

**Seven Entertaining Physics Demonstrations**  
**easily done by the layman**

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From the itinerant lecturers of the 18th century to popularizing physics in the 21st century –  
exploring the relationship between learning and entertainment

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[www.deutsches-museum.de](http://www.deutsches-museum.de), [www.hsse.uwinnipeg.ca](http://www.hsse.uwinnipeg.ca), [www.uni-oldenburg.de/histodid](http://www.uni-oldenburg.de/histodid)



**Deutsches Museum**

- (1) Spinning Plate & Spinning Discs: Flat plates from the cupboard may spin noisily on a table for a rather long period of time, and a number of up to five small steel discs with circular holes in their centers can be made spinning permanently on a steel ring of 30 cm diameter rotating in itself.
- (2) Pinhole Magnifier: This simple optical instrument, nothing but a piece of aluminum foil with a 0.6 mm hole in its center, and no lens, is useful in bright light to magnify small objects about eightfold.
- (3) Sailor's Rescue Whistle: This is, in fact, two whistles back-to-back, which sound two notes with a small difference (about 200 Hz) in pitch. Instead of the two notes the human ear perceives the difference tone helpful to locate people in distress at sea despite the white noise of the breaking waves. This difference tone does not exist in the acoustic spectrum of the pipe but is created in the listener's ears. One of these pipes you find fixed to every life jacket of the DGzRS (Deutsche Gesellschaft zur Rettung Schiffbrüchiger).
- (4) Paper Clip Tops carefully bent from the piece of wire of a normal paper clip are able to spin, on smooth tables, for about half a minute.
- (5) Waiter's Stunt is the challenge of looping the loop of a glass full of water (or, a soup plate full of soup, respectively) any number of times over one's head spilling no single drop on the floor.
- (6) Barking Dogs & Solar Sails: Paul Jackson's little dog is a fancy toy which we may easily fold for small children from a square piece of paper. When stretched the little dog "barks". The same mechanism is the secret of one mesh out of many millions which form the huge solar sails devised by Koryo Miura to propel future spacecraft on missions within the Solar System. Such a sail which would be humble to use at the earth's surface easily unfolds in an orbit, under conditions of so-called "zero-gravity".
- (7) Office Boomerangs may be made in a few moments from two strips of cardboard to form a cross. It is almost impossible to throw such a crazy flier away because it likes to return to the thrower.

#### References:

(SdW = Spektrum der Wissenschaft; bdw = bild der wissenschaft)

- (1) „Der wilde Tanz des Tellers“, SdW, August 2003, 92 – 94.
- (2) „Loch statt Linse“, bdw, March 1994, 94 – 95.
- (3) „Geistertöne“, bdw, November 1996, 38 – 39.
- (4) „Nur ein einfacher Kreisel“, bdw, March 1990, 146 – 147.
- (5) „Looping mit Suppe“, bdw, August 1999, 100 – 101.
- (6) „Von Himmel, Hölle und Sonnensegeln“, bdw, December 1999, 80 – 82.
- (7) „Bumerangflüge“, SdW, August 2001, 96 – 98.