

TABLE V.

Time in Minutes.	Current : Arbitrary Scale.
5	73.8
15	58.2
25	50.6
35	47.2
46	41
56	35.6
65	35.4
75	32
91	26
200	16.7

taining the emanation was maintained at a negative potential of 168 volts for 22 hours and during this time the conductivity rose from its initial value of 158.7 to a maximum of 226 and then fell to 176.3 before the expulsion took place.

The curve given in Fig. IV, in which the ordinates represent currents and the abscissae times, illustrates the results in this table. From this curve it is seen that the conductivity decreases in a geometrical progression with the time, falling to one-half value in about 35 minutes. This phenomenon is exactly analogous to that which other investigators have found in working with the radioactive emanations from thorium and radium and which has been explained on the assumption that these emanations have but a transitory existence and are gradually transmuted to a new substance which has a definite rate of decay and which is the cause of the so-called induced or excited radioactivity. On this view it is clear that, from the observations above, the active emanation from petroleum also produces the substance which is responsible for induced radioactivity, and that the presence of this substance in the cylinder is the cause of the high conductivity of the fresh air which replaced that blown out.

An experiment giving similar results was conducted under the same conditions as that just described, except that the cylinder was maintained for 22 hours before the emanation was expelled at a positive potential of 168 volts. This would show that the substance responsible for excited radioactivity was left in the cylinder in both cases when the air was blown out and,