ing the experiment, and as no such action was exhibited when the two compartments were not united, the result pointed to the existence of an electric conduction along the surface of the glass joining the two parts of the tube.

In order to test this the electrometer was simply connected to the wax a' instead of to the electrode C. On then exciting the tube the same charging action was obtained.

It was therefore clear that, although the sealing wax was a good insulator for small voltages such as those used in testing the insulation of the electrode C when no discharge was passing in the tube, it was not sufficient to cut off conduction along the glass when the tube was excited by the induction coil.

To overcome this difficulty part of the glass tube E, F, was removed, and replaced by one of brass held in position by sealing wax. With this tube joined to earth the experiments just described were repeated, and not the slightest trace of any electric action was observed in connection with the electrode C.

The effect of reducing the pressure in the lower as well as in the upper chamber was then investigated. The two taps E and F were kept open and both chambers exhausted together until any desired pressure was reached. The tap F was then closed and the exhaustion in the upper chamber completed.

In this way a wide range of pressures was examined and in no case did the electrometer give any indication that the electrode C either gained or lost a charge when the tube was excited. In all these tests the tap F was kept closed when the discharge was passing in the tube in order to prevent any possible conduction in the gas from one chamber to the other. This was found to be especially necessary at very low pressure when A and H were selected as the discharging electrodes. Otherwise the well known phenomenon illustrated by Hittorf's experiments occurred, the discharge preferring to take the longer path round by the tube E, F, rather than the short one across the bulb of the tube from the cylinder D to the disc A.

In all the experiments with this form of tube hitherto described the end of the cylinder D consisted of a disc of aluminium ·04 millimetres thick. This disc was now replaced by one only ·004 millimetres in thickness and both chambers were as highly exhausted as possible. The tap F was then closed and the tube excited. Different methods of connecting the coil to the tube were tried but in every case the cylinder again effectively screened the electrode C, and no charging was observed. Charges given independently to the electrode C were also main-