gous to that in which mechanical forces are balanced against each other by the intervention of the lever. It is impossible to him[37] to resist the idea, that the voltaic current must be preceded by a state of tension in its interrupted condition, which is relieved when the circuit is completed. He appears to possess the idea of this kind of force with the same eminent distinctness with which Archimedes in the ancient, and Stevinus in the modern history of science, possessed the idea of pressure, and were thus able to found the science of mechanics.[38] And when he cannot obtain these distinct modes of conception, he is dissatisfied, and conscious of defect. Thus in the relation between magnetism and electricity,[39] "there appears to be a link in the chain of effects, a wheel in the physical mechanism of the action, as yet unrecognized." All this variety of expression shows how deeply seated is the thought. This conception of Chemical Affinity as a peculiar influence of force, which, acting in opposite directions, combines and resolves bodies;—which may be liberated and thrown into the form of a voltaic current, and thus be transferred to remote points, and applied in various ways; is essential to the understanding, as it was to the making, of these discoveries.

By those to whom this conception has been conveyed, I venture to trust that I shall be held to have given a faithful account of this important event in the history of science. We may, before we quit the subject, notice one or two of the remarkable subordinate features of Faraday's discoveries.

Sect. 3.—*Consequences of Faraday's Discoveries.*

Faraday's volta-electrometer, in conjunction with the method he had already employed, as we have seen, for the comparison of voltaic and common electricity, enabled him to measure the actual quantity of electricity which is exhibited, in given cases, in the form of chemical affinity. His results appeared in numbers of that enormous amount which so often comes before us in the expression of natural laws. One grain of water[40] will require for its decomposition as much electricity as would make a powerful flash of lightning. By further calculation, he finds this quantity to be not less than 800,000 charges of his Leyden battery;[41] and this is, by his theory of the identity of the combining with the decomposing force, the quantity of electricity

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[37] Art. 950. [38] 990. [39] 1114. [40] 153. [41] 861