to do what Professor Haeckel has done in the more restricted field of the history of the living creation. Whilst these attempts are by many scientific authorities con-

tories. His speculations, based upon his own observations as well as those of many other European and American authorities, such as Secchi, Dumas, Kayser and Runge, Rutherford, Rowland, Young, and, above all, of Sir W. Crookes and the late Professor Preston,—all of which, as well as many others, he generously quotes,—were given in three works 'The Chemistry of the Sun' (1887), 'The Meteoritic Hypothesis' (1890), and 'The Sun's Place in Nature' (1897). He has latterly collected the whole evidence in a brilliant and fascinating volume entitled 'Inorganic Evolution as studied by Spectrum Analysis' (1900). The central idea contained in these books, and elaborated with increasing detail and clearness, was suggested as early as 1873, when Sir N. Lockyer pointed out "that many of the difficulties would vanish if it were conceded that the 'atoms' of the chemist were broken up or dissociated into finer forms by the high temperatures employed in the new method of investigation" ('Inorg. Evol.,' p. 73). This "dissociation" hypothesis has been much criticised, and can only be firmly established by patient and prolonged research in that borderland which unites chemistry and astronomy. As the author says: "The chemist has little interest in an appeal to celestial phenomena, and astronomers do not generally concern themselves with chemistry. The region investigated by the chemist is a low temperature region, dominated by monatomic and polyatomic molecules. The region I have chiefly investigated is a high temperature region, in which mercury gives us the same phenomena as manganese. In short, the changes with which spectrum analysis has to do take place at a far higher temperature level than that employed in ordinary chemical work." It is well to note that during and since the time when the dissociation hypothesis was first prominently put forward researches conducted on entirely different lines have led to similar views—*i.e.*, to a further elaboration of the atomic hypothesis. M. Berthelot wrote in 1880: "L'étude approfondie des propriétés physiques et chimiques des masses élémentaires, qui constituent nos corps simples actuels, tend chaque jour d'avantage à les assimiler, non à des atomes indivisibles, homogènes et susceptibles d'éprouver seulement des mouvements d'ensemble . . . il est difficile d'imaginer un mot et une notion plus contraires à l'observation ; mais à des édifices fort complexes, doués d'une architecture spécifique et animés de mouvements intestins très variés" (quoted in 'Inorg. Evol.,' p. 28). The first chemical confirmation of the dissociation hypothesis came in 1883 through the "beautiful researches on the rare earth Yttria," contained in Sir Wm. Crookes's Bakerian Lecture to the Royal Society. "In the lectures he gave a sketch of the train of reasoning by which he had been led to the opinion that . . . this stable molecular group had been (by a process termed 'fractionation') split up into its constituents" (ibid., p. 116); and already, in 1879, Sir Wm. Crookes had provisionally accepted the "dissociation" hypothesis (p. 74). Anomalies also in the periodic