

generally attributed to gases. Andrews<sup>1</sup> in the 'sixties carried on his important experiments on the transition of bodies from the liquid to the gaseous state, and came to the conclusion "that the gaseous and liquid states are only remote stages of the same condition of matter, and are capable of passing into one another by a process of continuous change."<sup>2</sup> He also referred to the "possible continuity of the liquid and solid states of matter."

Another important step by which our conceptions of the nature of the liquid condition of matter were considerably enlarged and altered—motion being introduced where a former view had seen only rest—was taken by Clausius, who, following Joule and Krönig, had about the same time given its modern form to the kinetic theory of gases. What suggested this step was the phenomenon of electrolysis. The older view looked upon the action of the electric current, which, passing through substances in a state of fusion or solution, liberated the constituents out of which they were composed, as an exertion of a force contrary to the forces of chemical affinity, by which the chemical constituents were supposed to be held together. In this case energy would have to be spent in doing work against chemical forces. It was, however, very soon found that the decomposition, or—as Sainte Claire Deville first called it<sup>3</sup>—the

<sup>1</sup> See vol. i. p. 316, note, of this History.

<sup>2</sup> See 'The Scientific Papers of Thomas Andrews,' with a Memoir by Tait and Crum Brown, London, 1889, p. 316.

<sup>3</sup> Sainte Claire Deville (1818-81) approached chemical research from the side of medicine, and after a

series of original investigations, first in organic then in metallurgical chemistry, entered upon his remarkable work in thermal chemistry at the time when Clausius in Germany was being led from an entirely different point of view to the same subject. He introduced the term dissociation to denote the