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Presentation of the Roebling Medal of the Mineralogical Society of America for 1990 to Sturges W. Bailey

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It is a special pleasure to present Sturges W. Bailey for the award of the Roebling Medal of the Mineralogical Society of America. I have known him for more than 40 years, first as a graduate student, then as a colleague and good friend in the Department of Geology and Geophysics at the University of Wisconsin. I have watched him, with growing admiration, through the full course of his highly productive career.

Bailey ("Bull" Bailey to all his friends and associates) was among my first graduate students at the University of Wisconsin, to which he returned after service in the Navy during World War II. His master's thesis was a meticulous study of fluid inclusions in sphalerite and calcite from the zinc deposits of southwest Wisconsin. Up to that time, most studies of fluid inclusions had dealt with isolated mineral specimens. Bailey examined inclusions in sphalerite and calcite in a suite of specimens representing the various stages of formation of the zinc deposits. He was able to establish changes in the temperature of the ore-forming solutions as ore deposition progressed.

At that point I could foresee a fine career for Bailey as an economic geologist, but it was not to be. Through work in the X-ray laboratory of A. N. Winchell prior to the war, he had developed an interest in X-ray work and now wished to pursue it as a career. The timing was excellent. The then Department of Geology sorely needed a program in X-ray crystallography. When Bailey expressed his interest in such a program, R. C. Emmons, our chairman, recognized him as an excellent candidate for the job. With departmental support, Bailey applied for and won a Fulbright Scholarship, and in 1949 he went off to the University of Cambridge to study under W. H. Taylor and earn his Ph.D. in physics. In the fall of 1951 he returned to Wisconsin, where an instructorship was waiting for him, and began the development of an outstanding program of teaching and research in X-ray crystallography and crystal chemistry. He rose to the rank of full professor in 1961 and was named Roland D. Irving Distinguished Professor in 1976. He served as chairman of the Department of Geology from 1968 to 1971. He retired in 1989 and is now a very active Emeritus Professor.

Bailey's fine work as a teacher is being honored by another society at this same annual meeting. His advancement in rank in his department was in recognition not only of his accomplishments in teaching and research but of his service to the department and to the university. Over the years he sat on 40 departmental and university committees. In resolving departmental problems, both department and student body benefited steadily from his wisdom, sound judgment, and plain hard work, motivated by a continuing dedication to their welfare.

Bailey's research in crystal chemistry began with studies of feldspars and certain other mineral species, but a study with S. A. Tyler of the clay minerals of the Lake Superior iron ores became the first of a long series of investigations of the complex structures of layer silicate minerals. Four studies of chlorite polytypism by Bailey and his students led to definition of 12 polytypes of that mineral. Polymorphism in the kaolin minerals was also investigated. Bailey acquired a broad knowledge of clay mineral structures, which he summarized first in an article in *Clays and Clay Minerals* in 1966, then in review articles appearing at intervals in various journals and books during the period 1972–1988. As time passed, he extended his work to other layer silicates, in particular the micas. The results of his work and that of his students poured forth in a steady stream. He is author or coauthor of more than 90 papers and chapters on layer silicates in various books. He is recognized internationally as an authority on the structures of his favorite group of minerals. He has given invited lectures on layer silicates to the Mineralogical Society of America, the Mineralogical Society of London, the Clay Minerals Society, the Association Internationale pour l'Etude des Argiles, and the European Clay Mineral Group. He has served on, and chaired for various periods, the CMS, AIPEA, and IMA-IUC committees on nomenclature that have hacked a path through the jungle of layer silicate names and have developed the system of nomenclature that is now in use.

For MSA he organized, in 1984, the short course on micas and, in 1988, the short course on hydrous phyllosilicates. He lectured to both short courses, contributed to their proceedings, and edited the resulting volumes. It is altogether fitting that after he had edited and presented the manuscript of the proceedings of the second short course for publication, his colleagues and friends inserted a preface that dedicates the volume to him.

Besides carrying on his active program of teaching and research, Bailey has served various professional societies in numerous capacities. I can give you only the highlights of this facet of his career. He has been council member and president of the Clay Minerals Society and was editor of its journal from 1964 to 1970. He was named a Distinguished Member of that society in 1975. He has also

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been council member and president of our Mineralogical Society and of the Association Internationale pour l'Etude des Argiles. He was named in 1989 to the Committee of Honor for the Strasbourg meeting of the latter society. He has served each of these societies, and other societies, as member or chairman of numerous committees besides those I have already mentioned. His record is one of remarkable service to his profession.

Mr. President, it is an honor and a privilege to present to you Sturges W. Bailey, a scientist eminently deserving of the award of the Roebling Medal of the Mineralogical Society of America.