Masters of Reinvention

TX: 8pm Monday 17th March on U&YESTERDAY

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MASTERS OF REINVENTION – SERIES SYNOPSIS

In a new UKTV Original six-part series, award-winning mechanical engineer, **Dr Shini Somara** turns to back copies of *Practical Mechanics* magazine - once the best-selling bible of British inventors - and challenges a dream design team to reinvent its vintage blueprints for the 21st century.

Each week, Dr Shini leads a diverse crew of engineers, crafters and gadgeteers as they try to update these vintage designs from the 30s, 40s and 50s and make them fit for purpose in the modern world.

Working from a vintage shed on a Yorkshire airfield, the build teams are drawn from a pool of returning experts, with Dr Shini allocating team members to the projects that most suits their skills.

The reinvention challenges range from a build-at-home car, a boat and a camping trailer…to a pedal-powered washing machine, a burglar alarm and a lie detector.

They've set themselves just four weeks - the time between each edition of the magazine - in which to design and build them.

Filled with imaginative and ambitious designs - and combining old-fashioned DIY skills with clever modern technology - the series aims to re-ignite the nation's passion for innovation.

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MEET THE TEAM

Dr. Shini Somara - Mechanical Engineer
Shini is a multi-award-winning engineer, she's on a mission to reignite Britain's passion for innovation and creativity. Shini excels in demystifying complex science, technology, and engineering concepts, making them accessible and engaging for everyone. "I want to reignite our passion for engineering and inspire the nation to get back in their sheds, making things once more."

Ivan Shaw - Aircraft Designer
What started as a hobby of building and flying his own planes has catapulted Ivan Shaw into the ranks of Britain's top aircraft designers. With a deep love for both innovation and craftsmanship, Ivan excels in turning challenges into achievements. "Nothing I enjoy better than a problem and starting with a blank piece of paper. There's a great joy in actually doing something with your hands and your brain together. It's fabulous".

Ruth Amos - Inventor
Ruth Amos is a Youtuber and engineering whiz, with a passion for getting young people making things. "I accidentally became an inventor when I was at school, and since then I found this passion and love for making things. A lot of the things I make are slightly ridiculous."

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Jacob Bell - Woodworker

Former school caretaker turned woodwork wizard, Jacob Bell has been reshaping his life and career with every piece of timber he touches. Two years ago, he swapped his job for carpentry. “I absolutely love high level precision joinery. When I’m starting a new project, the thing on the forefront of my mind is, ‘how can I use wood?’. If I can make anything out of wood, I will.”

Ellis Ware - Electro and Mechanical engineer

Engineer Ellis has carved a niche in the competitive world of Robot Wars, creating battle robots. Known for his attention to detail, Ellis takes pride in his perfectionism. “I might be known for being a bit of a perfectionist, I would hesitate to say that that’s a bad thing. In my time being an engineer, I’ve found that nine times out of ten, if you put the effort into the details, it pays you back. So that’s just how I like to work”.

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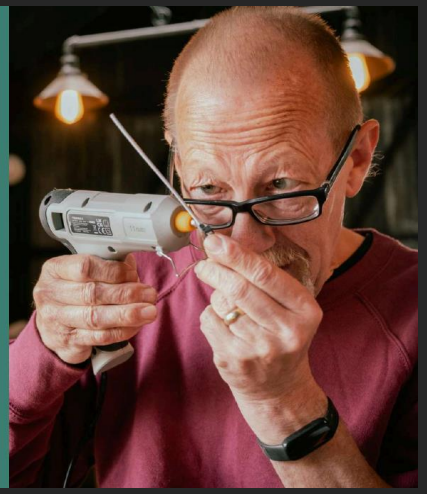
Louiza Loizou - Electronics Designer

Originally from Cyprus, Louiza moved to England in 2009 and now leads the Electronic Engineering department at a major product design agency. Her passion for building and understanding mechanisms drives her professional ethos. “I’ve always liked to build things, see how they work, understand what drives them. I am an old school person, so I do appreciate the old school designs, but I also look forward to modernising them, giving them a new spin, see what functions we can add—so yeah, it should be really exciting.”

Pete Ware - Audio Engineer

Pete's childhood curiosity about how things work - from disassembling old valve radios to tinkering with car parts - unexpectedly led him to a flourishing career as a music producer. But he was always an engineer at heart. "When I was a kid, I was very much into wanting to know how the world works: repairing things, taking things apart, whatever. I've got an enquiring mind and I'm prepared to put in whatever it takes to get the job done."



