

In view of the identity established by Rutherford between the alpha particles and the atoms of helium, it would follow from the view taken by Strutt—that the origin of helium in the saline minerals is the potassium which they contain—that rays of the alpha rays should be present in the radiation from potassium salts.

With the exception of Henriot no one, however, seems to have observed any indication of the presence of such rays. Usually, however, these rays have been detected and identified either by their fluorescent and ionising action or by the deflections which they undergo in electric or magnetic fields. But for these methods to be applicable the alpha particles must have velocities which will take them away a few millimetres at least from the substances which emit them.

It is quite possible then that potassium and even other substances may be emitting alpha particles with exceedingly low velocities, and that these rays have hitherto escaped detection largely through the inadequacy of the means adopted to bring them into evidence.

In looking for a means of demonstrating the possible existence of these rays it seemed to the writer worth while to make an attempt to investigate the radiations emitted by the potassium salts, by examining them for the acquisition of an electric charge when placed on insulating supports within a highly exhausted vessel.

Amongst others M. and Mme Curie,¹ Paschen,² Strutt,³ Aschkinass⁴ and Makower⁵ have applied this method with success to the investigation of different types of radiation. In Paschen's experiments it was found when a lead cylinder containing a small quantity of a radium salt was insulated in a vessel from which the air was removed that the lead cylinder acquired a positive charge through the action of the rays which were emitted. This effect was thought by Paschen to prove that the gamma rays from radium consisted of streams of rapidly moving negatively charged particles, but this was afterwards shown by Eve⁶ to be due to the excitation and consequent emission of a secondary radiation of the beta type in the lead by the passage through it of the gamma rays.

The method, too, was applied by Strutt (loc. cit.) in his interesting experiment popularly known as the radium clock, and more recently it was applied by Aschkinass to demonstrate the existence of the delta rays

¹ M. & Mme. Curie *Comp. Rend. CXXX.* p. 647, 1900.

² Paschen, *Wied. Ann.* 14, 1, pp. 164-171, 1904.

³ Strutt, *Phil. Mag.*, Nov. 1903.

⁴ Aschkinass, *Phys. Zeit.* 8, p. 773, Oct. 24, 1907.

⁵ Makower, *Phil. Mag.*, Jan., 1909.

⁶ Eve, *Nature*, Sept. 8, 1904.