

SCIENCE

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PROFESSOR THOMAS EGLESTON.

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THOMAS EGLESTON, planner and first professor of the School of Mines of Columbia University, died on Monday morning, January 15th, at his home, 35 West Washington Square, New York City, at the age of sixty-seven years.

Professor Egleston was born in New York City, December 9, 1832. He prepared for college under Dr. Dudley, of Northampton, took the regular four years' classical course at Yale and graduated in 1854; and in the following year took a post graduate course in the Yale Scientific School of Analytical Chemistry under Professor Benjamin Silliman, Jr.

In 1856 he went to Europe more for rest than to pursue any special course of study, but, becoming interested in the lectures in geology and chemistry at the Jardin des Plantes of Paris, he spent a good deal of time in the collections and laboratories and later, desiring to pursue more systematic work, applied for and obtained the permission of the government to attend certain lectures at the École des Mines, especially those of Professor de Senarmont on Mineralogy, of Elie de Beaumont on Geology, and of Professor Bayle on Paleontology. He completed his course at the school in 1860, having not only attended the lectures but worked in all the laboratories. During the vacations and at the close of his course he travelled extensively in France and Germany, studying and collecting.

MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor, J. McKeen Cattell, Garrison-on-Hudson, N. Y.

In 1861 Mr. Egleston returned to New York city and was at once chosen by the Smithsonian Institution at Washington to take charge of the work of sorting and arranging the specimens of minerals and rocks which had accumulated as a result of various exploring expeditions. To facilitate the work and assist in the system of international exchanges then undertaken, he prepared a check list of minerals with their compositions, which was published by the Institution.

At this time the need for a school of mines and metallurgy in this country was beginning to be recognized. Schools of civil engineering existed and schools of science, but nothing especially devoted to mining or metallurgy. Mining operations were conducted by so called 'practical miners,' with here and there a graduate of a foreign school, and the waste and mismanagement were almost beyond belief.

The nearest previous approach to the formation of such a school is found in the incorporation in New York State, about 1859, of the 'American School of Mines' with the avowed object of "The economic and scientific development of the mineral wealth of the United States, the determination of its economic values, instruction in the art of practical mining and the analysis and composition of mineral products." This institution does not appear ever to have reached a stage of active existence.

Dr. Egleston prepared and published in March, 1863, a 'Proposed Plan for a School of Mines and Metallurgy in New York City,' which was simple and practical and founded undoubtedly upon the methods pursued at the *École des Mines*. In about 1500 words he stated the object of the school, the proposed course of instruction, and the estimated cost of establishment.

The object stated was "To furnish to the student the means of acquiring a thorough scientific and practical knowledge of those

branches of science which relate to mining and the working up of the mineral resources of this country, and to supply to those engaged in mining and metallurgical operations, persons competent to take charge of new or old works and to conduct them on thoroughly scientific principles." A course of three years was outlined which was closely adhered to for the first few years of the school and then gradually modified. The estimated cost of equipment was \$17,300, of which over half was for collections.

Dr. Egleston's idea appears to have been to graft the school upon some existing institution, and fortunately he submitted the plan to the Trustees of Columbia College, who for four or five years had been considering the extension of the work of the college by the establishment of graduate schools, among others a 'practical school of science.' The opportunity to make a first step in this direction seemed to exist in the plan of Dr. Egleston, for it was proposed to pay all expenses of the school from the fees, and while the organization as planned required a larger outlay than the financial condition of the college warranted, the committee of the Trustees reported that, "the nucleus of such a school could be formed at inconsiderable cost to the college and so as to be capable of expansion whenever the means of the college shall permit." The Trustees, thereupon set apart rooms in the college building for mineralogical and geological collections, appropriated \$500, for fitting up cases and, on February 1, 1864, appointed Thomas Egleston, Jr., Professor of Mineralogy and Metallurgy without salary.

Although no money was appropriated with which to buy collections of minerals or rocks, the small collection of the college was placed at the disposal of the new school, and Dr. Egleston obtained gifts from Mr. George T. Strong and the Hon. Gouverneur Kemble, with which two private col-

lections of considerable value were purchased. From these, before the opening of the school, he formed a very fair working collection of minerals and a smaller geological collection.

An assay room, with a furnace for every four students, and a chemical laboratory were fitted up in one of the cellars. As one of the first students writes: "Though the actual state of these necessary aids to study was not good, the collections were all planned on a great scale and as far as possible the work was done thoroughly. The assay laboratory was the best in the country, the crystal models for every day use more abundant and complete than in any other school in the world. The best design was sought in tables and cabinets, and with all its shortcomings the new institution not only gave full promise of its present state of perfection, but was in fact superior in some respects to any existing at the time."

On November 15, 1864, the school opened with fifteen students, which by the end of the month had risen to twenty-nine and a little later to forty-three, the list including graduates of common schools and colleges, business men and civil engineers in full practice.

