

What might not these great minds have accomplished had they attached the same importance to style and form as most of the great French men of science, or had they been called upon to teach a number of eager pupils, anxious, not to take honours and degrees, but to understand and further elaborate the suggestions of their masters, as has been the custom and tradition in Germany? The history of English science during the first half of the century consists of a series of biographies, or of monographs on single ideas and points of view. We are struck by the individual greatness of the minds which produced them, their originality or the suddenness of their appearance. An *éloge* by the permanent secretary of the Academy has usually been considered sufficient to satisfy the historian of science in France; the life of every great philosopher in Germany is identical with the history of a phase of thought or with a school of research; in England alone the person of the thinker has nearly always claimed the

by Miller in 1845 and by Foucault in 1849 of observations relating to this subject, had suggested in the course of conversation that there is a correspondence between emission and absorption of the same kind of light by the vibrating molecules of the same body, according as it is used as a source or a screen for light. Had this idea of Stokes's, which suggested the presence of sodium in the atmosphere of the sun, been followed out at the time, the discovery of spectrum analysis would have taken place ten years earlier. Actually, the various publications, beginning with Fraunhofer's description of the dark lines in the solar spectrum in 1814 and proceeding through the observations of Herschel, Talbot, Drum-

mond, Miller, Angström, Plücker, Swan, and Balfour Stewart on the absorption and radiation of heat, found their consummation when Bunsen and Kirchhoff settled the main point in question—*viz.*, "that the bright lines of an incandescent gaseous body depend on the chemical constituents of the same." Then at length spectrum analysis became possible. See on this matter Kirchhoff's own historical *résumé* of the year 1862, reprinted in 'Gesammelte Abhandlungen' (Leipzig, 1882), p. 625, &c.; also Sir William Thomson's 'Baltimore Lectures,' shorthand notes, 1884, p. 100, and Stokes's translation of Kirchhoff's first paper in 1860 ('Philos. Magazine,' March 1860).