Carl Barlow - Model Maker

Former Royal Engineer turned master model maker, Carl Barlow has been crafting detailed miniatures and mechanical models for over fifty years. With a lifelong passion for mechanics, Carl brings precision and expertise to every project. "As long as I've got a plan to work off, I can work it out". No build can phase him - Carl thrives on diving right into the intricacies of each new challenge, showcasing his exceptional skill to every little tiny.

Jenny Olsen - Biomedical and Mechanical Engineer

Jenny, an award-winning engineer, specialises in designing prosthetic limbs with a keen focus on affordability. Her innovative approach ensures that her designs are not only functional but also environmentally considerate. "I'm always fixing things. If there's a hobby that involves turning something that was junk into something usable, I'm all over it."

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EPISODE 1:
CAMPING TRAILER & TWO-SEATER TOBOGGAN

Dr Shini Somara and her team are tasked with reinventing a camping trailer from 1950 and a two-seater toboggan from 1960. The team come up with a clever pop-up design for their camper; using a rope and pulley system to raise the roof, creating a spacious living area. With so much woodwork needed for this project, the pressure is soon on for furniture maker Jacob and mechanics expert Ellis to complete the fixtures and fittings, while Youtube inventor Ruth concentrates on the metalwork base, making use of a reclaimed towable trailer.

Engineer Pete is keen to modernise the toboggan by adding foot brakes. He also adds some steering, using reclaimed bike handlebars. His partner for the small build, Jacob, turns to the ancient craft of steam bending to create the the wooden sleds. So how well will their hi-tech toboggan perform when it's taken for a test run on an indoor ski slope? And what will Shini's final verdict be on the reinvented camping trailer?

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EPISODE 2:
LUTON MINOR MODEL PLANE AND ARMCHAIR DRAUGHTING TABLE

Dr Shini and her team are challenged to design and build a scale replica of an iconic vintage aeroplane: the Luton Minor. The Luton Minor dates back to the 1930s - the golden age of aviation - when, incredibly, Practical Mechanics offered its readers detailed instructions on how to build their own aeroplane, from the comfort of their back garden shed! After their initial attempts at model building get off to a disastrous start, the team are provided with inspiration, when a real Luton Minor plane makes a surprise visit to the airfield.

Woodworker Jacob and aircraft designer Ivan are given a second reinvention project; an armchair drafting table. It's a project that hinges, quite literally, on Jacob's joinery skills and Ivan's flair for mechanical design. When a major design flaw in the model aircraft build puts a spanner in the works, the team are forced to draw upon all their engineering skills to try and make this tricky reinvention project fly.

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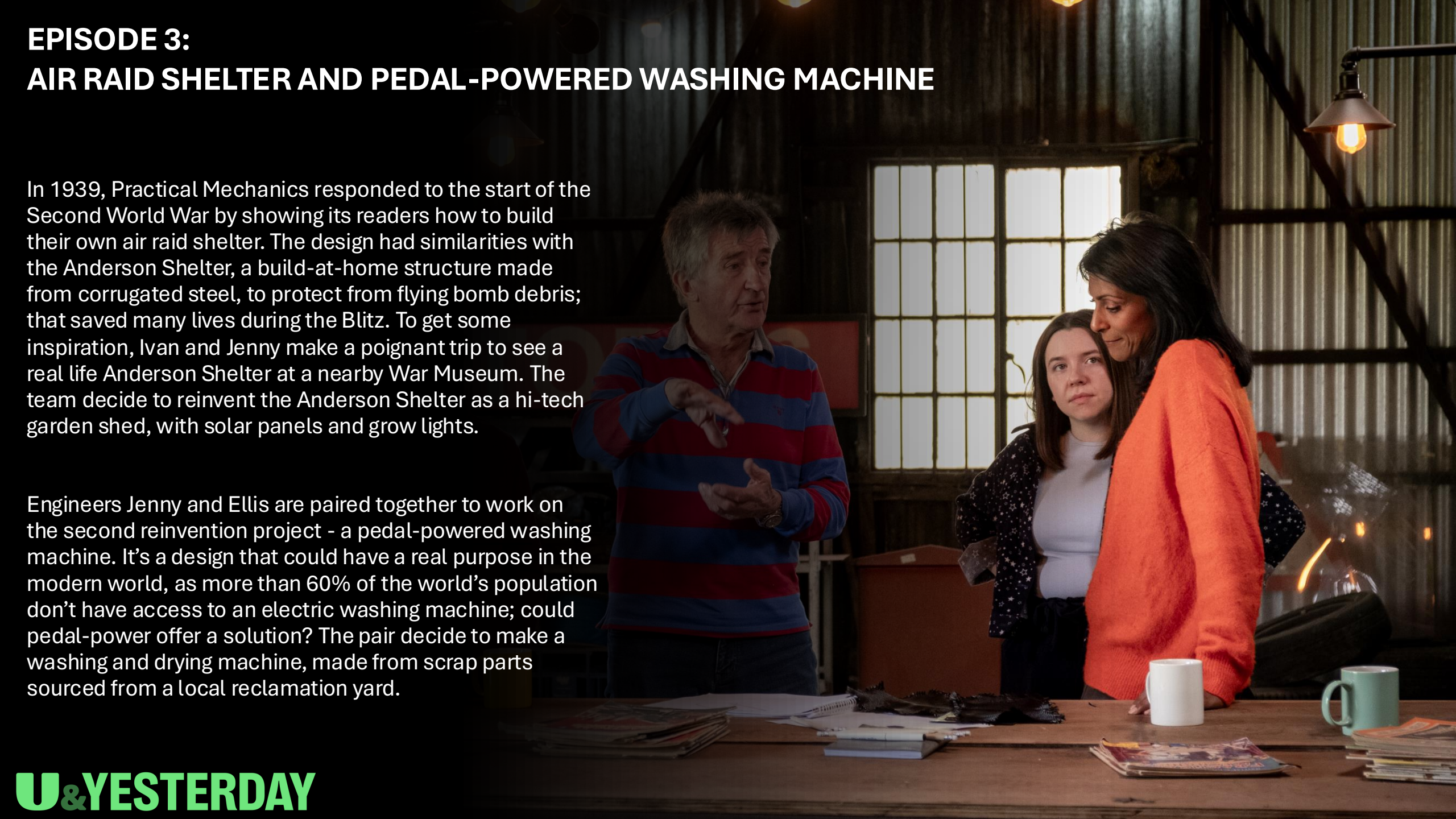
EPISODE 3:
AIR RAID SHELTER AND PEDAL-POWERED WASHING MACHINE



