In the mean time this view had gained great support by the efforts of quite a different section of scientific workers, whose labours had opened out a new and promising field of research. The new field for a considerable period belonged almost as exclusively to foreign science as the energy-conception had for twenty years belonged to this country. Early and for the most part isolated labourers were Kopp and Hess in Germany, Regnault and Berthelot in France, Julius Thomsen in Copenhagen.[1] They (with many younger men) can be

statements. These two forms were the impossibility of a perpetual motion and the equality of action and reaction. See his Faraday Lecture, 1881. Both in the positions of Thomson and Tait and of Helmholtz the principle of energy is, however, like Lavoisier's principle, purely a regulative, not a constructive, principle of scientific research. It exerts a control and enables us to check the correctness of results. Both in chemistry and physics other principles or methods are required for extending — not merely correcting—our knowledge. Such principles are in the abstract sciences the formula of gravitation, the atomic theory, the ether; in the natural sciences the morphological and genetic theories. The whole domain of physics and chemistry has been reviewed for teaching purposes from this point of view by Hans Januschke, 'Das Princip der Erhaltung der Energie,' Leipzig, 1897. See p. 14 *sqq.*

[1] Although the history of thought has more to do with theories than with the mere discovery of facts, and with the latter mainly when, as in exceptional instances, they change the scientific aspect of phenomena, I think it important to mention specially the great merit of Victor Regnault's experimental researches. How much the progress of physical and chemical theory is indebted to his elaborate and extremely accurate measurements of many physical constants may be seen by the perusal of Lord Kelvin's early memoirs on the dynamical theory of heat. The several (so-called) laws of Boyle, Dulong, and others were subjected by Regnault to exhaustive tests; the behaviour of steam in the steam-engine formed a subject of elaborate investigation; the proof that chlorine could be substituted for hydrogen in hydrocarbons supplied a prominent support to the chemical theories of Laurent. In general Regnault's work is a model of accuracy supported by great ingenuity in the construction of apparatus and the surmounting of difficulties. Like Liebig, he was the master of many pupils who subsequently became eminent. Besides being professor of chemistry and physics in Paris, Regnault was actively connected with the celebrated porcelain works of Sèvres. Similar remarks might be made with reference to the labours of Hermann Kopp, who was for many years probably the only professor of physical chemistry in Germany.