

**ON MATTER AND ETHER,  
OR THE SECRET LAWS  
OF PHYSICAL CHANGE**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649662517

On Matter and Ether, or the Secret Laws of Physical Change by Thomas Rawson Birks

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OF PHYSICAL CHANGE.

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Cambridge:  
MACMILLAN AND CO.  
AND 23, HENRIETTA STREET, COVENT GARDEN,  
London  
1862

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Cambridge:

PRINTED BY C. J. CLAY, M.A.  
AT THE UNIVERSITY PRESS.



## PREFACE.

THE Theory unfolded in the present Essay, whatever may be its merits or defects, is not the hasty production of a moment. It is twenty-eight years since the first steps were taken in the line of inquiry, which has now at length assumed a consistent and connected form. Three main elements of the theory, the conclusion from the law of gravitation with regard to the nature of the atoms of matter, the constitution of chemical elements, as the first step in composition of these material monads, and the large part played by rotatory motion and centrifugal atomic force, in nearly all branches of physics, were then imperfectly traced out in connexion with various kinds of phenomena, and became settled convictions of my mind. A second step, after some little interval, was to discern the absolute need of admitting ether distinct from matter, as proved by the phenomena of light and electricity, and along with this, the consequent necessity for three distinct laws of central force, to explain their nature and mutual action. From these data alone consequences were traced out, at intervals of reflection, such as other engagements would allow, which seemed gradually to take a definite shape, and reveal the main classes of phenomena, known to science, as necessary results of such a constitution of the two primary elements. One difficulty, however, hindered me from ripening the theory into a definite and tangible form, and made me unwilling, in spite of the many

interesting lines of speculation it opened, to offer it to the thoughts and criticism of men of science, until it had been overcome. I was long unable to conceive such a relation of the constants, required by the laws of force, as would satisfy the phenomena of light and of the cohesion of solids, and also make mechanical structure a direct and immediate result of chemical composition. It seemed needful to allow a wide interval between the chemical atom, the first result of composition, and the molecule, on which cohesion and solid structure depend. In a later review of the subject, by combining the known data, and adopting an inductive course, this difficulty, I believe, was finally removed. Its source was the assumption, on grounds of apparent simplicity, of the lowest possible powers, the inverse third and fourth, for the two unknown laws of force to be determined. By the course of reasoning unfolded in the earlier chapters of the *Essay*, this source of perplexity was removed, while the main features of the theory, as it had for many years been developed, remained unaltered. All recent discoveries, during the thirty years since I became possessed of some of its main outlines, seem to me to have only confirmed, by anticipation, its substantial validity and truth. With the strong hope that it will be found to supply the true key to many of the undisclosed mysteries of nature, which have hitherto baffled all attempts at harmonious and consistent explanation, I commit it now to the candid and thoughtful reflection of men of science, and to the blessing of Him in whom are hid all the treasures of wisdom and knowledge.

KESSELL BROOKLYN,  
*Sept. 23, 1863.*

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