Early in 1865 the trustees recognized the success of the experiment and definitely made the School of Mines a coördinate branch of Columbia College. It has steadily developed, widening by the addition of courses in civil engineering, chemistry, architecture, electrical engineering, sanitary engineering and mechanical engineering into the existing cluster of schools in applied science under one faculty, with 1300 graduates and over 2000 others who have attended partial or special courses.

In the first four years of the School of Mines Dr. Egleston devoted himself to the preparation of lectures in mineralogy and metallurgy, to the accumulating and bringing into shape the mineralogical collection

and to the preparation of needed text-books. All his publications prior to 1872, with the exception of a report upon a 'geological and Agricultural Survey of the first hundred miles of the Union Pacific Railroad,' which he conducted in 1866, were text-books, tables and catalogues for the use of students of the School of Mines. It is noteworthy that while Dr. Egleston's first love was mineralogy and, as he expressed it, he "only took charge of metallurgy because at the time he could not persuade anyone else to take it," yet after the completion of his text-books in mineralogy he did little or no work in this direction, except in the development of the collection. In the collection work he never relaxed and even the year of his retirement, when grievously broken in health, insisted on personally choosing and setting in the new specimens.

In metallurgy, on the contrary, he published nearly one hundred books and papers, covering a wide field and to a very great extent the result of data collected in his yearly trips to different parts of the world. This complete passing into metallurgy was practically coincident with and in a measure caused by the founding of the American Institute of Mining Engineers in 1871. Dr. Egleston was approved for membership at the first meeting and thereafter for over twenty years was one of its most vigorous members, twice a manager, three times vice-president, and in 1887 president. He contributed to their transactions over thirty articles, and in this same period he published over twenty articles, principally metallurgical, in the *School of Mines Quarterly*, and contributed also papers to the American Society of Civil Engineers and American Society of Mechanical Engineers, The New York Academy of Sciences, and in the *London Engineering* he published a long series of articles upon the Metallurgy of Silver, Gold and Mercury in the United States, which, with other matter, were re-

printed in two large volumes in 1887 and 1890, and constitute his most ambitious work.

Aside from his scientific work, Dr. Eggleston took a very active part in religious and charitable work. He was a vestryman of Trinity Church for twenty years, and at the time of his death was Junior Warden, as well as member of several committees. For nearly thirty years he was Vice-President of the Protestant Episcopal Mission Society and a Trustee of the General Theological Seminary. He is also to be credited with the establishment of 'Food Kitchens' in New York, and with organizing the Public Parks Association by which Washington Square was saved. The Audubon Monument movement was also started by him.

In 1874 Princeton conferred upon him the degree of Ph.D., and Trinity that of LL.D. In 1890 he was appointed a Chevalier of the Legion of Honor by the French government on the recommendation of the Director and members of the Faculty of the École des Mines. In 1895 he was made 'Officier.' It is pleasant to record also that since his death the Trustees of Columbia University have named the Museum of Mineralogy the 'Eggleston Mineralogical Museum,' thus attaching his name permanently to the collection which he created and loved.

In 1896 his health gave way, and though after a rest he endeavored to resume his work, he could not stand the strain and was retired June 30, 1897, at his own request, as Professor Emeritus.

The service of Dr. Eggleston to science lies not so much in his numerous writings, though these contain an enormous mass of valuable information collected with infinite labor and published always when and where they were needed. Far more important was what has been happily called 'his intuitive perception of the situation,' his recognition of when the time was ripe to

inaugurate a movement, his skill in organization and the amazing vigor, persistency and unfailing belief with which he forced it to success. ALFRED J. MOSES.

THE SEVENTIETH BIRTHDAY OF CARL VON KUPFFER.—HIS LIFE AND WORKS.

PROFESSOR VON KUPFFER has lately passed the mark of three score years and ten and has received the congratulations of his students of many lands. Some of these, following the good German custom, have prepared memoirs in his honor which appear in a memorial volume and were presented him as a birthday gift. Von Kupffer has been a most helpful friend to the Americans who have carried on their investigations in the Anatomical Institute in Munich during the past generation, and it seems but just that at this time an American journal should pay a tribute to his life and work.—EDITOR OF SCIENCE.

Carl von Kupffer ranks to-day as one who has taken a place within the innermost circle of comparative embryologists. He has long been recognized as a profound scholar in a broad field of zoological knowledge; he is best known, however, for his researches upon the structure, development and descent of the vertebrates.

In his biography von Kupffer presents an interesting parallel with the great embryologist, Karl Ernst von Baer. Both were natives of the Baltic provinces of Russia, students and graduates of the University of Dorpat, and sometime practicing physicians until drawn into zootomical-embryological research. Both were for a time professors at Königsberg, and showed a distinct bent towards the widely separate themes of Arctic exploration and craniology; they were equally interested in matters relating to fish and fishery and contributed important memoirs to this subject. On the other hand they had in general but little leaning towards work of the systematist.