

**ELECTRONS: OR, THE
NATURE AND PROPERTIES
OF NEGATIVE ELECTRICITY.
[LONDON-1907]**

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ELECTRONS

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THE NATURE AND PROPERTIES OF NEGATIVE ELECTRICITY

BY

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TO THE
CAVENDISH PROFESSORS OF PHYSICS
IN THE UNIVERSITY OF CAMBRIDGE, AND ESPECIALLY
TO THE PRESENT HOLDER OF THE CHAIR, THIS SMALL BOOK IS
DEDICATED WITH PROFOUND ADMIRATION
BY THE AUTHOR

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PREFACE

IN 1902 I was asked by the President of the Institution of Electrical Engineers to give to that body a discourse on recent progress towards knowledge of the nature of Electricity, especially concerning its discontinuous or atomic structure. This discourse, greatly extended, appeared in Vol. 32 of the Journal of the Institution, and constitutes the nucleus of the present book.

Many additions have now been made, and some of the difficulties recently promulgated concerning the possibility of an electric theory of matter are touched upon. They are of date too recent to have been mentioned even in my "Romanes Lecture" before the University of Oxford, published under the title *Modern Views of Matter* by the Clarendon Press.

The most important addition is a more detailed account of the proof of the purely electrical nature of the mass or inertia of an electron: an investigation generally associated on the experimental side with the name of Kaufmann, but of course based on the work of many predecessors and contemporaries. A proof that the atom of matter is essentially composed of such electrons, and that its mass too is of purely electromagnetic nature, is lacking: the electromagnetic theory of Matter,