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XIX. *On a Modified Water-dropping Influence-machine.*

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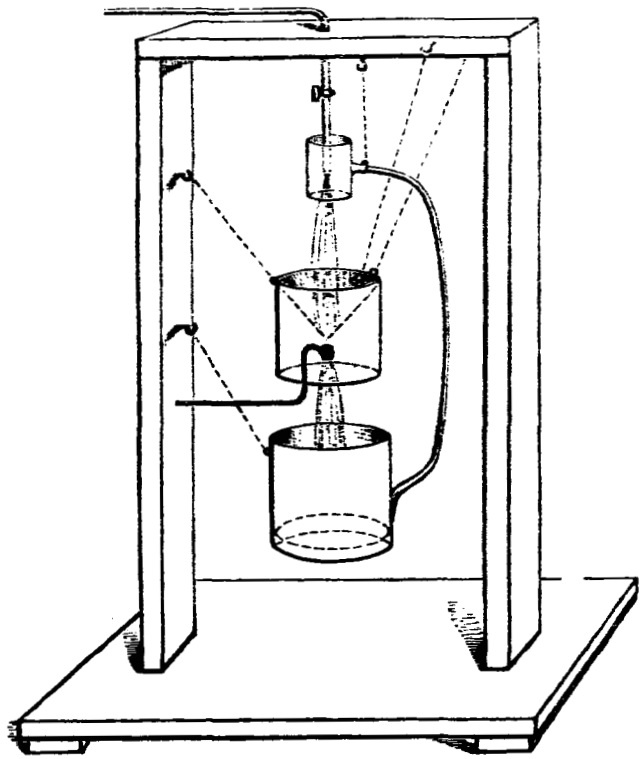
THE ordinary form of water-dropping influence-machine, as devised by Sir William Thomson †, possesses some inconveniences: it requires a double jet of water and special arrangements for high insulation. A simpler form, requiring but one water-jet and mere silk strings (well paraffined) as insulators, has been found by the author to give far less trouble, and to work well for lecture demonstrations.

From a wooden frame are hung by silk strings three simple metal vessels, the highest and lowest being rigidly connected together with a stiff metal wire. The highest is a small cylinder open at both ends; the lowest is an open pot which receives the water. The intermediate vessel is open at the bottom; and is provided at the top with a funnel, the upper rim of which is soldered inside the lip of the cylinder, and its depth such that its central aperture is about at the middle of the cylinder. An insulated wire, recurved as shown, is carried up clear under the funnel in the middle vessel, and should touch the drops as they fall below the aperture. The

* Read January 28, 1888.

† Proc. Roy. Soc. June 20, 1867; and Reprint of Papers on Electrostatics, p. 321.

water-jet, which must have a fine orifice, is inserted about half-way into the uppermost vessel. A single point of water will



suffice to gather a plentiful charge. To watch the process of charging, two gold-leaf electroscopes may be connected respectively to the middle and to the lowest vessels.

The same arrangement will answer for sand-dropping if a second, uninsulated funnel to contain the sand be provided above the topmost cylinder, and arranged with its lower end entering into the cylinder, so that the jet of sand breaks away from the orifice at the proper height. As dry sand is a very bad conductor, the apparatus is found to work with greater certainty if the sand is previously agitated with finely powdered plumbago, or with some sufficiently adherent metallic powder, such as the finer qualities of Bessemer bronze.