

Preface

The roots of the twentieth-century revolution in physics (relativity and quantum theories) are founded on the debates that, at the end of the nineteenth century, opposed the electromagnetic, energetic and thermodynamic “views of nature”, each and all competing with the traditional mechanistic one. We present a collection of papers that improve our understanding of classical electromagnetism from Volta’s times to the most recent developments of quantum electrodynamics. Volta’s battery modified not only the scientific but also the technical world in a still unparalleled way. The focus of many of these contributions is on the cultural aspects of the physical disciplines, on how they were and are entangled with other human practices relevant for our way of life.¹

This book has its roots in the ‘Volta and the History of Electricity’ conference held at the University of Pavia and at the ‘Centre for the Scientific Culture A. Volta’ (Villa Olmo, Como) in September 1999. The conference was the fourth of a successful series (Como, 1993; Berlin, 1995; Paris, 1997). It was organized under the auspices of: the National Committee for the Bicentenary Celebrations of Volta’s Battery (1799-1999), the Interdivisional History of Physics Group of the European Physical Society (EPS), the Commission on the History of Modern Physics of the Division of History of Science of the International Union for History and Philosophy of Science (IUHPS), the Italian Society for the History of Physics and Astronomy (SISFA) and the Italian Society for the History of Science (SISS).

The structure of the volume is organised in four sections: 1. Volta and his Influence on Physics; 2. Volta and Electricity in the International Context; 3. The Rise of Electromagnetism; 4. Electrodynamics and Twentieth-century Physics. In the first, contributions are related to the historical inquiry on Volta’s work and on its links to Humphry Davy, Theodor Grotthuss, Giuseppe Zamboni, Christoph Heinrich Pfaff, Giuseppe Eugenio Balsamo, Giuseppe Candido and Hermann von Helmholtz. The second section concerns the reception of Volta’s papers and instruments in

¹ Thirteen papers presented here are strictly related to Volta’s work and his influence on the history of science and technology and will be reprinted in *Nuova Voltiana: Studies on Volta and his Times*, Vol. 5, Milano: Hoepli, 2003.

Germany, England, Portugal, Hungary, Poland, Slovakia and Italy. The third section deals with the developments of electromagnetism in the eighteenth century: here the works of Oersted, Lichtenberg, Weber and Kohlrausch, Maxwell, Clausius, Ferraris are analysed. The last section contains papers on Fermi, Dirac and quantum electrodynamics, on Lorentz and relativistic electromagnetism, on some historical and contemporary electromagnetic experiments, and on the present and future relevance of electromagnetism in our societies.

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