THE RADIOMETER

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649308040

The Radiometer by Anonymous

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

www.triestepublishing.com

ANONYMOUS

THE RADIOMETER

Trieste

THE RADIOMETER.

AN INSTRUMENT WHICH REVOLVES CONTINUOUSLY UNDER THE INFLUENCE OF RADIATION.

Patent.

LONDON.

1876.

Price ONE SHILLING.

Sold by JOHN BROWNING, 63, Strand, London.

PREFACE.

THIS Pamphlet contains a description of the construction, action, and uses of the Radiometer, which was discovered by Mr. Crookes, F.R.S., V.P.C.S., and first exhibited by him at the *Soirée* of the Royal Society, April 7, 1875. In order, however, that the action of the instrument may be more clearly understood, a brief account of the researches and experiments which led to the discovery of the Radiometer is first given.

THE RADIOMETER.

CHAPTER I.

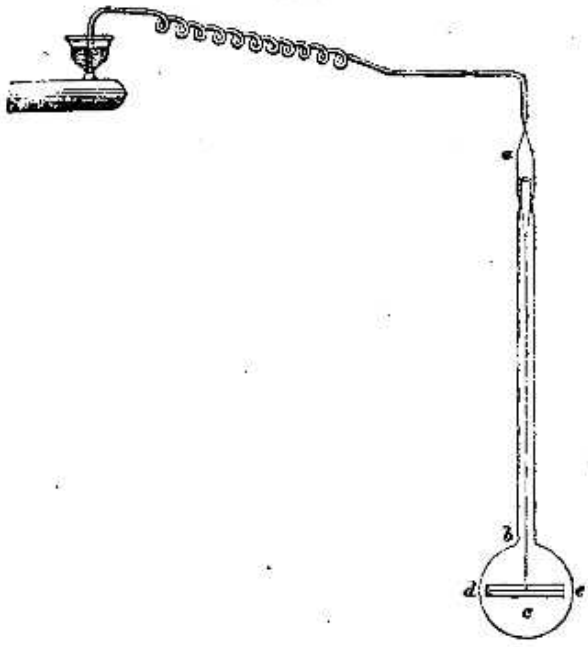
PRELIMINARY EXPERIMENTS.

MR. CROOKES'S researches were originally suggested by some observations made when weighing heavy pieces of glass apparatus in a chemical balance, enclosed in an iron case from which the air could be exhausted. When the substance weighed was of a temperature higher than that of the surrounding air and the weights, there appeared to be an interference with the force of gravitation. Experiments were thereupon instituted to render the action more sensible and to eliminate sources of error. These experiments led to the discovery that when radiation*

* See page 14.

falls on a light body delicately suspended in a vacuum it is driven away from the radiant source.

FIG. 1.



The simplest form of apparatus for showing this is given in Fig. 1. A bulb, *c*, 3 inches in diameter, is blown at the end of a glass tube, *a*, *b*, 18 inches long. In this bulb a fine glass stem

with a bar of pith, *d*, *e*, is suspended by means of a fibre of cocoon silk. When the apparatus is full of air at ordinary pressure, and radiation falls on one of the extremities of the bar of pith, a movement is obtained indicating attraction. If, however, the apparatus is exhausted by means of an improved form of the Sprengel vacuum pump, strong repulsion is shown when radiation is allowed to fall on one end of the index. Constructed with the proper precautions, and hermetically sealed off when the vacuum is perfect, this apparatus is so sensitive to heat that a touch with the finger on a part of the globe near one extremity of the pith will drive the index round over 90°, whilst it follows a piece of ice as a needle follows a magnet. With a large bulb very well exhausted, and containing a suspended bar of pith, a somewhat striking effect is produced when a lighted candle is placed about 2 inches from the globe. The pith bar commences to oscillate to and fro, the swing gradually increasing in amplitude until the dead centre is passed over, when several complete revolutions are made. The torsion of the suspending fibre now offers resistance to the revolutions, and the bar commences to turn in the opposite direction. This