. Fans of the City will be pleased to know that their existing characters are transferable, which gives you a much better chance of survival.

Movement is controlled by a joystick or by means of the keyboard. All other commands are single key entry.

My favourite is F, for pause, which stops the action at any time without affecting the game.

Other commands include U to use any item you are presently carrying, and D to drop an item if you get too burdened with stolen goods.

Various menus can be called up at any time and this, mixed with your stats at the top of the screen, action sequences in the middle, instructions and information at the bottom and having to flip discs all the time make the gameplay a little confusing.

The discs are constantly being swapped — although larger memory machines don't require as much updating.

All the on-screen text style is in old English. This is very appropriate but a little difficult to read at times without squinting.

All in all, this is another superb package from Datasoft and well worth every penny. The graphics are superb and the music played throughout the game is stunning.

Ruth James

Sound: 10 Graphics: 9 Playability: 10 Value for money: 10 Overall: 10
Stock car challenge

Program: Talledega
Price: £1.99
Supplier: Top Ten, 12 Chil tern Enterprise Centre, Station Road, Thesle, Berkshire RG7 4AA.
Tel: 0734 303933

RICHARD Petty, king of the Nascar Super Stocks race scene, challenges you to a gruelling race against 18 other drivers, each programmed to beat you.

This is Top Ten's description of its latest release. Basically, it's Pitstop plus a large dose of Pole Position. You have to race around a selected track - or choose one at random - inside the time limit to qualify for the main event.

You have to beat 19 racers - including Richard Petty in a blue flashing car - in order to win.

You can soon learn several tactics to help you beat the others - using turbo boosters which use up a lot of fuel and cut down control on bends, or sneaky manoeuvres such as slipstreaming which cut down on fuel used.

You can also cut turns, which allows you to take a certain line through bends at 250mph - the car will do a four wheel drift but you can retain full speed or even lean on the other cars to shunt them out of the way.

For balance there are things to hold you back or even put you out of the race - engine trouble is one but it is quickly remedied by a pit stop.

I didn't think Talledega was up to much graphically and its age is showing with old sound and gameplay. All in all it's not likely to make you race down to your local stockist to buy.

With Pole Position being sold nowadays for about £2.99, I believe you'd be better off spending the extra pound on that. Robert Swan

Jump at this one

Program: Twilight World
Price: £4.99
Supplier: Atari, Atari House, Railway Terrace, Slough, Berkshire SL2 8BZ.
Tel: 0753 822914

ISN'T it nice to see a familiar face again after so long? Yes it's true: Atari is now back in the software field after a long rest.

Its last release was the disc-only Star Raiders II last Christmas. Well, now all you proud tape owners can relish in Atari's comeback too, with this new offering from Matthew Trimbly - author of Mastertronic's Crystal Raider.

Twilight World centres around you as a guy with a gun and the ability to leap over vast pits of flame while avoiding nasties and collecting gems.

The nasties come at head, chest and feet height, and you can duck, jump or blast your way through the caverns ahead. A jet pack is also at your disposal a little later in the game.

The graphics are very good, and run along the line of the main character in US Gold's older titles such as Scooter, Ollie's Follies and Ghost Chaser - except they are much larger.


Robert Swan

Jumping back

Program: Henry's House
Price: £1.99
Supplier: Mastertronic, 8-10 Paul Street, London EC2A 4JB.
Tel: 01-377 8411

POOR Henry's got a bit of a problem. Although daddy happens to be the king, he hasn't stopped him from going where he's not supposed to - the royal laboratories. Nor has it prevented him from drinking a potion which he shouldn't.

All this has resulted in a six inch high prince in a lot of trouble.

Henry must now traverse many different rooms, collecting items on the way that will restore him to full size. These vary from eggs and food mixers, to boots and crowns - and some rooms contain televisions.

As you've probably guessed by now, you play Henry in this platform-jump-collect game. But somehow this has something which other offerings like Jet Set Willy didn't - it's highly playable. In addition control is a lot easier than in similar games.

Though the first few screens are a little difficult to start with, once you have managed to navigate your way through them things seem to fall into place and the game gets progressively easier.

One thing I didn't like was that you die if you fall from too great a height. I can only suppose that if you're six inches tall, everything's a great height.

The graphics are excellent and the sound adequate - I especially liked the rendition of Rule Britannia at the beginning. The game is certainly worth £1.99 of anyone's loot.

While the plot may be pretty thin for what is essentially a platform game with royal overtones, this is a must. We certainly were amused.

Bob Powers

16 Atari User February 1988
A LOT of companies have found success in the world of computer products, but perhaps the two largest and best known in the Atari field are MicroProse Software and Origin Systems.

These two giants of the software world have now agreed to unite in a venture and as a result a massive range of quality software will soon be marketed throughout Europe – and that is good news for all of us.

MicroProse is a subsidiary of Micro-Prose Software Inc. of Hunt Valley, Maryland, USA. The parent company was founded by Sid Meier and ex-fighter pilot “Wild” Bill Stealey. Since its formation in 1986 MicroProse has become one of the leading companies in the field of simulation games. The software is of a very high quality, and packaging and instructions are consistently superb.

Some of the titles that made MicroProse famous in the 8 bit Atari world can be seen in the panel below. These products, and many more, have always been a popular choice for software collections. This popularity can be put down to their high quality and availability on both tape and disc – a factor that a lot of companies forget about these days.

All the games are thoroughly researched before being released. For example, when Sid Meier was writing F-15 Strike Eagle he read everything available on the American Air Force’s most sophisticated multi-role combat aircraft.

The cockpit display, performance figures and weapons systems have been duplicated as closely as possible on the computer simulation. If this wasn’t enough, Stealey hired F-15 pilots to test the final product. Now that’s what I call research. This is why MicroProse products are considered to be the Rolls Royce of the software industry.

Origin Systems was founded in 1983 by a team of four: Richard and Robert Garriott, their father Owen and Charles Beuche. Today the company employs around 30 people and uses between 10 and 15 freelance programmers. Anticipated sales figures are over four million dollars a year.

The history of this company goes back long before 1983 to a young Richard Garriott, at that time a high school student. For many years he had an interest in fantasy role-playing games – TSR’s Dungeons and Dragons. This fascination led to him programming the school’s single punchcard-operated computer with his own mini adventures.

His first programming experience came when he went to Gunn High School where he logged many hours on an Apple computer. This is also where, on the very first day at school, he picked up his now famous nom-de-plume – Lord British.

This was because when people greeted him with “Hi” he replied with the unconventional “Hello”. People said: “What a proper way you have of talking – you must be British!”. The nickname stuck, and later Richard placed the Lord in front. He now uses the name for the main character in his famous Ultima series – but more of that later.

When Richard left school he got a job in a computer store back home in Texas, programming its Apple computers. He wrote quite a lot of graphic adventures and one day his boss – unbeknown to Richard – showed one to an up-and-coming software company – California Pacific. In 1979 the

### MICROPROSE/ORIGIN PRODUCTS

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company published Richard's first game — Akalabeth — and it sold a very healthy 25,000 copies.

Encouraged by this success Richard decided to write another game. This eventually emerged as Ultima, one of the most successful adventure games ever. He sold the rights to Sierra On-Line, and it went on to sell around 50,000 copies. After this in 1981 came the sequel, Ultima II, which was also licensed by Sierra On-Line, and sold around 100,000 copies.

Richard always had strong feelings as to how his games should be marketed, so in 1983, while he was still working on Ultima III: Exodus, he decided to form his own company — Origin Systems — with his brother Robert, who had just come out of business school.

They also asked their father Owen — a former NASA astronaut — and a programmer — Charles Beuche — to join them. Just to show that this is a family business they also got Helen Garriott to do the superb illustrations in the Ultima booklets.

Ultima III was another massive success, far outselling the previous adventures. Now the scene was set for the next challenge — Ultima IV: Quest for the Avatar, which has sold over 200,000 copies.

However, the Ultima series aren't the only packages that Origin are famed for. Admittedly, the company's products are what you could call highbrow, needing a lot of thought and time, but they do move from the fantasy adventure theme.

For example, in Ogre you challenge the might of a cybernetic supertank programmed to annihilate anything in its path. The game is set in the 21st Century and you must deploy conventional weapons and infantry to protect a defence post. It's a conversion of a Steve Jackson board game, and is a pleasure to play.

In another - Autoduel, classed as a strategic role-playing game – you again enter the 21st Century, this time in the NE of America, where death lurs around every bend of the freeway.

This is the first product to be launched under the MicroProse/Origin banner and is a nice addition to the already impressive joint range. It's based on a Steve Jackson board game called Car Wars and, again, is a very close translation. As with the Ultima series, the packaging is excellent: the box contains a miniature toolkit - a very nice touch.

But now the 64 million dollar question: How did Origin and MicroProse get together?

This was down to Bill Stealey, president of MicroProse in the USA. Bill is a business associate of Robert Galliott who was intending to set up a UK company with Stewart Bell. He asked if Origin was interested in a joint venture arrangement - the company already had something going in Japan where the Ultima series is very popular.

Initially MicroProse will launch seven Origin titles on the British and European markets, including the Ultima series. They have been revamped and include booklets and a beautifully made cloth map showing the world of Sosaria. It's worth buying for that alone, never mind the playability.

If you're into role-playing games and strategic simulations, the future seems very rosy indeed for the Atari 8 bit computers. Ultima V: Warriors of Destiny will hopefully be available around March for around £19.95.

In it the adventure continues with Lord British leaving Britannia to explore the newly discovered underworld, but all contact between the good King and his companions is lost. In Britannia, pandemonium breaks out when the sole survivor of the expedition returns to tell the tale.

You are summoned in an attempt to discover what has happened to the King and defeat the evil growing in the lands. Sounds great fun. New features added include eight dungeons, more animated monsters and 30 new towns to explore — some of them with as many as five levels.

You can choose from 10 people to come on the quest with you — up to six at any one time — and it's also possible to have interactive conversations with more than 200 characters. The combat system has been redesigned and should give more realism to the game. With all these options this can only be another winner for Lord British.

MicroProse plans to release a new simulator called Gunship later this year to complement its already large range. And it if is up to the usual quality, it will be well worth waiting for.
A super shoot-'em-up for the XE games system from ANDRÉ WILLEY

FOLLOWING last month’s exami-
nation of the new Atari XE Games 
System with its accompanying light 
gun, here’s something else for you to 
do with your new-found toy. Shoot-
ing bugs is all very well, but it 
certainly doesn’t help you to use the 
gun from within your own software, 
so Light Gun Blaster was written as 
part game and part utility.

It’s fairly simple – but very playable 
and quite addictive. I’m not claiming 
it’s going to be another Star Raiders, 
but some of the routines may well be 
useful to you for your own games.

After keying in the program and 
checking it with Get It Right!, run it 
and you’ll see the main menu screen. 
You can use the Start, Select and 
Option keys to adjust the game set-
tings for skill and speed, then simply 
pull the light gun trigger to commence 
play.

The aim of the game is very 
straightforward, but it takes some fast 
reactions to get a high score on the 
top level. You will see a grid of 
coloured squares – with more squares 
on the higher levels. These will 
change colour as the game pro-
gresses, and all you have to do is 
decide which colour is the most 
common and blast away at it. But 
make sure you aim well – you’ll lose 
points for hitting the less common 
colours or the border.

So, how does it work? The light gun 
routine starts at line 100, and this 
returns two variables – H and V – 
which contain the Horizontal and Ver-
tical position of the gun.

You might find that you need to 
adjust the numbers used to calculate 
H for your own TV, as different sets 
seem to return different values. The 
most likely changes will be to the 
number 85 on line 130 or the number 
160 on line 140.

You will notice that the screen 
flashes white for a moment when you 
pull the trigger, but that’s not just for 
effect. The light sensitive diode used 
inside the gun works best when the 
screen is fairly bright – indeed it won’t 
work at all on a black background.

