

<sup>†</sup> The enclosed photograph represents us having it. I suppose you will remember the scene though the photo. does not show Kintyre in the distance.

THE UNIVERSITY.

GLASGOW.

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23/80

Dear Fitzgerald

I have no theory as to how nitrogen gas is caused to become electrically conductive by white-hot iron near it and by ultra-violet light and by Röntgen rays.

With ultra-violet light and with Röntgen rays, making conduction between zinc and copper joined to the two electrodes of an electrometer, the electrometer shows the same direction and just about the same extent of deflection as when a drop of water connects the zinc and copper. So it does when the conduction is by fumes, 10 inches above a spirit lamp. \*\* we have not yet tested the zinc and copper affair in connection with the white-hot iron influence; but I have no doubt it will in this respect be the same. I have no doubt but all three will be the same with oxygen, carbonic acid or Argon substituted for Nitrogen: and it would be foolish at present to explain this effect in Nitrogen by  $N_2$  dissociated into N, N.

As to Christansen, I had a long talk<sup>†</sup> with him on contact electricity when he was here in June and I said to him exactly what, in consequence of your letter, I now see is said by Pellat in the first sentence of Phys. Soc. Abstract No. 767 Nov. 1896 p. 380. If you care to look in my "Electrostatics & Magnetism" you will see that part of the affair explained. In respect to water or mercury droppers it makes little or no difference whether the inner surface of the copper or zinc sheath is wet or dry. The metal of the electrometer is of course metallically connected with the metal of the dropper. I don't believe for a moment that there will even be such a thing as an "anti-contact" person among persons who have read what has been done by experimenters in the subject.

Yours Kelvin

\*\* Maclean & Goto, Phil. Mag. August 1890.

\* Guthrie, Phil. Mag. vol. 46. 1873, (2<sup>nd</sup> half year)