

The pitch drops that got the world talking

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Three webcams were trained on the experiment 24/7.

In light of recent results from the "world's longest experiment", spanning more than 90 years, at the University of Queensland, a group of researchers from Trinity College Dublin explain the background behind their own pitch-drop experiment in this month's *Physics World* and offer an explanation as to why their research hit the headlines in 2013.

Capturing the release of a drop of pitch – a thick, black, sticky material – from a funnel on camera seems mundane, yet created a storm of media interest last week for the Australian experiment, as it did over a year ago for the Irish one. Researchers at Trinity were the first to capture their pitch dropping on camera and the subsequent footage was viewed more

than two million times on YouTube.

In their article, the Trinity researchers say they believe the attention came from their story being short, quirky and something that both aroused curiosity and came with a high amount of tension and human interest. The latter was caused by a dramatic sequence of events and bad luck related to the similar experiment in Queensland.

The Australian researchers had also been hoping to record a drop of pitch, but when the previous drop finally fell in November 2000, they annoyingly discovered that their camera wasn't rolling. In 2013 the curator of the Australian experiment sadly died and therefore never got to share his findings with the public.

This scientific saga came to a climax on 11 July 2013 when a camera recorded a heavy, tear-drop blob of pitch falling to the base of a beaker at Trinity College Dublin.

The drop was a long time coming for the team based at Trinity's School of Physics, who had struck upon the experiment in the 1980s when clearing out dusty cupboards. The apparatus was dated October 1944, but there was no indication of who the experiment's creator was.

"Year after year, undergraduate students idled past it, paying no heed to the 'slow science' of the pitch drop," the researchers write.

In their article, the Trinity researchers make reference to the "pendant drop" experiment, which included a similar set-up to the pitch drop and was a staple in physics lessons before the Second World War for teaching students about surface tension.

Instead of using water, their experiment's creator had used the rather strange material pitch, which feels solid when you hold it in your hands

and will smash into pieces if you hit it with a hammer, but if placed under the influence of gravity for long enough will flow like a liquid.

The dripping of a highly viscous material such as pitch, which can take anything between tens and thousands of years depending on the apparatus and the sample, involves a combination of three forces – viscosity, density and gravity – but the mechanism by which a drop detaches still remains a mystery.

"Back in Dublin, we now intend to set up a larger version of the funnel apparatus, one that may enable us to see the stretching of a viscous filament to a much greater length, and perhaps its eventual dénouement," the researchers write.

"The pace of data-gathering and publication is not hectic, but slow science provides good food for thought in tranquility."

Provided by Institute of Physics

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