To get around this little problem all 
I’ve done is set the background colour 
to white and disable the the fore-
ground display with POKE 559,0 while 
the coordinates are being calculated. If 
you look carefully you will see that 
Atari’s Bug Hunt does something very 
similar.

Line 1000 is the start of a machine 

code routine called 
BOX. No, it isn’t Nathan’s 
portable voice-operated 
computer from Star Cops – 
this particular BOX is a high 
speed plotting routine which 
changes the colours on the 
screen. Without this piece of 
code the program would run far 
too slowly to be playable.

Line 2000 sets up the screen size 
and block locations for each of the 
various levels.

Line 3000 contains a small DLI 
routine used to reset the GTIA 
graphics mode when you reach the 
text window. Some of you might find 
this useful with your own programs as 
it enables both Mode 0 text and GTIA 
graphics to exist on the same screen.

The rest of the program is mainly 
concerned with altering the colour of 
the squares and keeping track of the 

score, so I’ll 
leave you to 
work these 
mundane details 
out for yourselves – 
well, I must give you 
something to tax your 
brains a bit!

O if you write any software that uses 
the light gun, why not send us a copy? 
We’d love to see it – and who knows, 
you might even get it published!

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Fancy a little sound advice?

LEN GOLDING journeys further into the wonderful world of Atari Basic

No game is complete without the occasional explosion, laser blast or musical theme, and even business software benefits from the odd discreet bleep or two. This month we'll show you how to produce sounds of all kinds, starting with simple musical notes, progressing through chords, phaser blasts, machine gun sounds, explosions and rounding things off with a singing joystick. The new commands we will cover are: SOUND, GOTO and FOR. NEXT.

First let's look at the SOUND command. It is quite a complex one, since it needs four numbers tagged on to keep the syntax correct. Here's a simple example:

```
SOUND 0,121,10,8
```

If you type this and press Return you will hear a musical note close to middle C. The sound continues, even though the READY message appears on screen. You can turn it off by typing:

```
SOUND 0,0,0,0
```

The obvious question to be asked at this point is: What do the four numbers mean? Well, the first specifies one of four different sound generators or voices, the second is pitch, the third is tonal quality and the last is the volume level.

Let's look at them in order. Unlike humans, your Atari has four separate voices, which it can use independently or all at the same time. Each voice has its own identifying number: 0, 1, 2 or 3, and in the examples above we've specified voice number 0. It's a bit confusing to think of 0, not 1, as the first number in a series, but that's the way computers like to do it.

Try changing the first number after the SOUND command to 1, 2 or 3 and see what happens. You probably won't hear any difference, because the computer is still singing middle C, and it sounds the same no matter which voice is producing it. So why bother having more than one voice? You'll see when we start generating more complex sounds, such as explosions and musical chords.

The second number controls the note's pitch — the higher the number, the lower the pitch. Your Atari can produce musical notes which range from one octave below middle C to two octaves above it. Here's a short utility program using some of the things we learned last month:

```
10 PRINT 'GIVE ME A NUMBER FROM 0 TO 255'
20 INPUT P
30 SOUND 0,P,10,8
40 GOTO 10
```

When you Run this program, line 10 prints the message asking for a number from 0 to 255. Type the number, then press Return. Your computer takes the number you've typed, and calls it P. Then it moves on to line 30, where it sees that P is the pitch value, so it inserts your number just as though you'd typed it directly into the program line.

Line 40 contains a new command — GOTO — which works exactly as you might expect, sending the computer back to line 10 so that the whole process is repeated. This kind of circular movement is called a loop, and we'll be saying a lot more about loops of various kinds throughout the series.

The third number after a SOUND command regulates the sound's tonal quality, and it can be any even number from 0 to 14. Numbers 10 and 14 will give you pure musical tones, while 0, 2, 4, 6, 8 and 12 produce pulsing.

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hissing or crashing noises which can be used for special effects. Odd numbers will either turn the sound off or produce an annoying little click, so avoid them if you can.

The fourth and final number controls volume, and can be any number from 0 to 15. The higher the number, the louder the sound – 15 is about twice as loud as 8, and 0 turns it off completely.

That’s voice, pitch, tone and volume dealt with, but there’s one more factor that we need to control – duration. In some versions of Basic the SOUND command has a fifth number which controls how long the sound stays on, but unfortunately that’s not the case with standard Atari Basic. Once our sound is switched on, it will stay that way until you switch it off, or until the program comes to an end.

Incidentally, that’s why we didn’t use a line number in our first example, if we had done so, the line would have become a program, instead of a throw-away command, and the computer would have switched off the sound before you could recognise it as a musical note. Try it and see.

To control a sound’s duration, we need a separate command to handle the timing. The most common method is to use one or more FOR...NEXT loops. These are quite tricky to understand, but they crop up in all kinds of situations, so it’s worth the effort to master them. Here’s a simple example:

```
10 FOR W=1 TO 500
20 NEXT W
```

In ordinary English, these two lines mean something like this: Take a variable called W and set its value to 1. Now increase its value by one, and continue doing this until the value reaches 500.

Because the computer can process only one Basic instruction at a time, a FOR-NEXT command like this will hold its full attention until the loop has counted itself out. The result, from a user’s standpoint, looks like a pause with nothing much happening. Here’s an example:

```
10 INPUT P
20 SOUN D 0, P, 10, 8
30 FOR W=1 TO 200
40 NEXT W
```

You will find that lines 30 and 40 hold the sound on for about half a second, giving the effect of a short bleep, before the computer turns it off at the program’s end. To get a longer bleep, change the 200 to a larger number; for a shorter bleep make it smaller.

FOR-NEXT loops can do other things with sound, as well as defining its duration. For example:

```
10 FOR P=0 TO 255
20 SOUN D 0, P, 10, 8
30 NEXT P
```

This gives you a tone which falls in pitch from high to low. Can you see how it works? The loop is executed 256 times, with the value of P increasing by one each time. Since P controls the sound’s pitch – the higher its value the lower the pitch – you get a rapidly falling note. You can do the same thing with volume:

```
10 FOR V=0 TO 15
20 SOUN D 0, 128, P, 10, V
30 NEXT V
```

Here you get a tone which starts quietly, but gets rapidly louder as the value of V increases. FOR-NEXT loops need not always count upwards in increments of one. There is a related command – STEP – which gives you a great deal more flexibility. For example:

```
10 FOR P=0 TO 250 STEP 10
20 SOUN D 0, P, 10, 8
30 NEXT P
```

This program counts to 250 in tens, so instead of a smoothly falling pitch you get a more jerky series of separate notes. However, because each note lasts only a fraction of a second, you don’t hear them as separate tones. Instead, the result sounds like some kind of futuristic hand-weapon – let’s call it a phaser. You can even use the STEP command to count backwards:

```
10 FOR P=255 TO 0 STEP -1
20 SOUN D 0, P, 10, 8
30 NEXT P
```

In this case the count starts at 255 and reduces by one every time the loop is executed, until it reaches zero. The result is a smoothly rising pitch. Try changing line 10 to:

```
10 FOR P=250 TO 0 STEP -10
```

What would you expect to happen? Atari Basic allows you to put one FOR-NEXT loop inside another. This is called nesting, and lets you produce all kinds of special effects. Here’s a

Turn to Page 24 ▲
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<table>
<thead>
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simple example, based on the phaser program:

```
10 FOR P=0 TO 250 STEP 10
20 SOUND 0, P, 8, 8
30 FOR W=1 TO 50
40 NEXT W
50 NEXT P
```

This time, instead of the phaser sound, you get a series of musical notes. Lines 30 and 40 hold the sound at each step long enough for you to hear it as a separate musical tone.

The important thing to remember about nested FOR-NEXT loops is that they have to be un-nested in reverse order - the one which starts first must be terminated last, and so on. In the previous program we introduced the loop containing P before the one containing W, so to make them unwind correctly we had to insert NEXT W before NEXT P (lines 40 and 50).

Well, that's the difficult bit over for this month - now let's have a bit of fun. Program I shows how you can use all four voices at once, each producing a different note, to make a musical chord.

Programs II and III produce sounds for zapping aliens, while the automatic rifle of Program IV would suit shoot-'em-ups of a more terrestrial kind and Program V is an explosion. You could use it for hand-grenades or set it at the end of a falling-pitch sound to represent a bomb dropped from an aircraft.

If you're into detective adventure games or police-style chases, the sounds in programs VI and VII could add an extra dimension of reality. Program VI is a ringing telephone, while Program VII produces the two-tone siren familiar to British ears.

In all these examples, look at how the FOR..NEXT loops are used to vary pitch and volume, or just to hold the sound on for a predetermined time, and experiment to see if you can improve the effects.

Program VIII is a musical joystick, and uses some commands which we'll be covering in detail later in the series. Line 20 reads the value returned by your joystick, which must be plugged into port one. Line 30 switches everything off if the stick is centralised. Lines 40 to 110 determine the pitch value, depending on the stick's position, and line 120 generates the sound. The GOTO command at line 130 starts the whole process off again.

The net result is a joystick which can play the scale of C - the positions for each note are shown in Figure I. It won't take the Albert Hall by storm, but you can use it for nursery rhymes, children's hymns and other simple tunes.

We'll be returning to sound generation at a more advanced level later, but next month it's time to introduce graphics, and show how you can produce simple movement effects on the screen.
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Those special characters

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

However, we recognise that sometimes it's the simplest way and occasionally it's the only way of doing something. For this reason we're repeating the two tables below. These show how to produce the special characters from the keyboard and were first printed in the December 1985 issue of Atari User.

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

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

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

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

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

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

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

---

**NORMAL VIDEO**

<table>
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<tr>
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<td>CTRL U</td>
<td>CTRL D</td>
<td>CTRL V</td>
</tr>
<tr>
<td>CTRL E</td>
<td>CTRL W</td>
<td>CTRL F</td>
<td>CTRL Y</td>
</tr>
<tr>
<td>CTRL G</td>
<td>CTRL Z</td>
<td>CTRL H</td>
<td>ESC ESC</td>
</tr>
<tr>
<td>CTRL I</td>
<td>ESC CTRL -</td>
<td>CTRL J</td>
<td>ESC CTRL =</td>
</tr>
<tr>
<td>CTRL K</td>
<td>ESC CTRL +</td>
<td>CTRL L</td>
<td>ESC CTRL #</td>
</tr>
<tr>
<td>CTRL M</td>
<td>CTRL</td>
<td>CTRL N</td>
<td>CTRL ;</td>
</tr>
<tr>
<td>CTRL O</td>
<td>SHIFT =</td>
<td>CTRL P</td>
<td>ESC SHIFT CLEAR</td>
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<tr>
<td>CTRL Q</td>
<td>ESC DELETE</td>
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**REVERSE VIDEO**

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<td>REV CTRL Z</td>
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<td>REV CTRL H</td>
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<tr>
<td>REV CTRL I</td>
<td>ESC SHIFT TAB</td>
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AIR YOUR VIEWS
—and you could win in Red Rat’s prize draw

What do you like best in *Atari User*? What would you see changed? This is your opportunity to let us know what you think.

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* Astro-Droid: You take on the role of a cyborg and attempt to force the evil Reidans back to their own galaxy.

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To enter the Draw, please return your survey form by February 29.

Please tick your reply in the boxes provided. You don’t have to fill in an answer if you don’t want to. You may photocopy these pages to protect your magazine if you wish.

<table>
<thead>
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<th>ABOUT YOU</th>
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<td>11 - 15</td>
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<tr>
<td>16 - 18</td>
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<td>19 - 22</td>
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Sex? M / F

Occupation?

What area of computers or computing interest you?

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<th>Arcade Games</th>
<th>Adventures</th>
<th>Comms</th>
<th>Programming</th>
<th>Hardware</th>
<th>Future Tech</th>
<th>Learning About: Programming</th>
<th>Hardware</th>
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<td>600XL</td>
</tr>
<tr>
<td>130XE</td>
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</tbody>
</table>

| How long have you had your Atari? |
| Under 1 year | 1-2 years |
| 2-3 years    | 3+ years |

| Do you have any other computer? Yes/No |
| Which one(s)? |
Are you thinking of buying another computer? Yes/No
Which one?

