

Yet the great variety, more than the exact measurement of phenomena, attracted the attention of natural philosophers in this new field. And when through Davy, Berzelius, and Faraday in different ways the importance of electric action in chemical processes became established, it was natural that from this school an entirely different view of electrical and magnetic phenomena should emanate: we may term it—in opposition to the astronomical—the physical view of phenomena. This view, which, as the astronomical view had done, found later on its expression in a mathematical formula, will occupy our attention in a subsequent chapter. It has in the course of the second half of the century very largely expelled the other and rival view from the domain of molar and molecular physics. But the astronomical view, with its largely developed mathematical apparatus, was not easily defeated: it was quite able to grapple with even such complicated processes as the discoveries of Oersted and Faraday had revealed. In the opinion of many Continental thinkers it won its greatest laurels when, under the treatment of Ampère in France and of Neumann and Weber in Germany, the perplexing interactions of magnets, diamagnets, and

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1843 ('Philos. Transactions,' 1843, p. 303, &c.): "An energetic source of light, of heat, of chemical action, and of mechanical power, we only require to know the conditions under which its various effects may be most economically and energetically manifested to enable us to determine whether the high expectations formed in many quarters of some of these applications are founded on reasonable hope or on fallacious conjecture." Forty years later Lord Kelvin, in his address

"On the Electrical Units of Measurement" (1883; see 'Popular Lectures and Addresses,' vol. i. p. 76), could still speak of the comparatively recent date at which "anything that could be called electric measurement had come to be regularly practised in most of the scientific laboratories of the world," whereas such measurements had then been for many years "familiar to the electricians of the submarine cable factories and testing stations."