The ideas through which unity and coherence have been introduced into the many different trains of reasoning which were bent upon unravelling the mysteries of chemical affinity came from an unexpected quarter —from the country which, in the early part of our century, had become, through Berzelius, the centre of a great school of chemical research. Prof. Ostwald, in his recent historical sketch of the doctrines of chemical affinity, dates the latest period from the year 1886,[1] when Svante Arrhenius published his theory of the chemical solutions decomposed by the galvanic current, the so-called electrolytes. That the reader may understand what importance belongs to this latest development of physical chemistry, I must go further

38. Arrhenius.

distinguish herself in the wider sphere of general or physical chemistry as much as she has done in the past by the extreme and one-sided culture of organic or structural chemistry, it will be largely owing to the influence of the school of Ostwald and that of the industrial factor mentioned in the text, which nowadays emphasises as much the economical control of chemical reactions as it did formerly the discovery and preparation of new compounds. The ultimate success in the industrial preparation of artificial indigo, which was theoretically long known, is an example well worth careful attention.

[1] Prof. Ostwald had himself about the same time made an attempt in the second volume of the first edition of his great work to unite the *disjecta membra* of physical chemistry, notably of the theory of affinity, into a systematic whole. This first attempt may have contributed quite as much as the special labours of others, among whom he mentions specially Helmholtz, Van't Hoff, Duhem, Planck, and Arrhenius, to create an era in chemistry. It may also be noted that, like every other important step in chemistry, this latest theoretical phase is characterised by violent controversies. These became more pronounced as Prof. Ostwald introduced into the second edition of his work the idea of "energetics" as a general and sufficient basis for the whole of physics and chemistry; making a very emphatic protest against the older physical theories, based upon attractions, atomism, or kinetics, which he stigmatises as mechanical. On this important controversy I shall have to report at the end of the present chapter, where I shall also give the full literature of the subject. In the meantime, see also Ostwald, 'Allgemeine Chemie,' vol. ii. part 1, preface, and part 2, p. 182 *sqq.*