What other hardware do you have?
- Monitor
- Colour
- Monochrome
- Disc drive
- 1050
- XF-551
- 810
- Printer
- Modern
Please list any others:

What type of hardware would you like next for your micro?

Please indicate which of the following types of software you have:
- Word processor
- Spreadsheet
- Database
- Other languages
- Assembler
- Basic utilities
- Disc utilities

What type of software are you most likely to buy next for your micro?

What do you use your Atari micro for (fill in your own ideas in the spaces at the end of the list)?

<table>
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<th>Not much</th>
<th>Never</th>
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<td>Never</td>
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<td>Not much</td>
<td>Never</td>
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</table>

What software do you use most frequently?

Is there any software (apart from games) you’ve bought that you never use?

THE MAGAZINE

How long have you been reading Atari User?
- 0-3 months
- 4-6 months
- 7-12 months
- 1-2 years
- 2-3 years
- From issue 1

How often do you buy Atari User?
- Every issue
- 1 in 2
- Less regularly

How do you get Atari User?
- Subscription
- Newagent
- Computer dealer
- A friend

How many other people read your copy of Atari User?
- None
- 1
- 2
- 3
- More than 3

What other computer magazines do you regularly buy?

What do you like most about Atari User?

What do you like least about Atari User?

Which program listings do you type in?

Games
- Usually
- Sometimes
- Never

Utilities
- Usually
- Sometimes
- Never

Tutorials
- Usually
- Sometimes
- Never

Educational
- Usually
- Sometimes
- Never

What is the maximum length of listing you would want to type in?
- Half page
- 1 page
- 2 pages
- 3 pages
- 4 pages
- 5 pages

Please circle the number which matches your level of interest in the following subjects (0 lowest - 9 highest):

News
- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Software reviews
- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Hardware reviews
- 0
- 1
- 2
- 3
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- 5
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- 8
- 9

Gadgets
- 0
- 1
- 2
- 3
- 4
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- 7
- 8
- 9

Communications
- 0
- 1
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Software solutions
- 0
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- 9

Five lines
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Roulco
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Hints and Tips
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Mailbag
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Education
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Business
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Spreadsheets
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Games programs
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Utilities programs
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- 7
- 8
- 9

Easy programming
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- 7
- 8
- 9

Maps
- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Indicate any articles or series you would like to see in future editions of Atari User.

Any other comments you would like to make about Atari User.

THE SHOWS

Did you attend any Atari shows in 1987? Yes □ No □

If you attended any, which?

Please circle the number that matches what would attract you to come to a show in 1988 (0 least - 5 most)?

New products
- 0
- 1
- 2
- 3
- 4
- 5

Bargain offers
- 0
- 1
- 2
- 3
- 4
- 5

Technical advice
- 0
- 1
- 2
- 3
- 4
- 5

Hands on testing
- 0
- 1
- 2
- 3
- 4
- 5

Show themes/theatre
- 0
- 1
- 2
- 3
- 4
- 5

Anything else not mentioned here?

Thank you for filling in this survey. Now send it to Reader Survey, Atari User, Europa House, Adlington Park, Macclesfield SK10 5NP.
LOGIC PUZZLE
from Robin Edwards

THIS short program is designed to confuse and befuddle you. When it is first run you are prompted to enter a difficulty level from 1 to 50 - 1 being easy and 50 very hard. Enter your choice and then press Return.

After this the screen will clear and a 10x10 box of hearts will appear with various sections inverted. Your task is to return the whole box to the normal - not inverse - state.

You use the joystick to move the cursor around the grid and when the fire button is pressed the square that the cursor is above and the eight adjacent squares will be flipped over. It is a little tricky to get the grid back to normal - but persevere as it's fun trying.

DEScENT
from Andy McAtear

HERE'S a game where you take the role of a chopper pilot who has to fly as far as he can into a mysterious cave. Movement is controlled by a joystick plugged into port one - but you can only move from left to right.

If you press the fire button you will cause the helicopter to descend at a faster speed - but be careful as this is very dangerous. As you get deeper your score increases and is displayed at the end of the game. You only have one life, so take care not to crash.

PROGRAM BREAKDOWN

1 Sets up the screen and positions the chopper and the cave. Sets the score to zero and prints the start of the cave. It also sets a TRAP which is needed later.

2 Prints the path of the cave and generates a noise if the fire button is pressed. Also gets the STICK value.

3 Determines the direction of the cave.

4 Sets the speed of the chopper by poking location 622 with a value obtained from the fire button which, when multiplied by 255, gives either 0 for fast scroll or 255 for slow. It also checks the chopper location to see if it has crashed and, if not finds the new location, prints it and branches back to line 2.

VARIABLES

S Score
C Chopper position
P Path of cave
T Random path of cave
V Value obtained from joystick
G,H Values obtained from the LOCATE command
DS Dummy string to force error to enable TRAP statement to be executed
N Value obtained from fire button

End of game. The sound channel is set to zero and the score is displayed. Waits for Return to be pressed to start the game again.
Win £25

Simply send a copy of the program on disc or tape together with the documentation – preferably as a word processed file – to:
Atari User, Europa House, Adlington Park, Adlington, Macclesfield SK10 5NP.

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

MASTERMIND
from Paul Soames

THIS program is a version of the classic board game, but instead of using coloured pegs it uses numbers from 0 to 9.

The computer will pick five random numbers for a secret code and give you 10 attempts to guess it. Enter numbers at the asterisk by just pressing the appropriate key. When you have entered the number for one guess, the computer will show you which, if any, of your numbers are in the correct positions.

It does this by showing a line of five pegs on the right of your guess. A filled in one means a correct number in that position and unfilled means an incorrect number. If you guess the code in the set number of goes, it will be shown for your confirmation. If not, it is shown with a rasp and, either way, the program will automatically run again.

As the program stands it should always be possible, with logical thinking, to guess the code in the 10 guesses allowed. The permitted number of guesses can be changed by altering the variable T in line 20, to any number you want.

PROGRAM BREAKDOWN

10 Dimensions variables, picks the secret code and opens the keyboard for the GET command.
The first quotes contain a clear screen character.

20 Sets the number of tries allowed, gets the five digits of your guess and increments the number of tries counter.

30 Uses a Boolean statement to set the elements of AS to equal an 0 for an incorrect answer and a Control-T for a correct one.

40 Prints the number of tries so far, checks to see if you have every digit correct or if you have no more tries left. If the guess is incorrect it goes back to line 20 for another try.

50 Uses a Boolean statement to either play some notes for a correct answer or play a rasp. It waits a while before running the program again.

ALARM
from Granville Danby

HOW many times have you been programming and your mother or wife has told you that your dinner will be ready in half an hour? But you just keep typing away and end up getting a telling off.

Well, now you have a solution to that problem with this simple program. When you first run it you must enter the number of minutes before you want the alarm to go off.

The program works in the vertical blank period, so once it is installed you can be performing other functions such as entering a Basic program or playing certain games – providing they are written in Basic and don't use the VBI. It works by converting the minutes into Jiffies – the time units for the internal clock.

A small piece of machine code is then initialised to set up a vertical blank interrupt. The alarm is then activated and the only way to turn it off is to press Reset or switch the computer off.

Because the program uses the internal clock and page 6, any program that also uses these cannot be run while the alarm is working. It is accurate to within five seconds whether you set it to one minute or one hour.

PROGRAM BREAKDOWN

10 Gets the time in minutes and converts it into Jiffies

20 Reads and pokes in the machine-code data

30 Regists the clock and pokes in the VBI location

Data statements for the machine-code

10 INPUT T:TI=TIME;:X=INIT(T);:X=TIME;:X=TIME;:X=TIME
20 FOR X=X TO 25:READ Y:POKE 152664,Y:
30 NEXT R:POKE 155555,0
40 DATA 104,128,163,141,124,2,169,6,144,35,2,86,96,165,18,285,6,280,17,169
50 DATA 186,135,12,236,102,105,158,156
60 DATA 280,168,17,281,16,280,245,96,76,
70 226,172

Get it right!

0 7VR (K) 10 994 (1) 30 8VH (O) 40 8VH (E) 50 OCV (G)

Get it right!

10 37M (K) 20 65F (A) 30 34V (K) 40 33W (O) 50 CWR (L)

February 1988 Atari User 31
IF you are a compulsive games player you will probably remember a game called Breakout. It was probably one of the simplest games ever written — but very addictive. So, to bring back old memories, here is our version of that old classic – Breakin.

The game controls are shown in Table I, and the idea is to keep a ball in play using a bat that moves across the bottom of the screen. At the top are high-scoring moving targets protected by a ball. To make a hole by bouncing the ball against the wall to knock out the bricks. Points are awarded as shown in Table II.

This may sound simple, but in the land of arcade games nothing is ever that easy. So to make things more difficult, pin-table type bumpers appear on the play area to deflect the ball.

You need quick reactions and lots of concentration to predict where to place the bat to send the ball up the field of play again.

You start with five balls and one is lost if it travels past the bat. The game ends when all your balls have been used. There are 10 levels of play — shown in Table III — and these determine the speed of the ball and the number and way in which the bumpers are placed. The current level, together with the other information shown in Table IV, is displayed at the top of the screen.

Breakin is written mainly in Basic, but plays at high speed due to the use of two short machine code routines that handle all the movement of the bat, the ball and the targets — lines 720 to 830 and 950 to 1050.

If you want to change the number of
balls you start off with, alter LIVES in line 1660. The speed of the ball and the distribution of the bumpers can also easily be altered: In line 1750 to 1840 XDELAY determines the speed of the ball so to change it simply alter n in the statement:

POKE XDELAY,n

where n is the speed value of the ball. As the game stands a value of 15 is slow, 10 medium and 5 fast.

If you know how to plot characters to the screen display using the POKE command you should not find it difficult to alter the number or pattern of bumpers on any level. Lines 1190 to 2080 plot their positions and they are a redefined character X — internal character 56. SM is the beginning of screen ram.

### Table III: Levels of play

<table>
<thead>
<tr>
<th>Speed Level</th>
<th>Bumpers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow speed</td>
<td>5</td>
</tr>
<tr>
<td>Medium speed</td>
<td>5</td>
</tr>
<tr>
<td>Fast speed</td>
<td>5</td>
</tr>
<tr>
<td>Medium speed</td>
<td>18</td>
</tr>
<tr>
<td>Fast speed</td>
<td>18</td>
</tr>
<tr>
<td>Medium speed</td>
<td>5</td>
</tr>
<tr>
<td>Fast speed</td>
<td>Random bumpers</td>
</tr>
<tr>
<td>Medium speed</td>
<td>Random bumpers</td>
</tr>
<tr>
<td>Fast speed</td>
<td>High-density random bumpers</td>
</tr>
<tr>
<td>Medium speed</td>
<td>High-density random bumpers</td>
</tr>
<tr>
<td>Medium speed</td>
<td>Super-density random bumpers</td>
</tr>
</tbody>
</table>

### Table IV: Game display status

<table>
<thead>
<tr>
<th>Number of balls left</th>
<th>Score</th>
<th>High Score</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>150</td>
<td>140</td>
<td>8</td>
</tr>
<tr>
<td>20</td>
<td>200</td>
<td>250</td>
<td>7</td>
</tr>
<tr>
<td>19</td>
<td>250</td>
<td>300</td>
<td>6</td>
</tr>
<tr>
<td>18</td>
<td>300</td>
<td>350</td>
<td>5</td>
</tr>
<tr>
<td>17</td>
<td>350</td>
<td>400</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>400</td>
<td>450</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>450</td>
<td>500</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>500</td>
<td>550</td>
<td>1</td>
</tr>
</tbody>
</table>

### Table V: Change game level

<table>
<thead>
<tr>
<th>Game</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>START</td>
<td>Starts Game</td>
</tr>
<tr>
<td>BRICK ROW 1</td>
<td>Launches Ball</td>
</tr>
<tr>
<td>BRICK ROW 2</td>
<td>Moves Bat Left</td>
</tr>
<tr>
<td>BRICK ROW 3</td>
<td>Moves Bat Right</td>
</tr>
</tbody>
</table>

---

Turn to Page 34
Melody Maker

BRUCE WOODLAND starts you on the right note with this musical program

This superb utility is designed to allow you to write simple tunes on to an on-screen simulated music sheet and play it back in a choice of voices. You may also have full disc handling of the music files and a special facility which allows simple access to one from within your own programs.

