

58.
Recent
triumphs of
atomic view.

But whilst the question as to the true method of physical research is still being ventilated abroad, as it has recently begun to be in this country also,¹ the mechanical conceptions of atoms and ether have quietly gained new victories. At the end of the last chapter I related how, in the hands of Maxwell and his followers, the word "electricity" gradually lost its substantial meaning, so that there remained only the conception of a state of motion or stress in the electromagnetic field, it being difficult to assign a definite sense to the term, an electric charge. That those who were brought up under the ideas of Coulomb and Weber would naturally regard this as a defect has also been noted. Still more had the substantial nature of electricity been forced upon those who studied the electrolytic action of solutions and currents, the wandering of

up as a secondary phenomenon of energy. See Boltzmann, *loc. cit.*, last note, p. 114, &c.; also, *inter alia*, Dr R. Pauli, 'Der erste und zweite Hauptsatz,' Berlin, 1896, preface.

¹ The discussions which began in Germany in the year 1895 at the meeting at Lübeck, and have, after being continued at subsequent meetings, and in the volumes of the 'Annalen der Physik und Chemie,' come to a kind of standstill by the exhaustive treatise of Helm on the one side and by Boltzmann's summing up on the other, do not seem to have attracted much attention in this country. Interest in the subject was, however, latterly aroused by two criticisms of the principles of scientific method coming from entirely different quarters. The first, which was of a purely philosophical character, was con-

tained in Prof. James Ward's 'Gifford Lectures' (1896-98), published in two volumes with the title 'Naturalism and Agnosticism.' The other was an Address delivered by M. Poincaré at the Congress of Physicists in Paris in 1900. In consequence, the subject of the legitimacy of the various physical principles, such as action at a distance, atomism, kinetic and ether theories, the use of mechanical models, and many kindred questions, have been discussed in the Addresses of Poynting (1899), Larmor (1900), and Rücker (1901), before the British Association, with a very emphatic attestation of the usefulness and indispensableness of the atomistic theory regarding the constitution of matter, and the view that a continuous ether is the carrier of all physical actions through space.