the influence of microscopic study more revolutionary than in that of the massive rocks. Zirkel, in 1866, classified the massive crystalline rocks mainly upon the basis of the modifications of felspar, and sub-divided them into five chief groups—orthoclase, orthoclase and oligoclase, nepheline and leucite, labradorite, anorthite rocks. The orthoclase and oligoclase group was sub-divided into rocks containing quartz and rocks without quartz, and the members of the sub-groups were further distinguished by the presence or absence of hornblende or augite, or of different modifications of felspar. The geological age and the structure (granitic, porphyritic, glassy) afforded additional means of differentiation.

Notwithstanding the great success that attended the microscopic study of rocks, certain mineral elements could not be identified by the finest optical methods, and it was felt necessary to combine microscopic and chemical investigations. Micro-chemical methods were invented for the purpose of testing the composition of minute mineral grains; excellent memoirs dealing with this branch of research were published by Streng, Boricky (1877), Behrens, Haushofer (1883-85), and by Klement and Rénard (1885).

Cordier had in 1815 introduced a mechanical means of separating the fine particles of mineral matter by reducing them to powder, washing the powder with water, and allowing the mineral particles to subside according to their respective specific gravities. An additional device for the isolation of the fine particles was communicated in 1875 by Fouqué, who pulverised specimens of the Santorin lava and then used a strong electro-magnet to attract the mineral particles containing iron.

A more signal improvement in mechanical means of isolation had been suggested in 1862 by Count Schaffgotsch, and afterwards by Church. It was proposed to introduce finely powdered mineral matter into a saturated chemical solution, such as the solution of iodide of mercury and potassium, prepared by Thoulet, and to shake the mineral powder in the solution, so that the particles which are heavier than the solution will sink to the bottom while the lighter particles will float. By diluting the original solution, or using other solutions of given density, the particles can be obtained successively according to their specific gravities. Since Thoulet conducted his experiments, solutions of greater density have been pro-