Music is often added to programs, either to provide mood or to fill in those tedious intervals when data is being processed and nothing exciting is happening on screen.

Atari computers contain a versatile sound generator, but unfortunately the resident Basic suffers from complicated sound handling commands. Production of even simple tunes may require much trial and error.

Furthermore, since it takes a significant time to run the SOUND command, program operation is slowed or even stopped while music is being played, and this defeats the object of its inclusion.

Melody Maker presents an attractive solution to both these criticisms and is also fun and educational. Music is written on to a music sheet on the screen using a few logically-chosen keys. Standard musical notation is used, so composition or copying from sheet music is simplicity itself.

Disc handling routines allow music files to be saved or loaded and they can be added to or played in a choice of voices. An interrupt-driven machine code routine is used to play the music, so it will continue playing during most Basic operations. This option may be saved separately so it can be added to your own programs.

When you run the program the options available — shown in Figure 1 — are displayed. Select W for the edit mode and enter the music using the keys shown in Figure II.

Position on the music sheet is marked by a player missile cursor which can be moved vertically on the staves by the arrow keys. You don’t need to press Control. Its position is translated to the appropriate pitch. The sharp and flat keys, which modify the pitch slightly up or down, have to be selected before the note is written.

Keys 1 to 4 will write a note of the correct type (length) at the cursor’s position. The note length can be prolonged by 50 percent by preselection of the full-stop. The correct note will sound, and be stored in memory. It is also possible to delete notes if necessary.

A key signature may be set up at the start of the composition or this can be bypassed if desired. The various key functions — shown in Figure II — can be displayed on screen by pressing the I key; and these are usable at any point during composition. Only valid keys are accepted, so if you avoid Reset and Break you can’t go wrong.

The Basic END command will turn off any music, as will Reset and any disc accessing. No provision is made for accented beats, so the normal bar structure of music is conveniently ignored. In other respects Melody Maker follows standard musical notation very closely.

The program is very user-friendly and very little musical knowledge is required for its use, so an absolute novice can create superb music.

However, the complexity of the program renders it unsuitable for the smallest Atari machines such as an unmodified 400 or 600XL and cassette storage is too slow, which means a disc drive is essential to store files.

Figure I: Main menu options

<table>
<thead>
<tr>
<th>Key</th>
<th>Note</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Semiquaver</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Quaver</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Crotchet</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Minim</td>
<td>8</td>
</tr>
</tbody>
</table>

Table I: The notes available

Turn to Page 36
Move the cursor to the required position on - or slightly above or below - the staves.

S Sounds the note represented by the position of the cursor on staves without writing or storing it - useful for trial and error composing.

P Plays the notes entered so far. Cursor position and store are unaltered and a single voice is used to avoid confusion.

1 Cycles between different on-screen instruction sets.

1-4 Write a note to the screen of the designated type shown in Table I and store its sound in memory. The cursor will then advance automatically. They are used after the spacebar. Note identities are as follows:

# B.N. Give a sharp, flat or normalised note if it has been preset to sharp or flat in the key signature. These keys must be selected before the note is written.

Spacebar Allows the insertion of a musical rest or pause, with length equal to the note or rest selected thereafter. Dotted rests are possible. The cursor moves one place to the right after an appropriate symbol has been drawn.

Delete Erases the last note entered from screen and memory - multiple uses are possible.

This should be used before the note and causes its length to be increased by 50 per cent. It's total length depending on the note type.

Return Returns you to the main menu from where you may play or store your composition.

---

**Figure II: Key commands available**

---

```
0 REM ****************************
1 REM * MELODY MAKER *
2 REM # MUSICAL UTILITY*
3 REM * (C)ATARI USER *
4 REM # BY BRUCE WOODLAND*
5 REM ****************************
6 REM:100:DEMO:D00:MCDE=500:MENU=700
10 REM HALT PROGRAM
20 GOSUB REM5:REM REUSE MEMORY
30 REM DEMO:REM SETUP DEMO PLAY
50 REM MCDE:REM SETUP MC ROUTINE
70 REM MENU:REM MAIN ROUTING
80 GOTO 70
90 REM ****************************
100 REM REUSE MEMORY ETC
110 CAP=128:REM Max tune length
120 &PEEK(180)-36:GRAPHICS 8
130 POKE 54279,0:MCDE=#256:BASE=512:MCDE=500
140 DIM K$(10),MREF$(15),K50S$(15)
150 DIM PICKS(256),SCALES(15)
160 DIM TUNES(CAP),TEMPS(255)
180 OPEN ML=4,0:"K:";TA=ADIR(TUNES)
190 RETURN
195 REM ****************************
200 REM DEMO PLAY
210 GRAPHICS 17:POKE 710,6
220 POKE 708,152:POKE 711,102
230 DL:7:PEEK(742)=256:PEEK(741)
240 POKE DL:7:POSITION 4,1
250 GOSUB 400
260 F5:0:GOSUB 510
270 F5:1:RETURN
275 REM ****************************
300 REM TITLE PAGE
310 POSITION 4,1:? M6;"MELODY MAKER"
320 POSITION 5,6:? M6;"MELODIE"
330 POSITION 8,3:? M6;"AKZ"
340 POSITION 4,10:? M6;"atari user"
350 POSITION 5,13:? M6;"MV"
360 POSITION 5,15:? M6;"S.VALENTIN"
370 POSITION 5,18:? M6;"1988"
380 GOSUB 900
390 REM ****************************
400 REM ****************************
510 K$="-~#1234 MD.WP5$" 520 K50S$="BDFGABDFGAB"
530 RESTORE 658:FOR A=1 TO 15
540 READ DTA
550 SCALES(LEM5S)(55)=CHR$(62)TA
560 NEXT A:REM $=SCALES
570 RESTORE 999:FOR A=8 TO 247
580 REM DEMO:REM NEXT A
590 CK=MC=47:MD=CK+42:MD=MD+125
610 REM DEMO:REM
630 POKE 704,236:POKE 5255,4
640 POKE 5248,8:RETURN
650 REM DEMO:REM FOR SCALE
660 DATA 31,35,40,45,47,52,60,64
670 DATA 72,81,91,100,112,120
680 DATA_OHARA CURSOR DATA
690 DATA 96,144,144,96
700 REM ****************************
710 REM DEMO:REM
720 POKE 710,22:POKE 708,168
730 POKE 709,102:POKE DL:1,7
750 POKE 87,8:RESTORE 910
770 ? : " MELODY MAKER"
780 ? : " FOR ATARI 8080XL"
790 FOR A=1 TO 6:READ PICKS
800 POSITION 5,24:? PICKS:NEXT A
810 ? : " option or start" 820 MMC4:MV=3
830 POSITION KK,MY; " ";
840 IF PEEK(5273)=6 THEN 859
850 IF PEEK(5273)=5 THEN 830
860 IF PEEK(5273)=0 THEN 860
870 MV:MY1:IF MV>14 THEN 820
880 GOTO 830
890 GOSUB MW:1000
900 RETURN
910 DATA WHITE MUSIC,CONTINUE
```
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5840 # "FORMNUM": INPUT PICKS
5850 IF LEN(PICKS) # 2 THEN # :RETURN
5860 IF LEN(PICKS) # 7 THEN 5800
5870 FNS#="":FNS#(JZ)-PICKS
5880 FNS(FNS#(K)+1)+1):"MS"
5900 GOTO 3590:RETURN
5910 REM "FREE MS AS DISK FILE"

6180 IF TEMPS(4,4)"" THEN 6170
6190 FNS(TEMPS(1,1,1,1):FNS(1,2,2,0):"01"
6200 FNS(FNS(FNS#(K)+1)"":"MS"
6210 GOSUB 5300
6220 TRAP 48666:RETURN
6390 REM ******
7000 REM PRINT
7100 PRINT GRAPHICS 0
7200 "CHRS(125): POSITION 14,0
7300 "CHRS(125):POSITION 10,3
7400 "CHRS(125):POSITION 7,3
7500 "SELECT—A Mid Voice"
7600 "M Low Voice"
7700 "M Three Voices"
7800 "M HiLo Voice"
7900 "M Hi/MidVoice"
7910 # "YOUR CHOICE:"
7920 GET M1,0,0:CHRS(M1):A=40
7930 IF A6 OR A5 Then 7920
7940 IF A4 OR A3 THEN 7920
7950 SOUND 2,0,0,12
7960 SOUND 1,0,0,12
7970 SOUND 0,0,0,10
7980 GOSUB (K310,1500)
7990 #: "MORE...":GET M1,0
8000 IF A=0 THEN 7920
8010 RETURN
8380 REM "DATA"
8480 REM "PLAYLDST"
8490 REM "SOUND"
8500 REM "MICROFILM"
8510 REM "SHARP"
8520 REM "KS20"
8530 REM "Deko"
8540 REM "FREE"
8550 REM "LIST"
8560 REM "LIST"
8570 REM "FREE"
8580 REM "DATA"
8590 REM "FREE"
8590 REM "FREE" 5070 REM "FREE"
8600 REM "FREE"
8610 REM "FREE"
8620 REM "FREE"
8630 REM "FREE"
8640 REM "FREE"
8650 REM "FREE"
8660 REM "FREE"
8670 REM "FREE"
8680 REM "FREE"
8690 REM "FREE"
8700 REM "FREE"
8710 REM "FREE"
8720 REM "FREE"
8730 REM "FREE"
8740 REM "FREE"
8750 REM "FREE"
8760 REM "FREE"
8770 REM "FREE"
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8900 REM "FREE"
8910 REM "FREE"
8920 REM "FREE"
8930 REM "FREE"
8940 REM "FREE"
8950 REM "FREE"
8960 REM "FREE"
8970 REM "FREE"
8980 REM "FREE"
8990 REM "FREE"
9000 REM "FREE"
 WHETHER you're a first time user or a seasoned professional, I've no doubt that your Atari played a big part in the recent seasonal fun - but most likely as a games machine rather than a computer. Even I must admit to having spent a fair bit of time on the old joystick myself - which brings me round to our first question, from Kumar Neppalli of Mid-Lothian in Scotland, who writes:

It is really amazing how few books there are that deal with the technical aspect of Atari 8 bit machines. It has been frustrating me for some time now to find out how the joystick port works, and what its configuration is.

My main questions are:

- What is the joystick pin configuration?
- How does the touch tablet work?

Let's tackle the joystick connections first. Looking towards the side of the computer the pins are numbered as follows:

```
  1 2 3 4 5
  6 7 8 9
```

1. Forward movement (Up)
2. Backward movement (Down)
3. Left
4. Right
5. Paddle A (0 or 2)
6. Trigger button
7. +5 volts
8. Ground
9. Paddle B (1 or 3)

![Joystick Diagram](image)

Figure 1: The joystick connector

The first four pins are detected by four bits within location 54016 ($D300). The lower four handle joystick socket one while the high four bits handle socket two. Bits 0/4 function with pin 1, 1/5 with pin 2, 2/6 to pin 3 and 3/7 with pin 4. Each of these are normally set to 1, and they drop to zero to indicate a movement of the stick.

