

All these are merely external signs of the new life, indications of progress and change: the inner reason and result, the altered ways of thinking which underlie or are produced by these external changes, will be the object of closer study hereafter; they constitute the real substance of this work. What I draw attention to here, by way of introduction, are merely fingers on the dial-plate of a complicated clock-work: their motion and position are patent to every one. Later on I shall invite the reader to remove the outer case, and try with me to understand the delicate working parts and the principle of the mechanism, the prime mover and the mode of transmission of motion within. The general curiosity that exists to follow the internal and hidden workings of thought is manifested especially in that country which in modern history has frequently taken the lead in philosophical reasoning. It is manifested by the huge and increasing historical literature of Germany, which is devoted to tracing out the growth and development of modern science and thought. In that country history seems for the moment to have taken the place of metaphysical speculation. A similar transition from the logical to the historical view can be traced in English literature in the last century, the

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generality is sometimes exaggerated at the expense of simplicity and usefulness, and then leads to abstruseness and to the enunciation of theorems which have no special application; precision may degenerate into an affected brevity which renders a dissertation more difficult to read than to write; elegance of form has in our days almost become the test of the value of a theorem. Yet in spite of all draw-

backs these conditions of efficient progress are of the greatest importance, inasmuch as they keep the scientific matter within those limits which are intrinsically necessary if mathematical research is not to lose itself in minutiae or be drowned in over-abundance." — Hankel, 'Die Entwicklung der Mathematik in den letzten Jahrhunderten' (Tübingen, 1869).