

#### 4. Obituary Notice of Gustav Rose. By Professor Crum Brown.

GUSTAVE ROSE was born in Berlin on the 18th of March 1798. He was the youngest son of the pharmaceutical chemist, Valentin Rose, and the brother of Heinrich Rose, the eminent analytical chemist. He intended to devote himself to mining engineering, and began his practical studies in Silesia; but in consequence of illness gave up this profession, and occupied himself with scientific chemistry and mineralogy. He studied mineralogy under Weiss, in the University of Berlin, and made a large number of careful measurements of crystals. His first published work was his graduation thesis, "*De Sphenis atque Titanitæ systemate Crystallino*," 1820.

Like many young chemists of his time, he was attracted to Stockholm, where he studied under the guidance of Berzelius, the greatest and most accurate chemist of that age, and by frequent excursions in Sweden made himself thoroughly acquainted with the varied mineralogy of that country. In Stockholm he met Mitscherlich, with whom he maintained a life-long friendship. Late in life he felt it necessary for him to explain, which he did in a friendly and modest way, the share he had in the work which led to Mitscherlich's discovery of isomorphism. In 1823 he became lecturer on mineralogy in the University of Berlin; in 1826 he received the title of extraordinary Professor; and in 1849 was appointed ordinary Professor of Mineralogy and Director of the Mineralogical Collections.

Rose travelled much in search of mineralogical knowledge. He visited England, Scotland, Scandinavia, Italy, and France, studying rocks, mines, and museums; and in 1829 was selected by Humboldt as one of his companions in his examination of the Ural and Altai Mountains. There Rose discovered many new minerals, and in a special work, "*Reise nach dem Ural*," 1837 and 1842, made known the remarkable mineral wealth of that part of the Russian empire. His holidays were usually occupied by excursions in Silesia or in the Harz, where he collected the materials for some of his most valuable investigations. During one of his walks in Silesia he sustained an injury of the knee, from which he suffered much, but continued

his lectures till the 11th July 1873, when he was attacked with inflammation of the lungs, from the effects of which he died on the 15th of July.

His most important works were an elaborate memoir on felspar (1823); numerous investigations on quartz, on granite, on the metals which crystallise in rhombohedra; on the conditions under which carbonate of lime crystallises in the form of calcspar, or in that of arragonite, on meteorites, and on the mineralogical constituents of trap-rocks. Besides these purely mineralogical researches, special interest attaches to his study of the relation between the crystalline form and the physical properties of minerals. He pointed out that in tourmaline and in electric calamine the pyro-electric polarity is connected in a constant manner with the crystalline polarity, and described with great minuteness the forms of these minerals.

In 1857 Marbach showed that the crystals of iron pyrites and also those of cobaltine, both minerals crystallising in forms belonging to the regular system, could be divided into two sets, differing extremely in thermo-electric character, the one set more positive than antimony, the other more negative than bismuth. Rose saw at once that this difference must be related to their crystalline form, and that these two sets must possess crystalline characters of a right and left handed kind, and at last succeeded in detecting the difference between them.

Most of his researches were published in "Poggendorff's Annalen," in the Transactions of Berlin Royal Academy of Sciences, and in the Journal of the German Geological Society. Besides the "Reise nach dem Ural," already mentioned, he published a short work on the "Elements of Mineralogy," distinguished by beautifully drawn figures, and one on a crystallo-chemical system of classification of minerals.

Professor Rammelsberg, from whose notice of Rose's life most of the foregoing sketch has been taken, testifies to the remarkable kindness and geniality of his character, to the pleasure which he felt in the success of his young scientific friends, and to his hatred of polemical discussion.