The trigger button status may be found at location 53264 ($D010) for socket one and at 53265 ($D011) for socket two. These addresses are normally zero and they change to one when the relevant trigger is pressed. By using POKE 53277,4 you can latch both of the trigger buttons. This means that, once pressed, the value will remain in the register until it is specifically cleared - even after you have released the trigger. These locations are the actual hardware addresses, but you will find it more convenient to use the shadow registers lower in memory, which are updated automatically by the OS 50 times a second.

Joysticks one and two show up separately at 632 and 633 respectively and the trigger buttons show up at 644 and 645. Basic these values can be read by using STICK(0), STICK(1), STRIG(0) and STRIG(1). Additionally to the digital (on/off) joystick system, the Atari also boasts four analogue-to-digital converters. These are used to detect the movement of paddles - such as those used to play Breakout - and each contains a resistor giving a continuously variable voltage on pins five and nine of each joystick connector.

The computer converts the values from each of the four paddle controllers into numbers between 0 and 228 which may then be found at locations 53760 to 53763 ($D2B0 - $D2B3). As before, shadow locations are available at 624 to 627 and the Basic functions PADDLE(0) to PADDLE(3) are also available.

Because there are two paddles connected to each joystick socket, they can't be connected to the single trigger line - so pin three gives the Paddle 0 trigger and pin 4 gives that of Paddle 1. These may also be read using PTRIG(0) to PTRIG(3).

On now to part two of your question. The touch tablet contains two resistance pads - one going from top to bottom and the other from left to right.

The slightest pressure at any point on the pad connects a given resistance value to the paddle A and B connections, so they are converted to digital values between 0 and 228 for both directions. The three buttons show up on pins one, three and four and may be picked up using STICK(0).

Here is a small program to illustrate the use of the touch tablet:

```
10 GRAPHICS 8:SETCOLOR 2,B,8:SETCOLOR
11,B,14:POKE 752,1
20 X=PADDLE(0)+519/228
30 Y=PADDLE(1)+519/228
40 S=S+1
50 SOUND 0,228-PADDLE(0),10,10
60 SOUND 1,228-PADDLE(1),10,10
70 IF S<14 THEN COLOR 1:PLOT X,Y
80 IF S<11 THEN COLOR 1:DRAWTO X,Y
90 IF S<7 THEN COLOR 1:PLOT X,Y
100 CHRS(125):IF S<15 THEN 20
110 IF S<14 THEN "PEN BUTTON (PLOT)"
120 IF S<11 THEN "LEFT BUTTON (DRAW)"
130 IF S<7 THEN "RIGHT BUTTON (ERASE)"
140 IF S<10 THEN "PEN/LEFT BUTTON"
150 IF S<8 THEN "PEN/RIGHT BUTTON"
160 IF S<5 THEN "LEFT/RIGHT BUTTON"
170 IF S<2 THEN "ALL THREE BUTTONS"
180 GOTO 20
```

Printer problems

The next letter is from Mr Hill from Stranraer.

Having written a program which determines the solution to a problem dependant on the input from the user, I would like to dump the displayed solution to my 1029 printer.

Also, when I write software and run into difficulties, I would like to be able to print selected lines or groups of lines for later examination.

I am at present unable to do either of these, and any screen dump programs previously published are only intended for use with graphics screens and are not really suitable. I do hope you will be able to help me with this problem.

The listing problem is the easiest one to answer - all you need to do is use the LIST "P:" command to list to the printer. Follow it with two optional

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line numbers: The starting line number for the listing and the last line number to print. If you only give one number you'll get a single line listed to the printer.

For example:

```
LIST P; 100
```

would list line 100 on the printer, while:

```
LIST P: ;500,1000
```

would list all the lines from number 500 to 1000.

There are two possible solutions to your other question. One is to print the answer to the printer instead of the screen – which will only work if you print the lines sequentially rather than using a lot of POSITION statements to move about the screen. My series on I/O channels gave some information on re-vectoring the screen output to the printer, but you will probably find it easier to alter your program slightly.

Firstly you must remember to OPEN a channel to the printer at the start of your program, and CLOSE it again at the end. Assuming we will use channel #1 for these examples, you would use:

```
OPEN #1,X,Y,Z,P;
```

and

```
CLOSE #1
```

If you want to print lines on the printer rather than the screen you should replace any PRINT or ? statements with PRINT #1.

You could, for example, use the following routine:

```
10 OPEN #1,X,Y,Z,P;
20 GRAPHICS B; LIST : LIST
30 X1=5; X2=25
40 Y1=5; Y2=15
50 GOSUB 1000
60 CLOSE #1
70 END
1000 REM PRINTOUT ROUTINE
1010 FOR Y=1 TO Y
1020 FOR X=1 TO X
1030 LOCATE X,Y,C
1040 PRINT #1;CHR$(CH);"
1050 NEXT X
1060 PRINT #1"
1070 NEXT Y
1080 PRINT #1"
1090 RETURN
```

Variables X1 and X2 are used to specify the horizontal size of the text dump – use X1=0 and X2=39 for the full line width. Y1 and Y2 perform the same task for the vertical axis – with Y1=0 and Y2=23 giving the full height of the screen.

Don't forget that you must have issued a GRAPHICS command before LOCATE can work – so the routine won't function correctly without the GRAPHICS 0 command somewhere earlier in the program.

You could have PEEked the values of the characters directly from the screen ram but then you'd have to convert them back to standard Ascii codes before the printer would accept them – all of which would slow the routine down considerably.

The only disadvantage with using LOCATE is that it will corrupt the current cursor position, so don't forget to reset it with the POSITION command before you print any more text to the screen.

I'll be back next month with more answers to your technical queries, so keep them coming in. And how about all you new users who've just received an XE system for Christmas – what problems are you facing right now? Write in and let me know.

---

**ADVENTURE PROBLEMS?**

AT LAST!! Help is at hand with this new all in one programme.

C.A.B. - Cassette Adventure Breaker - is designed to display hints on the screen to assist you to conquer those obstacles you can't overcome. Simply load CAB into your Atari before loading your adventure. Clues will then be displayed: verbs, nouns and locations but in such a way that it won't ruin your game - almost an adventure within itself!! And at an adventurous price of £4.99 inc. p & p it must be the ULTIMATE UTILITY.

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**RABBIT**
16 The Green, Thurlby, Bourne, Lincs. PE10 9NB
GAMES of strategy have always intrigued the human mind, and this one - an advanced version of the old sliding block puzzle - certainly has you in all sorts of trouble.

After the title screen is displayed press Start to begin. The display will go blank, then a 5 x 5 colour grid will be drawn, giving you 24 coloured squares and one black one.

The middle nine squares are surrounded by a white line - remember that these are the important squares in the puzzle. In the bottom right corner of the screen a smaller nine square grid displays the pattern you are required to create.

These small squares can't be moved, but you can move the large ones in Rubik cube style - after plugging a joystick into port one. It is possible to move the blank square in four directions - up, down, left and right. When this is done the blank square will swap places with the square adjacent to it, in the direction indicated by joystick movement. The only requirement for movement is that the blank square is in the direction of travel.

At first the movement of the squares seems strange, but you will soon get used to it. Also note that it is possible to move all 24 coloured squares, and not just the middle nine.

When you have got the nine large squares to match the small ones press the fire button. The program will then shuffle the colours of the squares for a new game. You will then be given your time and the number of moves you needed to finish the puzzle.

Each time the puzzle is played the starting positions and colours of the large and small squares will be different.

**PROGRAM VARIABLES**

- **puz(9)** Colours of the small nine squares.
- **col(25)** Colours of the large 26 squares.
- **bttime** Best time so far.
- **c0** Position of the black square.
- **x,y** Corner of the black square.
- **go** Number of moves the player has taken so far.

---

**By MICHAEL O'CONNOR**

---

```
1 REM COLOUR PUZZLE
2 REM BY MICHAEL O'CONNOR
3 REM <ENTER USER MAGAZINE
4 DIM PIZ(9),COL(25):BITIME=1000:TIME=1000
50 GOSUB 486000:GRAPHS 10:GOSUB 1T IT
60 SCREEN 2,39,70,80,106,170,15
70 RESTORE
80 FOR T=0 TO 6:READ C:PUKE 705,7:T:=NE
90 X:RETURN
55 REM SET UP RANDOM COLOURS
60 C1=4:C2=4:C3=4:C4=4:C5=4:C6=4
70 FOR T=0 TO 24
80 Z=INT(RND(0)+6)+1
90 IF Z=1 AND C1=0 THEN C1=C1+1:GOTO 1
100 IF Z=2 AND C2=0 THEN C2=C2+1:GOTO 1
110 IF Z=3 AND C3=0 THEN C3=C3+1:GOTO 1
120 IF Z=4 AND C4=0 THEN C4=C4+1:GOTO 1
130 IF Z=5 AND C5=0 THEN C5=C5+1:GOTO 1
140 IF Z=6 AND C6=0 THEN C6=C6+1:GOTO 1
150 GOTO 80
160 COL(7)=2:NEXT T:COL(25)=0:TI ME=1
165 REM DRAW BOARD
170 FOR X=0 TO 59 STEP 12:F OR Y=1 TO 1
175 X=STEP 36
180 COLOR COL(TIME)+7:TM=TIME+1
190 FOR X1=X TO X+10:PLOT X1/Y:DR ARTO
```

---

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2840 RETURN
3000 REM END
3100 COLOR 2 FOR X=1 TO X=10: PLOT X1, Y=DRAW X1,+,32+SOUND 0,X1,10,10:NEXT X1
3200 Y=45+S4

3230 COLOR 0 FOR X=1 TO X=10: PLOT X1, Y=DRAW X1,+,32+SOUND 0,X1,10,10:NEXT X1
3300 RETURN

4010 COLOR 2 FOR X=1 TO X=10: PLOT X1, Y=DRAW X1,+,32+SOUND 0,X1,10,10:NEXT X1
4100 RETURN

5010 REM END
5100 COLOR 2 FOR X=1 TO X=10: PLOT X1, Y=DRAW X1,+,32+SOUND 0,X1,10,10:NEXT X1
5200 RETURN

6100 REM TITLE SCREEN
6200 6100 GRAPHICS 17
6300 RETURN

6400 ? 62: "COLOUR PUZZLE"
6500 ? 62: "GET IT RIGHT!"

1  CAJ (W) 160  97F (V) 280  MNL (E) 530  RKA (2)  350  VKM (5) 5600  YGI (3)
2  CAS (3) 150  97F (V) 260  MNL (E) 530  RKA (2)  4500  CRK (5) 5600  DZA (L)
3  CLO (5) 150  97F (V) 270  15S (E) 530  RKA (2)  1000  Y72 (4) 5600  37K (C)
10  LAL (Y) 165  97S (E) 260  15S (E) 530  RKA (2)  6000  23S (S) 5600  D7A (L)
20  V8X (C) 170  S86 (X) 250  15S (E) 530  RKA (2)  6000  23S (S) 5600  D7A (L)
30  J6Y (H) 180  90S (Y) 250  15S (E) 530  RKA (2)  1500  31F (Y) 5600  D7A (L)
40  J5V (J) 200  159 (J) 240  15S (E) 530  RKA (2)  1500  31F (Y) 5600  D7A (L)
50  D4G (H) 210  159 (J) 240  15S (E) 530  RKA (2)  1500  31F (Y) 5600  D7A (L)
60  PKP (K) 220  159 (J) 240  15S (E) 530  RKA (2)  1500  31F (Y) 5600  D7A (L)
70  RYU (L) 230  159 (J) 240  15S (E) 530  RKA (2)  1500  31F (Y) 5600  D7A (L)
80  S6L (L) 230  159 (J) 240  15S (E) 530  RKA (2)  1500  31F (Y) 5600  D7A (L)
90  F5X (J) 240  159 (J) 240  15S (E) 530  RKA (2)  1500  31F (Y) 5600  D7A (L)
100  TXA (B) 250  159 (J) 240  15S (E) 530  RKA (2)  1500  31F (Y) 5600  D7A (L)
110  S8L (L) 260  159 (J) 240  15S (E) 530  RKA (2)  1500  31F (Y) 5600  D7A (L)
120  N8S (L) 270  159 (J) 240  15S (E) 530  RKA (2)  1500  31F (Y) 5600  D7A (L)

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While Stocks Last
THE two main features people notice first about Atari computers are their sound and graphic capabilities. Even though internally generated computer music can sound superb, you can never get a micro to create accurately the sound of your favourite rock mega star.

