FROM CRUDE PETROLEUM

as it is known that negatively charged conductors in the presence of radioactive emanations become more active than those positively electrified, it is very probable that in the first experiment the excited radioactivity was deposited on the walls of the receiver, while in the second case it was concentrated upon the electrode, C.

A confirmation of this conclusion was obtained by exposing a conductor under negative electrification, and then under positive, to the petroleum emanation. The exploring electrode, C, was taken from the cylinder, A, and suspended in a large glass tube, through which air containing the radioactive emanation was drawn. It was connected for half an hour with the negative terminal of an electrical machine giving a potential of about 10,000 volts, and on being replaced in the receiver it increased the conductivity of the air to about three times its normal value. The conductivity in this case fell to a half value in the same time as before. When the exploring electrode was suspended under a positive electrification of 10,000 volts, for the same time, in the current of air containing the eman.tion, it did not acquire any appreciable activity.

It has been shown by Mme. Curie, Rutherford and others that the induced radioactivity from the radium emanation decays to one-half value in about thirty minutes, and Adams has found that the induced radioactivity from the gas in Cambridge tap-water falls to half value in about thirty-five minutes. These values are practically the same as that determined in the present investigation, and confirm the conclusion already arrived at that the active gas from crude petroleum is very probably identical with the emanation from radium.

Conclusions.—Summarizing the results given in the foregoing paper we have the following :

I. Fresh crude petroleum has been found to contain a strongly adioactive gas which is similar in its rate of decay, and also in the rate of decay of the induced radioactivity which it produces, to the emanation from radium and to the emanations obtained by a number of experimenters from mercury and from certain waters fresh from the earth.

[43]

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