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CONTENTS

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THE IONS OF THE ATMOSPHERE[1]

As one of the results of the recent development of electrical science it is considered that throughout the air in its normal state, and in other gases in a similar condition, there exists a small number of molecules, or groups of molecules, which are distinguished from the vast host of their fellows in being electrified. Each of these electrified entities, whatever its structure, is called an ion, and of ions there are two main classes, the one containing those which are positively, the other those which are negatively, electrified. The notion of the ion, in this connection, arises from attempts to reach a simple description of the facts associated with the conduction of electricity through gases, and the hypothesis admirably fulfils its purpose.

The number of ions in the air can be greatly increased by exposing it to the influence of Röntgen rays, or to the radiations from radium or other radio-active bodies, and it is from investigations connected with this artificially produced ionization that most of our present knowledge of ions is derived. For the most interesting account of these researches I refer you to the address delivered before this section at Dunedin in 1904 by the present distinguished president of the association. For my immediate purpose I have to remind you of one result: in an electric field, in addition to the motion of molecular agitation shared by all the constituents of a gas, the ions, in virtue of their charge, acquire a velocity whose average value depends on the electric intensity

[1] Presidential address before Section A of the Australasian Association for the Advancement of Science.