But with this fun and very easy-to-use program you can put your own pop, rock or classical music tapes into any Atari tape recorder and hear the music through the TV speaker.

The program also controls the movement of five vertical bouncing bars - which simulate the peak scan on a Hi-Fi - in time with the music.

Type in the program - remembering to check it using Get it Right - then save a copy to tape or disc. To use it, all you have to do is press Reset, place the music cassette of your choice into the tape recorder and press play.

Now run the program: The main screen is drawn and then the tape motor is turned on by the command POKE 54018,52. Music will now come through the micro to the TV speaker.

The program looks at 16 locations between lines 53775 to 54015 to see if a value of 239 is found - this figure is present if a sound of a strong enough level exists. These are then used to control the movement of the bars up and down the screen, so the louder the music the more the bars beat to the music.

The routine can be easily modified to create other interesting effects such as flashing lights or drawing graphical designs in time with the music. So Roll over Beethoven - let's have some music.

```assembly
1 REM GRAPHIC EQUALISER
2 REM C:SMITH AND M.HARRIS
3 GOSUB 15000:REM DRAW LINES
10 ? CHRS(215):REM CLEAR SCREEN
15 ? CHRS(255):REM BEEP
17 POKE 799.1:REM CHARACTER BRIGHTNESS
LEVEL
20 POKE 710.6:REM SCREEN COLOURS
25 POKE 752.1:REM REMOVED CURSOR
35 LET L1=L1-1;L2=L2-1;L3=L3+1;L4=L4+1;L5=L5+1
7:0=TIM 115(50);125(50);135(50);145(50)
1,155(70)
17 REM LINES 40-240:DRAW SCREEN
40 T15=0:EQUALISER, "T15=";"GRAPHIC"
"T15=";"ATARI":";T15=";"M.HARRIS.
S55=";"BY";S55=";"C:SMITH.";S5;
50 POSITION 1,1:? T15
95 L4=L4+1;L5=L5+1
54 IF L1=25 THEN GOTO 60
55 GOTO 50
60 POSITION 2,0:? T25
62 L2=L2+1
64 IF L2=15 THEN GOTO 70
65 GOTO 60
70 POSITION 3,0:? T35
72 L3=L3+1
74 IF L3=5 THEN GOTO 80
75 GOTO 70
80 POSITION 0,0,0; """;POSITION 39,35:
90 L4=L4+1;L5=L5+1
100 IF L4=22 THEN GOTO 120
110 GOTO 80
120 POSITION 6,21,1; T45
125 L6=L6+1
130 IF L6=26 THEN GOTO 150
135 GOTO 120
150 POSITION 7,21,1; T55
155 L7=L7+1
160 IF L7=7 THEN GOTO 200
165 GOTO 150
200 POSITION 1,1,1; """;POSITION 16,1,1:
""";POSITION 1,20,1; """;POSITION 39,2
100 IF L4=22 THEN GOTO 120
210 POSITION 5,3,1; """;POSITION 12,3;
1; """;POSITION 19,3,1; """;POSITION
M 26,3,1; """;POSITION 12,1,1; """;
220 POSITION 5,18,1; """;POSITION 12;
18,1; """;POSITION 19,18,1; """;POSITION
26,18,1; """;
```

**PROGRAM BREAKDOWN**

- **10-35**: Set up variables, turn cursor off and alter screen display.
- **40-260**: Draw the main screen.
- **290**: Turns the cassette motor on.
- **300-350**: Set the calculated GOTO statements.
- **400-650**: Peak the locations to detect if any music is present.
- **700-1420**: Draw the bars that beat to the music.
- **1500-1550**: Draw black lines across the screen.

---

_Turn to Page 46_
Van Gogh Junior

RECENTLY my young brother has decided that he wants to be another Van Gogh: He uses my commercial art packages all the time to draw his masterpieces, but has problems with the complex range of commands designed for older age groups.

We looked around for a package aimed at young children but couldn't find any, so we created Child Artist. It is designed to be simple and easy to use for children of any age — providing they are old enough to be using a computer in the first place.

It is a four colour art program and nearly all the drawing options can be used by just pressing the function keys and moving the joystick, although some keyboard input is needed.

Figure I shows the drawing options available by pressing the function keys while Figure II shows the keys used to scroll through the available colours — the defaults are red, white, blue and green.

Once the program has initialised you are presented with a blank graphics Mode 2 screen with a triangular cursor at the top left. This is joystick controlled and can have a variety of shapes and colours which you can use to design any pictures you want by just moving the cursor around the screen and pressing the fire button to leave the shape.

Pictures can be saved on disc and

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start+Select</td>
<td>Saves picture</td>
</tr>
<tr>
<td>Start+Option</td>
<td>Loads picture</td>
</tr>
<tr>
<td>Start+Select+Option</td>
<td>Clears screen</td>
</tr>
</tbody>
</table>

Figure I: Options available

MATTHEW AUGIER presents a fun art package for youngsters

each one only takes up two sectors, containing the screen information followed by the colour register information — 708 to 711 — and the colour of the cursor — 704. A picture can have a filename of eight characters and the program automatically adds the extender of .CPC to the name.

It is important to note that before a file can be loaded the cursor must be positioned at the top of the screen. This prevents the accidental erasure of a drawing by loading a file on top of it.

The program's player missile graphics are written in machine code so that movement is smooth and easy to see. The data for the shape of the cursor can be easily changed, so you can have hours of fun creating your own designs. Break has been disabled so you can't accidentally lose your picture, and the attract mode has been switched off.

<table>
<thead>
<tr>
<th>Colour</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luminance up</td>
<td>G</td>
<td>E</td>
<td>T</td>
<td>U</td>
</tr>
<tr>
<td>Luminance down</td>
<td>A</td>
<td>D</td>
<td>G</td>
<td>J</td>
</tr>
<tr>
<td>Escape</td>
<td>Makes the cursor invisible. Spacebar exits this mode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spacebar</td>
<td>Allows you to alter the shape and colour of the cursor by moving the joystick - pressing the spacebar again exits this mode.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* These keys scroll through the brightness level of the corresponding colour.

**Figure II: Keyboard controls**

```plaintext
10 REM ***************
20 REM * CHILD ARTIST *
30 REM * BY *
40 REM * MATTHEW AUGIER *
50 REM * *
60 REM * (C) GAMES USER *
70 REM ***************
80 GRAPHICS 2:16:POKE 780,119:POKE 789 ,14:POKE 780,57:GOSUB 1580
110 DIM L$(11),R$(20),FL$(20)
120 GOSUB 548:GOSUB 548:GOSUB 548
120 POKE 784,10:COL(43):POKE 764,255:7 #0 ;CHR$(125)
130 S$=STR$(1):IF PEEK(784)=2 THEN GOSUB 1580 SUB 760:GOTO 130
140 POKE 16,16:POKE 53774,64:POKE 77,8
150 IF PEEK(784)=0 THEN GOSUB 1580:R
160 IF PEEK(53279)=0 THEN GOSUB 1080:R EM CHANGE COLOUR
170 IF PEEK(53279)=2 THEN GOSUB 1250:R
180 EM LOAD SCREEN
190 IF PEEK(53279)=4 THEN GOSUB 1360:R EM SAVE SCREEN
200 IF PEEK(53279)=0 THEN ? #0;"K";REM CLEAR SCREEN 220 IF STR$(1)=0 THEN GOSUB 250
230 IF 5=15 THEN 130
240 FOR PO=1 TO 3:SET 1,779.,5,15-(PO*5):NEXT PO
250 IF 5=11 AND ?<48 THEN GOSUB 1020:G
260 IF 5=7 AND ?<200 THEN GOSUB 1800:G
to 130
270 IF 5=14 AND ?<15 THEN GOSUB 1950:G
```

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Feature

This is one of hundreds of programs now available FREE for downloading on MicroLink

GP-1,8: NEXT GP
1540 POKE 16,54:POKE 53774,64:RETURN

1550 REM SAVE
1560 GOSUB 1320
1570 POSITION 8,8:"NAME:"
"GOSUB 1310"
1580 OPEN M1,4,0,FLS
1590 FOR Q1=0 TO 11:FOR Q2=0 TO 19:LOCATE Q2+1,Q2;PRINT M1,Q1:PRINT M1,Q1:
1600 NEXT Q2:NEXT Q1
1610 CLOSE M1:RETURN
1620 REM GET FILE NAME
1630 CLOSE M1:OPEN M1,4,0:"NAME:POK-2
1640 GET M1,FL:IF FL=27 THEN POP:POP
1650 GOSUB 1350:GOTO 130

ARE YOU MISSING OUT?

You've got lots of questions about your computer but don't know who to ask! We do! You're not sure which software is best for your application! We do! You'd like to keep up to date with new releases and be sure they are a good buy, but who's going to tell you? We will! You would love to get to know other Atari enthusiasts, but you don't know how! We do! We want you to get some of that 'Public Domain' software you've heard about, but where from? We know! You don't want to feel like you're the only Atari owner in the world, but where can you turn too? Well, we can help! Great, but who are you?

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The U.K. Atari Computer Owners Club
P.O. Box 3, Rayleigh, Essex, SS6 8LR
Independent User Group

February 1988 Atari User 49
THE Financial Times Business Reports database is now part of Profile Information - the online service formerly known as Datasolve International - which is obtainable through MicroLink. It is the first venture between Profile and its new owner, The Financial Times, which recently acquired the company from Datasolve for £10 million.

Based on the highly-regarded FT newsletter service, the new database provides the full text of 22 regular newsletters covering technology, business, finance, media and energy.

Profile is best known to MicroLink subscribers for its World Reporter database containing the complete text of more than 25 worldwide newspapers, periodicals and news services.

As well as the world's leading business newspapers - the Financial Times and the Wall Street Journal - Profile also offers publications such as the Washington Post, the Guardian and the Daily and Sunday Telegraph.

Several major international news services such as Associated Press and Asahi are included, along with a wide range of authoritative sources on international politics, business, markets and finance.

Profile also offers access to McCarthy Online, which contains full text articles selected for their relevance to business and commerce from more than 60 of the world's top business publications.

The social side wins

MICROLINK subscriber Nigel Inwood temporarily abandoned a career in accountancy and law to help his parents open a business. Fourteen years later he very much doubts he'll ever return to the office.

The business his family took over was Judges Bakery, in the High Street of Hastings old town near the harbour.

With the addition of a restaurant, it became the only bakery to be listed in tourist guides such as Egon Ronay and the Good Food Directory.

"I'm on MicroLink for pleasure, because computing is my hobby", said Nigel Inwood. "Despite its international fame this is still a one-shop business - my Email communications are more likely to be social than official."

"I chose MicroLink because it offered more interesting and entertaining features than the other systems available".

Software speed-up

IT's now quicker and easier to use the massive MicroLink library of free computer software.

With the number of titles available for downloading fast approaching the 600 mark, subscribers were in danger of experiencing difficulty locating specific programs. As a result MicroLink has completely redesigned the telesoftware database to speed up the process of selection.

Users can now choose from a menu a complete database of program titles suitable for their own particular make of computer.

Third World connection

A LEADING independent authority on conditions in Third World countries has joined MicroLink to improve its international communications.

The Overseas Development Institute was formed nearly 30 years ago to study and monitor economic and agricultural development abroad.

At any one time it has as many as 20 research projects underway in different parts of the world. As well as publishing vital information about conditions in various countries, the ODI also tries to influence the decisions of policy makers around the world.

