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THE IONIZATION OF GASES AS A TYPE OF CHEMICAL ACTIVATION¹

"CHEMICAL activation" is a generic term embracing the various processes by which substances are brought into a state of chemical activity. The use of this term is by no means new, but the intense investigation of the subject during the past ten years may be regarded as a recognition of the incompleteness of our knowledge of one of the fundamentals of chemistry.

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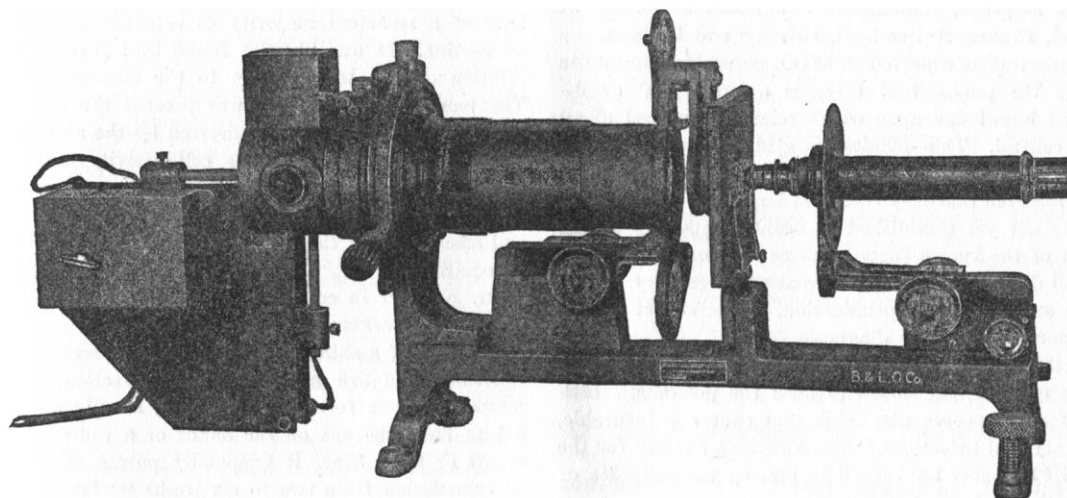
Of the non-thermal modes of activation, besides contact catalysis we have the various radiant forms, including photochemical rays and the different kinds of corpuscular streams which may be made to act on gaseous systems. The primary activated products of these various radiative agencies may be classified as free atoms, excited atoms or molecules, and ionized atoms or molecules. In ionization an electron is entirely removed from an atom or molecule, thus producing negative and positive charges which are capable of quantitative measurement by electrical discharge methods. Uncharged atoms do not have any properties by which their concentrations can be so definitely determined. For this reason, if we apply a source of energy so as to produce a known quantity of ions in a given system, in which the chemical reaction produced can also be measured, we are in a position to establish more accurate and definite relations between primary activation and resulting chemical action than has been done in any other type of activation.

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¹ Address at the presentation of the W. H. Nichols Medal by the New York Section of the American Chemical Society, March 5, 1926.

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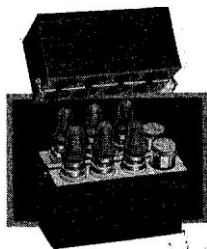
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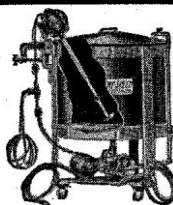
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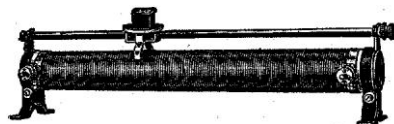
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