determinations. That rule is indeed the foundation of all work in the laboratory, the principle which decides the degree of accuracy attained in every analysis, and which not infrequently is the only method of determining the presence of some undiscovered constituent.[1] Not long

[1] The revolution in chemistry at the end of the last century manifests itself in nothing more than in the various distinct problems, corresponding to different courses of scientific thought and different interests, which have guided chemical research since that time. The first definite object was the search after the real elements, the attempt to decompose the existing substances of nature into their ultimate constituents. This interesting occupation somewhat pushed into the background the theoretical investigations regarding the forms of the combinations of the various elements into compounds, still more the study of chemical affinity. A second definite object was the development of the theory of combustion which Lavoisier propounded, and the confirmation or refutation of the idea according to which oxygen occupied almost as important a position in chemical reactions as phlogiston had done before. A third definite object was the development of analytical chemistry, the systematic and methodical use of the balance. So far as the first branch of this pursuit was concerned, Lavoisier's catalogue of the elements was still very incomplete; it contained thirty-three members, including light and heat, and twenty-three of the substances which now figure in the list of the seventy elements enumerated in the text-books; the alkalies and earths were still considered to be simple bodies. A great addition to our knowledge in this department came through Davy's decomposition of soda and potash. And after his proof of the elementary nature of chlorine the oxygen theory of Lavoisier had also to be greatly modified. "Through a series of most important investigations, he rose in the beginning of this century to such eminence, that he was then considered to be the first representative of chemical science. With great experimental ability he combined a singular freedom from all the theoretical doctrines which were recognised in his age" (Kopp, 'Entwickelung der Chemie,' p. 451). In this he resembled Dalton and Faraday and other natural philosophers in this country, on whom theoretical notions formed in the Continental schools had little or no influence. Qualitative analysis was less indebted to Lavoisier than other branches of the science were. In fact, it was more at home in Sweden and Germany, where the interests of mineralogy and metallurgy promoted it. Bergmann and Scheele in Sweden, Klaproth in Berlin, were the forerunners of Berzelius and of the Berlin school of analysts. In this country Black and especially Cavendish had carried out some important quantitative determinations, the accuracy of which seems very far behind modern standards (see Kopp, 'Geschichte der Chemie,' vol. ii. p. 70, &c., 1844). It was the introduction of the notion of chemical equivalence, a term used already by Cavendish, which furnished the ultimate test for accuracy and revolutionised quantitative analysis.