"We have an ongoing need to communicate with researchers and other institutions worldwide", said ODI spokesman Peter Gee.

"As part of a project to improve communications we are looking at electronic messaging, and MicroLink is as good a base as any to start with its excellent Email and telex facilities".

YOUR chance to join MicroLink - Page 6
Escape from Traam

IF you are having trouble with this superb science fiction adventure don't panic - help is at hand. When you crash your ship, look at it, get the nylon rope, push the ship and get the laser.

Go South and tie the rope to the bush then climb up and talk to the alien warrior - you have to talk to him twice. Now go South, then West into the dark cave and once you're inside it keep moving until you bump into an object - the rest is up to you. - Patrick Brown, Newton, Leicestershire.

Donkey Kong

Junior

WHEN the game has loaded press Start. Then press shift and hold it down as you type the word BOOGA. If you now press K you will never be killed as you play the game and if you press S you will be able to skip levels.

- George Boyle, Livingston, West Lothian.

Spiderman

HERE is the complete solution to this addictive adventure:

Walk along the walls, go West, look in the crib and take the formula. Now, look in the crib again before taking the first gem. Go N, N and drop the gem followed by the formula then go S, S, E and open the doors.

Enter the shaft and have a look around, especially in the niche, and get the gem. Now go up the shaft and have a look around in another niche before getting the gem. Go up again and search around for another gem. Push the shaft and go up, take another look before getting the next gem.

You are now in the Penthouse, so lower the thermostat twice before reading it then open the desk and get the sixth gem. Take the painting and pull it, then get the paper and drop the picture. Go back into the shaft and go D, D, D, W, W, N, N and drop a gem six times.

Go S, E and take the aquarium. Go W, S, E and enter the shaft again. Go U, U, U, W and raise the temperature. Empty the aquarium and take the gem, then drop the aquarium. Lower the temperature, take the desk and couch and go back into the shaft.

Go D, D, D, W, W, N, N and drop a gem then go S. Next move E and take the statue and go W, S, E. Go into the shaft, climb up and go W where you drop the statue, couch and desk.

Enter the shaft again, go U, W, W and close your eyes. Go W then push the knob, open your eyes and get the gem. Type RUN and go E, S to get the acid and calcium, then go S, S and get the other chemicals. Go N, N and mix the chemicals first and then get the calcium - then call.

Go S, S and take the chemicals before going N, N, now make a web. Drop the paper then go S, E and enter the shaft: Go D, D, W, W then South before dropping the calcium. Have a look in the corners and take the gem you find there, then go N, N, N and drop the gem twice.

Go S and shoot your web at the gem before you get it, then go N and drop the gem before going S, S, S. Take the corners and go N, E to get to the roof. Open the mesh and then drop it, go down the duct and get the gem.

Examine the fan before shooting your web at the button five times, then enter the fan to take the gem before going D, D, D, D, D. Get octo and hit electro then go W and read the dial - it should say 957. Go E, U, U, U, U, U, enter the fan, go down and feel N before you take the gem.

Go S and then feel S and take the gem before going N, E, E. Enter the shaft and go D, W, W, N, N so you can drop the gem seven times. Go S, S, E and enter the shaft before going U, U, W, W and type RUN.

Go E, E, enter the shaft, then go D, W, W and enter the roof. Now enter the duct then the fan before going D, D, D, D and take the newspaper. Open it and take the gem. Go U, U, U, U and enter the fan before going D, D, E, E so you can enter the shaft.

Go D, D, W, W, N, N and drop the gem - now ask for your score and it will print MICA 100% - you have just finished the game. - Lee Harding, Bradford, West Yorkshire.

Spiderman map
HAVE you reached the stage in your programming career when a standard blue-and-white screen no longer fills you with inspiration? Perhaps you’ve envied other makes of computer which use different colours or formats for their programming screens. Or maybe you just want to give your loveable old Atari a face-lift, and impress your friends with its new customised appearance.

If so, this autoboot program is for you. It lets you override the operating system so that whenever you switch on, or press Reset, a different screen layout with lots of new features appears instead of the boring old blue one.

What new features? Well, for starters the new screen can be any colour you like, with or without a border, and the text can be brighter or dimmer than usual. The left and right margins can be set at any positions you choose — perhaps to give balanced margins at either side, rather than the standard right-heavy effect.

The cursor can be adjusted so that it zooms around at up to four times its normal speed, while still allowing precise single-step positioning and without affecting the auto-repeat on any other keys. You can also have it flashing on and off at whatever rate you choose and, unlike most flashing cursors, this one stays visible whenever it moves — so you will never lose track of it no matter how quickly it whizzes about.

If you like the BBC Micro display, with thin lines under each line of text, you can incorporate a similar effect in your new custom screen. And, if you adopt this feature, you can move the whole text area up or down to centralise it, should your TV be slightly out of adjustment.

A feature unique to the Atari is the attract mode colour rotation — that is, when you don’t touch the keyboard for about 10 minutes, the screen colours will start to change randomly every few seconds. This can be very irritating when you’re programming, so the autoboot routine gives you the option of switching it off.

There’s also an extra feature for advanced programmers, which allows you to reserve a safe area of memory below the MEMLO pointer. This area can be used to store display lists, character sets, player missile graphics tables, machine code routines or any other data that you want to keep out of BASIC’s clutches but which won’t fit on page six.

Because the routine is written entirely in machine code, and installs itself before BASIC takes control, it behaves just as though it were part of the built-in operating system.

You can load, save and modify your BASIC programs without affecting it in the slightest, and even typing NEW won’t erase it. The new screen will disappear, of course, when you select any new graphics mode, and you can change the colours using SETCOLOR in the usual way. But if you press Reset, everything will be automatically restored to its former glory.

The machine code is quite complex, and would take too long to discuss in detail, so we’ll just look at the Basic versions and how to customise them.

Program I is for disc users. When you run it, it creates an AUTORUN.SYS file containing all the routines and data for your new customised screen. Make sure, though, that the disc you’re saving it to contains a copy of DOS, and doesn’t contain an existing AUTORUN.SYS file that you want to keep.

Program II is similar, but creates an autoboot cassette file. Insert a blank, rewound cassette, Run the program and proceed as for CSAVE when you hear the familiar double beep. To get the new screen routine installed and working, you now follow the normal boot procedure.

With a disc drive, simply insert the disc containing your AUTORUN.SYS file and switch the computer on. To load the cassette version, insert the fully-rewound autoboot cassette, switch power on while holding down the Start key, then follow the usual CLOAD procedure.

If you keep the routine in its present form, you will get a green screen with blue-grey lines under each line of text, margins set at 1 and 38, a cursor which flashes twice per second and moves twice as fast as normal, and no attract mode colour rotation. The disc version also gives you a protected area of ram between addresses 7991 and 9216, while the cassette version gives you 2092 to 3072 — see Figure 1.

All these parameters may be altered by changing a few numbers in either program, then making a new autoboot file containing the customised data.

<table>
<thead>
<tr>
<th>Numbers</th>
<th>Function</th>
<th>Existing number</th>
<th>Permissible range</th>
</tr>
</thead>
<tbody>
<tr>
<td>on line</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>230 or 300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>Background colour</td>
<td>194</td>
<td>Even numbers from 0 to 254</td>
</tr>
<tr>
<td>2nd</td>
<td>Border colour</td>
<td>176</td>
<td>Even numbers from 0 to 254</td>
</tr>
<tr>
<td>3rd</td>
<td>Character brightness</td>
<td>10</td>
<td>Even numbers from 0 to 14</td>
</tr>
<tr>
<td>4th</td>
<td>Left margin</td>
<td>1</td>
<td>0 to 38</td>
</tr>
<tr>
<td>5th</td>
<td>Right margin</td>
<td>38</td>
<td>1 to 39</td>
</tr>
<tr>
<td>6th</td>
<td>Attract mode on/off</td>
<td>0</td>
<td>0 = off, 1 = on</td>
</tr>
<tr>
<td>7th</td>
<td>Flashing cursor on/off</td>
<td>1</td>
<td>0 = off, 1 = on</td>
</tr>
<tr>
<td>8th</td>
<td>Cursor flash rate</td>
<td>14</td>
<td>1 to 255</td>
</tr>
<tr>
<td>9th</td>
<td>Cursor movement rate</td>
<td>2</td>
<td>1 to 6</td>
</tr>
<tr>
<td>10th</td>
<td>Underlines on/off</td>
<td>0</td>
<td>0 = off, 1 = on</td>
</tr>
<tr>
<td>11th</td>
<td>MEMLO pointer, low byte</td>
<td>0</td>
<td>Best left at 0</td>
</tr>
<tr>
<td>12th</td>
<td>MEMLO pointer, high byte</td>
<td>36 (disc)</td>
<td>Minimum 32 (see text)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 (cass)</td>
<td>Minimum 9 (see text)</td>
</tr>
</tbody>
</table>

Table I: The possible program changes and their effect
It's quite easy to do.

Look at line 230 in Program I or line 300 in Program II. Each of these 12 numbers controls some aspect of the new default screen. For example, the first three – 194, 176, and 10 – affect screen colours. Table I shows what each number does, together with the range of numbers you can use as alternatives to customise the screen.

You can experiment with most of these numbers while your new screen is in place. First install the autoboot file, get the green screen and so on, then experiment by POKEing different numbers into the control registers, as follows:

**Background colour:** POKE 710 with any even number from 0 to 254.

**Border colour:** POKE 712 with any even number from 0 to 254. If you do not want a visible border, make it the same colour as the background.

**Character brightness:** POKE 709 with any even number from 0 to 14. If you accidentally make the text invisible against the background, just press Reset.

**Left margin:** POKE 82 with any number from 0 to 38.

**Right margin:** POKE 83 with any number from 1 to 39.

**Colour rotation:** POKE 7680 (disc) or 1805 (cassette) with 0 to cancel the attract mode colour rotation, or 1 to enable it.

**Flashing cursor:** POKE 7681 (disc) or 1806 (cassette) with 0 to stop the flashing, or 1 to start it again.

**Cursor flash rate:** POKE 7682 (disc) or 1807 (cassette) with any number from 1 to 255. The higher the number, the slower the flash rate.

**Cursor movement rate:** POKE 7683 (disc) or 1808 (cassette) with any number from 1 to 6. Numbers above 6 will not slow the cursor down any further.

**Text up/down movement:** POKE 7687 and/or 7688 (disc) or 1812/1813 (cassette) with 0, 16, 32, 48, 64, 80, 96 or 112. These pokes will have no effect unless the thin lines are present on screen.

**Underlining:** POKE 7988 (disc) or 2089 (cassette) with 0 to turn the lines off, or 1 to turn them on, then press Reset.

The one parameter which you cannot change in this way is the **MEMLO** pointer. It can be altered only by changing the last two numbers in line 230 or line 300 – see Table I – and

---

**Figure I: Memory maps**

Turn to Page 54
making a new autoboot file. Unless you're an advanced programmer, it's best not to attempt this.

You can now proceed to make the new file, incorporating your chosen settings. Load Program 1 or II and insert your new numbers in place of the existing ones on line 230 or 300. If you have decided to retain the underlying feature, and have adjusted the text area to centralise it, you will need to change the first, and/or second number on line 80 – Program I – or line 160 – Program II – to your new values. Do not alter any other numbers in the program, or the autoboot routine won't work properly, even if it is updated.

Finally, Run the modified Basic program to make a new autoboot file incorporating your changes. That's all there is to it. If you're an advanced programmer, however, you may interest yourself in some extra information.

First the routine doesn't occupy any of page six but it does use two page zero addresses – 203 and 204 – during power-up and reset. At all other times these addresses are available for your own use. The routine is executed during Stage 1 vertical blank, so you can't use Immediate VBI routines in your own Basic programs. The more useful Stage 2 vertical blank period is, however, available as usual.

