



Incredible Science (5):

From the secret archives of the IgNobel committee

Dripping Pitch

The experiment begins in Latin, "Relatio experimenti picis fluidatem

ostendentis" – and ends in Australia. In between there are eight drops of pitch.

In the year 1927 Thomas Parnell of the University of Brisbane melted a clump of pitch and poured it into a glass funnel. He sealed the spout of the funnel and allowed it to settle for the following three years.

In 1930 he broke the seal at the neck of the funnel and placed the simple apparatus into a wooden rack. The pitch now started flowing – just eight years later the first drop fell.

Similar to the biscuit dunking topic in *Lab Times* 1/2006 (p. 19) the flow velocity depends on the viscosity of the "liquid pitch". The first drop fell in December 1938, the next in February 1947, these were followed by further single drops in April 1954, May 1962, August 1970, April 1979, July 1988 and November 2000.

In order to calculate the exact flow rate, one simply has to figure out how much pitch forms one drop. The weight of the drops, however, couldn't be determined. Either the drop hung on the funnel for many

years, or it finally merged with the pitch in the collecting dish. Moreover, nobody developed the desire to observe the experiment for years in order to catch the next drop in a new dish at just the right moment. Aside from which, nobody really dared to open the "historical" experimental set-up which was covered with an old glass.

Thus the colleagues simply calculated the total volume of the dish which already contained all the old and merged pitch drops. Then they filled the dish with water,

measured this top-up volume and subtracted it from the total dish volume. Now they only needed to divide this remaining volume by the well-known number of pitch drops.

After calculation following Poiseuille's law, as well as considering the weight of the pitch in the tube, they finally arrived at a pleasing result. "The viscosity of our pitch is very high compared to normal liquids", the Brisbane physicist proclaimed for the first time in 1976. "It is approximately as tough as the planet earth."

"I still remember the last drop very well", says John Mainstone, professor for Science History at the University of Queensland. "Unfortunately I just happened to be abroad that day. And the webcam directed toward the drop had a memory crash exactly at the crucial moment."

To date, no one has ever actually witnessed a drop fall. The experiment is in the view of a webcam although technical problems prevented the most recent drop from being recorded.

Because the most recent drop fell on 28th of November 2000, twelve years after the previous one, it is not yet worthwhile for sensation-addicted people to buy a flight ticket to Australia. Despite

the changing climate conditions, it will probably be at least 2009 before the next drop separates from the "pitchy" funnel.

IgNobel's final assessment: Great show: An experiment as tough as the earth! Well-deserved IgNobel-Prize 2005 in Physics for John Mainstone and the late Thomas Parnell.

(Edgeworth R, Dalton B J, and Parnell T „The Pitch Drop Experiment.“ European Journal of Physics, 1984, Vol. 5: 198-200)



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