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LORD KELVIN, LL.D. F.R.S. &c.

GEORGE FRANCIS FITZGERALD, M.A. Sc.D. F.R.S.

AND

WILLIAM FRANCIS, Ph.D. F.L.S. F.R.A.S. F.C.S.

"Nec araneorum sane textus ideo melior quia ex se fila gignunt, nec noster vilior quia ex alienis libamus ut apes." JUST. LIPS. *Polit. lib. i. cap. 1. Not.*

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XXXI. *On Electric Equilibrium between Uranium and an Insulated Metal in its Neighbourhood.* By Lord KELVIN, G.C.V.O., J. CARRUTHERS BEATTIE, D.Sc., F.R.S.E., and M. SMOLUCHOWSKI DE SMOLAN, Ph.D.*

THE wonderful fact that uranium held in the neighbourhood of an electrified body diselectrifies it was first discovered by H. Becquerel. Through the kindness of M. Moissan we have had a disk of this metal, about 5 centim. in diameter and $\frac{1}{2}$ centim. in thickness, placed at our disposal.

We made a few preliminary observations on its diselectrifying property. We observed first the rate of discharge when a body was charged to different potentials. We found that the quantity lost per half-minute was very far from increasing in simple proportion to the voltage, from 5 volts up to 2100 volts; the electrified body being at a distance of about 2 centim. from the uranium disk. [Added March 9.—We have to-day seen Prof. Becquerel's paper in *Comptes Rendus* for March 1. It gives us great pleasure to find that the results we have obtained on discharge by uranium at different voltages have been obtained in another way by the discoverer of the effect. A very interesting account will be found in the paper above cited, which was read to the French Academy of Sciences on the same evening, curiously enough, as ours was read before the Royal Society of Edinburgh.]

These first experiments were made with no screen placed between the uranium and the charged body. We afterwards found that there was also a discharging effect, though much slower, when the uranium was wrapped in tinfoil. The effect was still observable when an aluminium screen was placed between the uranium, wrapped in tinfoil, and the charged body.

To make experiments on the electric equilibrium between uranium and a metal in its neighbourhood, we connected an insulated horizontal metal disk to the insulated pair of quadrants of an electrometer. We placed the uranium opposite this disk and connected it and the other pair of quadrants of the electrometer to sheaths. The surface of the uranium was parallel to that of the insulated metal disk, and at a distance of about 1 centim. from it. It was so arranged as to allow of its easy removal.

With a polished aluminium disk as the insulated metal and with a similar piece of aluminium placed opposite it in place of the uranium, no deviation from the metallic zero was found

* Communicated by Lord Kelvin: read before the Royal Society of Edinburgh, March 1, 1897.

when the pairs of quadrants were insulated from one another. With the uranium opposite the insulated polished aluminium a deviation of -84 scale-divisions from the metallic zero was found in about half a minute. [Sensibility of electrometer 140 scale-divisions per volt.] After that the electrometer-reading remained steady at this point, which we may call the uranium rays-zero for the two metals separated by air which was traversed by uranium rays. If instead of having the uranium opposite to the aluminium, with only air between them, the uranium was wrapped in a piece taken from the same aluminium sheet, and then placed opposite to the insulated polished aluminium disk, no deviation was produced. Thus in this case the rays-zero agreed with the metallic zero.

With polished copper as the insulated metal, and the uranium separated only by air from this copper, there was a deviation of about $+10$ scale-divisions. With the uranium wrapped in thin sheet aluminium and placed in position opposite the insulated copper disk a deviation from the metallic zero of $+43$ scale-divisions was produced in two minutes, and at the end of that time a steady state had not been reached.

With oxidized copper as the insulated metal, opposed to the uranium with only air between them, a deviation from the metallic zero of about $+25$ scale-divisions was produced.

When the uranium, instead of being placed at a distance of 1 centim. from the insulated metal disk, was placed at a distance of 2 or 3 millim., the deviation from the metallic zero was the same.

These experiments show that two polished metallic surfaces connected to the sheath and the insulated electrode of an electrometer, when the air between them is influenced by the uranium rays, give a deflexion from the metallic zero, the same in direction, and of about the same amount, as when the two metals are connected by a drop of water.

XXXII. *Notices respecting New Books.*

Recherches Expérimentales sur quelques Actinomètres Electro-chimiques. Par H. Rigollot, *Chef des travaux de Physique à l'Université de Lyon.* Paris: Masson, 1897.

THIS volume, published as one of the series of annals of the University of Lyons, contains a full account of Dr. Rigollot's work on the electromotive force between two plates, one of which is illuminated and the other kept in the dark. Two metallic plates are taken, and one side of each is coated with the substance to be examined; the other side of each plate is then varnished or paraffined, and the plates are placed in an electrolyte in the dark