The reserved area below MEMLO is illustrated in Figure I. With the values shown in Program I – low byte = 0, high byte = 3F, the disc version gives you 1225 bytes of reserved memory, 1024 of which are above a 2K boundary. It can therefore be used for any data tables which need to start on a higher address, such as player missile – PM – graphics.

For cassette users, the MEMLO value in Program II (low byte = 0, high byte = 12) gives you 980 bytes of reserved memory, stretching from 2092 to 3072. This overlaps the nearest 2K boundary (2048) by 44 bytes, but the reserved area can still hold PM data, since the 256 bytes of any PM table are never used by the PM system.

It can also hold a Graphics 1 or Graphics 2 character set, as long as you're allowed to start these on a 512-byte boundary (2560).

However, you may prefer to change MEMLO, as described above, so that it points to a higher address – say 6144 (024). This reduces the amount of memory available for Basic programs, of course, but it releases boundaries at 1k (3072) and 2k (4096), for your player missile data or character sets. 
THE LSP-100 bi-directional dot matrix printer is Citizen's latest addition to an already impressive range of products. As with most printers, you have the option of friction or tractor feed and this can be selected easily by moving a lever on the top right of the casing.

You also have the option to load paper from underneath the printer using a process called bottom-feeding (see Figure 1). Loading paper this way can only be done when your printer is mounted on a stand. The tractor-feed mechanism must be attached to the printer and you must use continuous stationery. Loading paper is just like setting the tractor-feed up, except the paper comes from underneath.

The printer will connect to your micro via an Atari 850 interface box, but you will need to buy a lead to connect them — or a Centronics-to-Atari interface cable, which costs about £50.

On the front right side of the printer are three buttons controlling the online status, form feed and line feed. The printer must be brought offline before the feed buttons will work — rather annoying, but this is the case with several printers. Next comes a panel with three small lights — power, paper out and ready.

The DIP switches are easy to access: You simply switch the printer off and remove a cartridge-style interface located on the right of the printer as you look at it. You can then alter the switches to suit your micro. Instructions on how to do so are very well documented in the manual.

Now for the all-important question: Is it Epson compatible? The answer is yes, and it is also switchable to IBM-compatible, not that this will affect Atari owners.

Citizen says that the LSP-100 is an 80 column printer and the print head has nine pins which are used to give you a 9x9 matrix. When used in NLQ mode a double pass of the head allows the matrix to change to 17x17 and this gives you a wide variety of styles and typefaces.

The print speed is 150/175 characters per second (cps) at 10/12 cpi (characters per inch) in draft mode and 40 cps in NLQ mode. Now that is quite a mouthful, but it gives you an idea of the capabilities of this machine.

It is interesting to note that although this is quite a fast printer it is also very quiet. Even when doing a screen dump I could still manage to concentrate on other work while it was churning away.

There is a built-in 4k buffer — very useful indeed, as it allows you to continue working on your micro as the printer does its work. However, there is a snag with the large buffer — there isn't a flush button. So, if you make a mistake you have to wait until that large 4k buffer empties. Alternatively you can turn the printer off.

Fitting the cartridge type ribbon poses no problems. It's claimed to last for two million characters — but I didn't have time to test this.

The LSP-100 has a sleek modern look and is surprisingly compact when you consider that it does some tasks that printers twice its size can't. The manual is well presented and easy to read with plenty of diagrams showing things like fitting the ribbon and so on.

This is a superb printer, well priced and should satisfy the needs of most homes and small businessmen.

**Specifications**

- 150/175 cps at 10/12 cpi in draft and 40 cps in NLQ
- Epson and IBM compatibility
- Parallel interface standard
- Tractor feed and friction feed
- 4k buffer
- 8 bit graphics capabilities
- Downloadable characters
- More than 400 print styles
- Automatic sheeter feeder available
- Bottom-feed paper loading option

---

**Figure 1: Loading the printer using bottom-feed**
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ALL DISKS CARRY A NO QUibble REPLACEMENT GUARANTEE ARE CERTIFIED 100% ERROR FREE & COME WITH LABELS. 51/2" ALSO HAVE SLEEVES & WRITE PROTECTS. FLIP SIDED DISKS HAVE 2 INDEX HOLES AND 2 NOTCHES.

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25 DS 48TPi 5.25" DISKS & 100 CAP LOCKING DISK BOX 17.00
50 DS 48TPi 5.25" DISKS & 100 CAP LOCKING DISC BOX 26.50
100 DS 48TPi 5.25" DISKS & 100 CAP LOCKING DISK BOX 42.00

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56 Atari User February 1988
An American eye on the 8 bit scene

I LIVE in Boston USA and I was in London for two weeks when I heard of the Atari User Christmas Show. Having owned an Atari 1200XL - which was once available in the US - for nearly three years, I naturally decided to attend.

I am a great fan of games software and boast a 1,200 program collection which includes 82 cartridges. In my two week visit I have been to many software outlets in the West End, but have discovered that Atari 8 bit computers are sadly not so well supported as others I could name.

This is a shame really, as they offer excellent graphics and superb sound facilities, which by far exceed the standards offered by other micros.

In the US, Atari 8 bit computers are now one of the most popular micros. With the arrival of the new XE, software houses have really been booming.

But it is not like this in Britain, so as I entered the Champagne Suite in

Printer transformed

I HAVE just returned from Saudi Arabia with an Epson RX80 printer that I bought out there.

The printer is 120 volts and I am at present using it with a voltage transformer. Can I convert it to 240 volts? - Nigel Potter, London.

It should be possible to convert your printer to 240 volts. Some transformers are multi-standard and require a link to be changed inside the printer.

If your printer contains a single voltage type, it will be necessary to replace it. Epson UK should be able to help you: The address is Epson UK, Dorland House, 386 High Road, Wembley, Middlesex HA9 6UH.

No Ninja

COULD you please tell me if the Last Ninja from System 3 will ever be available for Atari 8 bit computers? I have waited a long time but it has not come out yet. - Scott Howden, Stirling, Scotland.

At the moment the Last Ninja has not been released for the 8 bit Atari and it appears a conversion is unlikely to be forthcoming.

WIN A TENNER!

Each month we will award £10 prizes for the most interesting letters sent to us.

So now there's more reason than ever to contribute to our lively mailbag pages.

Get your pens out, start writing and you could be one of the winners. The address:

Mailbag Editor Atari User Europe House Adlington Park Adlington Macclesfield SK10 5NP

Faulty keyboard

I BOUGHT my 800XL about two years ago from Currys and we had a few problems loading games. After a few weeks and computers - we found one that worked and I've been happy with it until recently.

Everything was fine until about two months ago when the comma key started to stick and a continuous stream of them poured out. I ignored this as I didn't do much typing for a while, but when I did, none of the keys would work.

I could still load games, as the function keys worked, and after the beep the data recorder started automatically. If it's a major fault could you please recom-mend someone to repair it?

- L. Stephenson Easington Co. Durham.

• Your best course of action is to send your computer to a service engineer for repair. Here is the address of someone close to you who may be able to help; ISC Electronics, 12 Pirbright Grove, Hemlington, Middlesbrough, Cleveland TS8 9PB.

Stopped on the red

Occasionally the black background on my monitor display develops a pale green/yellow cast which sometimes lasts up to a minute.

Also the top of my print head doesn't work making the text difficult to read. - Michelle Nixon, Waddington, Lincoln.

• The cast on the picture is due to an absence of a red signal. This could be a faulty lead or connector at the computer or monitor end. Alternatively it could be a problem inside the monitor circuit itself.

The print head fault can probably be rectified by cleaning or replacing it. Alternatively the Darlington driver - inside the printer - which controls the top solenoid of the head may have gone faulty and need replacing.

Lighting up

I WAS very interested in the disco light controller in the December 1987 issue of Atari User. I would like to know if it can be bought.

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ready built, and if so what is its price? I am not electrically minded and don't know anyone who could build it for me, but I would like to put on a light show. – R. Hindhaugh, Ashton, Northumberland.

- The disco lights are available ready built from RH Design for £32.50 plus £1.50 postage and packaging. The company also sells some of the other gadgets featured in Atari User ready built.

The address is RH Design, Units 2 and 3, Stonelow Stables, Stonelow Avenue, Harrogate HG2 7NR.

Printing screens

I would like to tell you that Atari User is really great and I buy it every month in my country – Israel. I have two questions and was wondering if you can help.

Can my dot matrix printer dump screens from games and pictures from adventures?

I can't find the game King's Quest for my Atari 800XL with 256k memory. Do you know where I could get this? – Eyal Levy, Mozkin, Israel.

- As your computer stands it is very difficult to dump screens from adventure games. However, using something like the OS Controller card from Computerhouse it is possible.

The board is an internal modification to your micro and allows you control over the operating system. Their address is Computerhouse, 14 Ramily Court, Landridge Road, Fulham, London SW6 4LL.

The King's Quest adventure game is only available on ST format in the UK. However if you write to Sierra On-Line Inc., America you will be able to obtain full details of the product for the 8 bit. Their address is Sierra On-Line Inc., Coarse Gold, California, CA 93614, USA.

Software shortage

WHY is it that 8 bit Atari owners always get left out when games like Out Run are released? I have written to many of the major software companies, but to no avail.

If games like Out Run and many others – too numerous to mention – were released they would be bestsellers.

There is a massive user base for Atari 8 bit computers out there, so why are we still ignored? – Martin Osborne, West Wimbledon, London.

- Do any of our other readers have problems obtaining software? Write in to us, we'd like to hear from you.

A sound investment

I recently bought a second-hand 800XL and 1050 disc drive, but there were no manuals. I am interested in music and programming, so I tried to produce some tunes on my micro. A friend explained the

SOUND statement to me, but my problems arose when I tried to convert numbers for the pitch value into musical notes. Can you please help me? – Denise Skelton, Cleveland.

- The panel below shows a range of musical notes and their numeric equivalents. There's also a short program to play a musical scale and demonstrate the SOUND statement in use.

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Topical translations

Following the amusing article on Computer Speak in the November issue of Atari User, here are some more in a similar vein. – P Bullin, Hucknall, Notts.

Apple...grows on a tree. Brand new...at last someone has found a use for it. Byte...a hungry computer programmer. C...a letter after B. CMOS...moss that grows on the sea bed. Data...asking your girlfriend out for a drink. Data bus...mobile library. DOS...a layabout.

Designed by a computer...no one will take the blame. Forth...a bridge. IC...rough weather for ships. Latest technology...we put it in a new case. One meg bus...expensive double decker. Mega byte...banquet for computer people. Monitor...school milk distributor. Nibble...not-so-hungry computer programmer. Unrepeatable offer...hurry up, we're going bankrupt. Serial input...cornflakes for breakfast. Micro chips...small portions of fried sliced computer.
Enter the magical world of Kerovnia!

This fascinating adventure features the most sophisticated parser around: You can type complex sentences and interact with the many characters, including some very intelligent animals.

This superb package includes a 44-page novel and a cryptic help section.

"The program took three man years of programming time to produce – and it shows. The Pawn is the stuff from which cults are made."

– Anthony Ginn, Atari User, May 1986

Guild of Thieves – it's a steal!

Guild of Thieves is the long-awaited follow-up to the award-winning adventure, The Pawn.

You're back in the fantasy world of Kerovnia, in the role of a novice thief who has applied to become a member of the illustrious Guild. To prove your worthiness, you must ransack an island of all its treasures.

There are 29 beautiful illustrations, a massive vocabulary, and a text parser which is claimed to be more sophisticated than the parser in the Infocom adventures.

"This is an absorbing, funny and tantalising adventure and guaranteed to be another sure-fire winner for Rainbird."

– Bob Chappell, Atari User, October 1987

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- **Moneybags** – Gobble up all the money but beware of the sinister spiders
- **Frank the Fruit Fiend** – Help Frank eat his favourite food in this platform game
- **Duck Dash** – Dash round and chase up all the ducks before the storm hits the farm
- **Frogjump** – Direct the frog across the busy road in this classic arcade game
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