The Radium Clock.

By R. R. Ramsey.

R. J. Stutt (Phil. Mag. 6, 588, 1903) has devised a very simple little device to show that a radium preparation takes on a positive charge due to the B-rays. This consists of a radium preparation enclosed in a thin walled glass tube. The tube is suspended in a vacuum tube by means of a quartz rod. To the lower end of the tube a gold leaf is suspended, forming an electroscope. The B-rays cause the tube to become positively charged, the L-rays being absorbed by the glass, the leaves diverge, and if the gold leaf is allowed to touch an earthed plate the charge is taken off and the process of charging begins over again with a regularity which suggests perpetual motion. The term radium clock has been suggested by some one as a name for the device. It was the original intention to exhibit one here today.

The only successful one which I have been able to make is the one I had when the title was sent in. Since the period of this one is about 48 hours, I have concluded your faith would be tried as much with the exhibit as without. However, the tube is on the table. It was my hope to be able to make one in a neat, short tube with a quick period which could be used in front of a lantern. To accomplish this 50 mg. of 10,000 activity radium was placed in the tube. The quartz was discarded and the tube set upon a block of hard rubber in the bottom of a test tube, with the gold leaf hanging alongside of the radium tube. When exhibited to a vacuum of lower pressure than my first tube, the gold leaf refused to move. The tube was prepared again with a quartz rod between the tube and the hard rubber. This also failed to work. Since the gold foil hung alongside the radium the B-rays were partially absorbed by the gold, thus neutralized the charge. At the last moment I was forced to come back to the original form. This has failed to work, probably due to dirt on the quartz rod. The essentials for success are plenty of high activity radium, thin glass, containing tube hermetically sealed, perfect insulation and a good mercury pump.