In 1939, Practical Mechanics responded to the start of the Second World War by showing its readers how to build their own air raid shelter. The design had similarities with the Anderson Shelter, a build-at-home structure made from corrugated steel, to protect from flying bomb debris; that saved many lives during the Blitz. To get some inspiration, Ivan and Jenny make a poignant trip to see a real life Anderson Shelter at a nearby War Museum. The team decide to reinvent the Anderson Shelter as a hi-tech garden shed, with solar panels and grow lights.

Engineers Jenny and Ellis are paired together to work on the second reinvention project - a pedal-powered washing machine. It's a design that could have a real purpose in the modern world, as more than 60% of the world's population don't have access to an electric washing machine; could pedal-power offer a solution? The pair decide to make a washing and drying machine, made from scrap parts sourced from a local reclamation yard.

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EPISODE 4:
ALUMINIUM BOAT AND CYCLE SIDE CAR

Dr Shini and her team are tasked with updating a 1940s aluminium boat and a bicycle sidecar from the 1950s. With none of our engineers having made a boat before, they are soon at odds with each other over what size and shape it needs to be. Having settled on a design, the basic structure is constructed from wood, before aircraft designer Ivan draws on his expertise in composite materials to apply a fibreglass coat.

Ivan is also paired with electronic engineer Louiza to reinvent a cycle sidecar. The pair come up with the novel idea of creating automated mechanical stabilizers to assist with starting and stopping. But, after some last minute mechanical malfunctions in the shed, how will their customised bike reinvention cope when Shini tests it out in a busy city centre? And will it be plain sailing for their modernised fibreglass boat when it's taken on the water for its maiden voyage?

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EPISODE 5:
DIY CAR AND BURGLAR ALARM

Dr Shini and her team are tasked with reinventing a build-at-home car from the 1930s and a burglar alarm blueprint from the 1950s. In 1936, Practical Mechanics provided its readers with plans of how to build their own three-wheeled car for just £20, the equivalent of £1800 in today's money.

The team decide to reinvent this design using recycled parts and a reclaimed recumbent trike. Aeroplane designer Ivan comes up with a novel idea for the steering, an aircraft-style yoke.
Youtube inventor Ruth is tasked with welding together the chassis; while carpentry wizard Jacob is building a plywood body to give the car a vintage look. Their do-it-yourself car promises to look impressive, but how well will it perform when it's taken for a test drive on the airstrip?

Ruth and model maker Carl are also busy working on their burglar alarm reinvention, which involves some very clever micro-electronics and more than a few surprises!

