ELECTRIC SCIENCE; ITS HISTORY, PHENOMENA, AND APPLICATIONS

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649569946

Electric Science; Its History, Phenomena, and Applications by F. C. Bakewell

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

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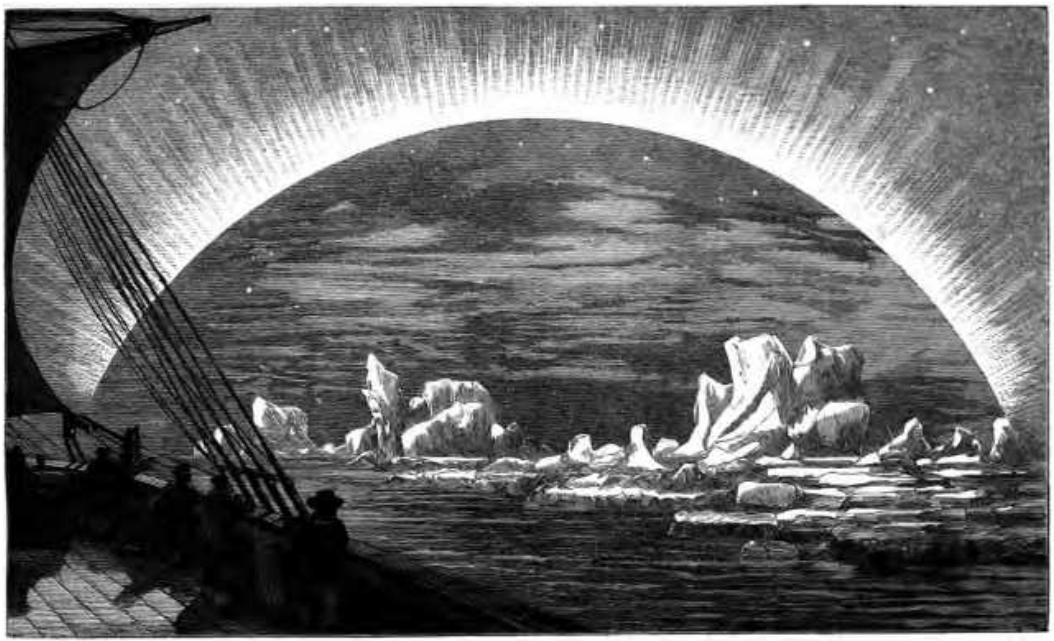
Trieste



AURORA BOREALIS IN THE ARCTIC SEA.

ELECTRIC SCIENCE;

ITS HISTORY, PHENOMENA, AND APPLICATIONS.

BY

F. C. BAKEWELL,

AUTHOR OF "NATURAL EVIDENCE OF A FUTURE LIFE," "PHILOSOPHICAL CONVERSATIONS," ESSAYS ON MECHANICAL SCIENCE; INVENTOR OF THE COPYING ELECTRIC TELEGRAPH, ETC.

LONDON:
INGRAM, COOKE, AND CO.

1853.

PREFACE.

The attention that electricity now commands, by its intimate relations with the other physical sciences and by the important objects to which it is applied, makes it particularly desirable that the student of natural philosophy should have the means of attaining, in a compendious form, a knowledge of the progress of electric science to the present day, and of comprehending its varied phenomena, and the applications of which it has been found capable. With this object in view, the author has endeavoured to set forth clearly, yet concisely, the prominent points in the history of electricity, and to notice and explain all those phenomena which indicate any special attribute of that peculiar force.

In attempting to comprise all that is important to be known of the history, the phenomena, and the applications of electricity within a single volume, there is considerable risk of producing a mere chronological record and an explanatory catalogue rather than an interesting treatise. When, indeed, it is considered that Priestley's *History of Electricity* occupies a thick quarto volume—though written before the most important sources of electric force had been revealed by Galvani and Volta, by Œrsted, Seebeck, Faraday, and Armstrong—it might be supposed that a history which includes those discoveries, and is contained within forty pages, must be only a barren sketch. To afford space for circumstantial illustration and explanatory remarks, attention has been concentrated on the characteristic facts, by the adoption of which course it is hoped that the historical notice of the advancement of electric science will be found interesting as well as instructive.

As a mere statement of effects would have proved unsatisfactory without an explanation of the causes that produce them, such explanations have been given as appeared to the author to afford the clearest insight into the nature of electrical action. Though the Franklinian theory of

the excitement of frictional electricity has been generally adopted, because it is the most simple, and voltaic action has been attributed to chemical agency, theoretical discussions have been avoided as much as possible, lest they might tend to obscure rather than to throw light on the causes of electrical phenomena. In some few instances views have been taken of the action of electric force different from those commonly entertained; but in such cases the reasons for the departure from received opinions have been fully stated.

The author is not aware that the many varied inventions for the application of electric power to the uses of man have been previously described collectively. In noticing them, prominence has been given to those objects that are of the greatest importance; it having been considered sufficient in appliances of less consequence merely to indicate the mode of operation, and to explain the principles of their action.

By dividing the consideration of electric science into its history, phenomena, and applications, some repetitions have almost unavoidably occurred, in order to make each part complete in itself. It is conceived, however, that the advantages attending such an arrangement, by affording a clearer conception of each branch of the subject, more than counterbalance the inconvenience of occasionally going, for a short distance, over the same ground.

HAVERSTOCK TERRACE, HAMPSTEAD,
June 1853.

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