

generalisations which he attempts. Absolute mathematical certainty is almost unknown in such cases: they can only be made out with more or less clearness and probability.

It seems to me that the new phase into which scientific thought has entered, mainly through the influence of Darwin, has not been sufficiently appreciated by those of his critics who have compared his methods with those of earlier philosophers and naturalists. Darwin has been called by some the Newton of the natural sciences,<sup>1</sup> and again by others his method has been unfavourably contrasted with that of Newton and Cuvier.<sup>2</sup> Some of these

39.  
Darwin and  
Newton  
compared.

<sup>1</sup> It is in many instances only a *façon de parler*. Maxwell similarly called Ampère the Newton of Electrodynamics; and Young has been called the Newton of Optics. Mr Wallace says ('Darwinism,' p. 9): "We claim for Darwin that he is the Newton of natural history, and that, just so surely as that the discovery and demonstration by Newton of the law of gravitation established order in place of chaos, and laid a sure foundation for all future study of the starry heavens, so surely has Darwin, by his discovery of the law of natural selection and his demonstration of the great principle of the preservation of useful variations in the struggle for life, not only thrown a flood of light on the process of development of the whole organic world, but also established a firm foundation for all future study of nature."

<sup>2</sup> The most important publication of this kind is the late Professor Albert Wigand's work, in three volumes, 'Der Darwinismus und die Naturforschung Newton's und Cuvier's' (Braunschweig, 1874-1877). The author significantly classes Humboldt also among those

who belong to that period and school of research which has—unfortunately, in his opinion—been superseded by the modern genetic treatment (see vol. iii. p. 14). It is not likely that a perusal of these volumes will, in the mind of the reader, change the current of thought which is now, even more than twenty-five years ago, running in genetic lines, nor will it do anything towards diminishing the sense of importance which attaches to this modern movement. Nevertheless, the book is valuable as giving a very complete *résumé* of what was said "pro and con" Darwinism during the first fifteen years of its existence. It is interesting to see what a small part French scientific opinion played during that period as to the theories of descent and mutability of species, which had both their origin and their first great exponents in France. The book does not appear to have had much influence in its time, but more recently the criticisms of Wigand, von Baer, and other writers seem to receive greater attention since the central biological problems have been pushed into the foreground. Of