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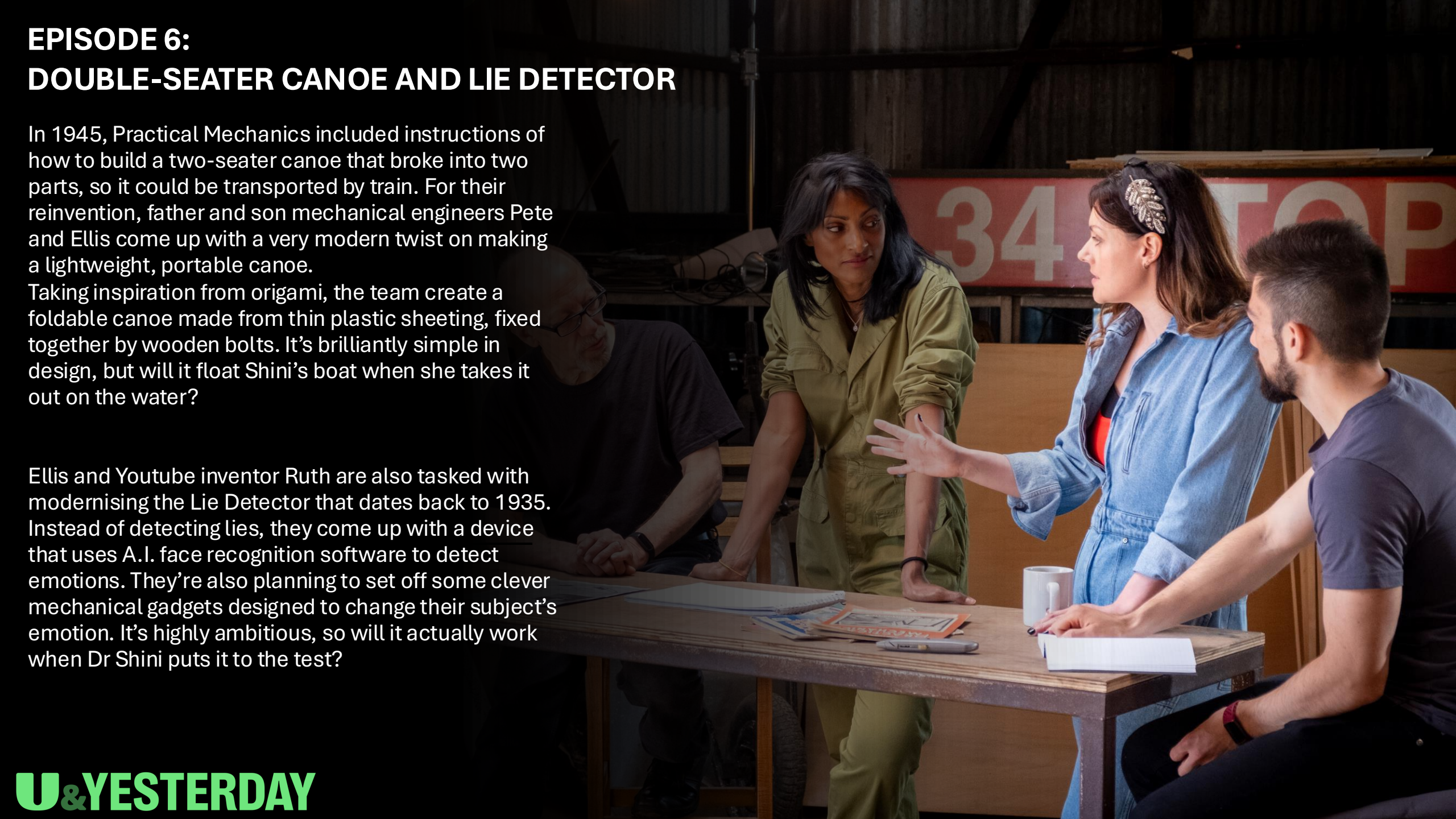
EPISODE 6:
DOUBLE-SEATER CANOE AND LIE DETECTOR

In 1945, Practical Mechanics included instructions of how to build a two-seater canoe that broke into two parts, so it could be transported by train. For their reinvention, father and son mechanical engineers Pete and Ellis come up with a very modern twist on making a lightweight, portable canoe.
Taking inspiration from origami, the team create a foldable canoe made from thin plastic sheeting, fixed together by wooden bolts. It's brilliantly simple in design, but will it float Shini's boat when she takes it out on the water?

Ellis and Youtube inventor Ruth are also tasked with modernising the Lie Detector that dates back to 1935. Instead of detecting lies, they come up with a device that uses A.I. face recognition software to detect emotions. They're also planning to set off some clever mechanical gadgets designed to change their subject's emotion. It's highly ambitious, so will it actually work when Dr Shini puts it to the test?



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