Faraday Rediscovered

Plate 1 Faraday's Laboratory. Harriet Moore. Royal Institution. Watercolour.

FARADAY REDISCOVERED

Essays on the Life and Work of Michael Faraday,
1791–1867

Edited and Introduced by

David Gooding
Frank A. J. L. James

M
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Foreword

Those of us who are fortunate enough to work here in Faraday's laboratory and even, in my case, to live in his home, feel his influence all around us. Never have a great scientist and a building been so closely linked. This happy association, coupled with the meticulous way in which he recorded all his work and the fact that his successors were wise enough to keep carefully the great quantity of experimental apparatus he left behind, has resulted in the happy circumstance that we have, for our greatest experimentalist, the most complete historical record of the artefacts of a single scientist to be found anywhere.

Much has been written about Faraday and much more will be written — and read — not only because of the enormous significance of his discoveries and the profusion of historical material, but also because his life has a romantic 'rags to riches' quality and a nearness to perfection which will forever be an inspiration to those whose love for science may seem to be unmatched by opportunity or formal education.

I hope that these studies will encourage scholars to 'rediscover' Faraday and to understand better the ways of working of his great mind. The new aspects of his life and achievements revealed here will also be of interest to the many people by whom he is revered throughout the world.

The Royal Institution, July 1985

GEORGE PORTER, FRS
Director and
Fullerian Professor of Chemistry

For our families

Preface

There are many studies of the life and work of Michael Faraday (1791–1867). None of these are definitive and this book does not aim to be so. Our title, *Faraday Rediscovered*, recalls John Tyndall's *Faraday as a Discoverer*, the first account of Faraday's considerable experimental achievements. It conveys our intention to promote a fresh approach to Faraday, whose work has been obscured by preconceptions about science and by heroic myths about its practitioners. We have brought together recent essays on Faraday which point the way for future studies of Faraday and of nineteenth century science generally.

Earlier versions of these essays were presented at the conference 'Faraday Rediscovered' held from 19 to 21 September 1984 at the Royal Institution, with one morning session at the Institution of Electrical Engineers. The conference was a forum in which new work was discussed and criticised. A strength of the meeting was its emphasis on the performance of experimental demonstrations. However, since not all demonstrations and lectures lent themselves to a literary rendering, some have, we regret, been omitted. The central place of experiment in Faraday's work is none the less a dominant theme in several that we have included.

The demonstrations were a striking feature of the conference. They also showed the unique contribution that the Royal Institution continues to make to British intellectual life. No other institution in the country combines a major scientific collection, demonstration skills, conference and library facilities and the personnel that allowed the conference to develop in the way it did.

Not all the demonstrations were successful, as the case of one of us (DG) illustrates. His experiments had been set up before we went to the Institution of Electrical Engineers for the morning session. We returned to the Royal Institution through a heavy rainstorm. Fifty wet historians increased the humidity in the lecture theatre so much that none of the electroscopes functioned. This illustrates Coates's law of electrostatics: 'keep your audience

dry'. One of the themes of this book is that failed experiments often provide as much information as successful experiments do.

All the other demonstrations worked. We are particularly grateful to Professor Sir George Porter and Professor Ronald King for their demonstration lectures respectively on Faraday's chemical experiments and his electromagnetic induction experiments. We thank Bill Coates, Senior Experimental Officer, and his staff for the immense effort they put into providing these demonstrations.

Contributors make their acknowledgements at the end of each essay, but we would like to make our joint acknowledgements here. We thank the Director of the Royal Institution, the Council of the Royal Institution and the Steering Committee of the Royal Institution Centre for the History of Science and Technology for supporting the conference and this book. DG wishes to thank them particularly for appointing him a Visiting Research Fellow of the Centre. He also thanks the School of Humanities and Social Science of the University of Bath for a study leave during the spring term of 1984, and the Royal Society for financial support during that period. We acknowledge the award of a travel grant by the British Academy for Dr Nancy Nersessian that allowed her to attend the conference. We thank Lenore Symons, Archivist of the Institution of Electrical Engineers and Irena McCabe, Librarian and Information Officer of the Royal Institution for their support during the conference (the latter, especially, for organising a display of Faradaiana in the library) and for their subsequent patience in dealing with our many editorial queries of the Faraday holdings in both archives.

We thank the Royal Institution for permission to reproduce Plates 1, 3–10, 12–14; the Institution of Electrical Engineers, Plates 11 and 15; Glasgow University Library, Plate 2 and the National Portrait Gallery, Plate 16.

Bath and London, 27 March 1985

DG
FAJLJ