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Presentation of the Roebling Medal of the Mineralogical Society of America for 1976 to Carl W. Correns

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Mr. President, Ladies and Gentlemen:

In the applied sciences that involve complex natural systems, new insights and successful approaches are achieved by a very special kind of scientists. On one hand they need to have a keen understanding of what nature is really like in all its complexity, and they must be able to distinguish important features from the background noise. On the other hand these pioneers must also know and understand what is happening at the forefront of theory and experiment in the fundamental sciences, and be capable of selecting the new tools that make it possible to achieve today what was impossible yesterday and that will be powerful but routine tomorrow. From these two Apollonian and Dionysian sources of inspiration, the new fields in the natural sciences are being created and explored by this special kind of people.

Professor Carl Wilhelm Correns as the founding father of modern sedimentology is such a scientist. I will not indulge here in the basic biographical data which have already been communicated, be it enough to say that in spirit Carl Correns is a very young man. It is of particular interest, however, to consider the sources, traditions, and events from which he and fate initiated the approaches which have since become so widely accepted in the earth sciences.

Two important and related threads in this web derive from surface chemistry and colloid science. They rose to importance first in the biological sciences in the 1880's and 1890's. Correns imbibed this new knowledge literally with his mother's milk; both of his parents were pupils of the botanist Carl Wilhelm Nägeli, who is perhaps best remembered today for creating the concept of colloidal micells.

From his mother, Carl Correns also inherited an unusual ability for three-dimensional geometrical perception, predisposing him for his achievements in mineralogy and crystallography. His father became one of the founders of modern genetics.

The first major conscious exposure to the physical aspects of colloid chemistry came during World War I, when Correns carried with him at the front and sought refuge in Wolfgang Ostwald's book *The Forgotten Dimension.* Realizing the potential importance of colloid-chemical concepts in the study of sediments, the young Correns, after his doctoral dissertation, associated himself with H. Freundlich, author of the famous volume on *Capillary Chemistry,* who was then at the Kaiser Wilhelm Institute in Berlin.

The third important thread in Carl Correns' scientific career was spun from the advances in physical chemistry, which brought him into association with one of the towering figures in this field, Fritz Haber. This collaboration strengthened the physicochemical approach to sedimentation that set the tone for Correns' entire scientific production. It also launched the aspiring sedimentary geochemist into exploration of perhaps the most relevant and beautiful domain of this science, the oceans. Haber as a great patriot was deeply concerned with the devastating economic effects of the Versailles Treaty on the German nation, and conceived of the idea to explore and if possible to exploit the immense but dilute store of gold in the world ocean in order to pay for the heavy war reparations. At his initiative the Emergency Association for German Science, an organization of the Federal Government, launched the famous oceanographic research expedition with the "Meteor" to systematically explore the chemistry and physics of the Atlantic Ocean and its sediments. Haber proposed to Correns to undertake part of the responsibility for this scientific task, which was to provide splendid material for the application of Correns' new ideas.

During his pioneering work in the 1920's and early 30's, at the University of Rostock on the Baltic Sea, Correns amalgamated this new science with the developments in modern geochemistry, crystallography, and mineralogy that were created at this time by men such as V. M. Godschmidt, Paul Niggli, and others.

From here on the stage is essentially set for a lifelong adventure into these new dimensions. The

transfer of Correns' activities in 1938 to Göttingen, one of the major European scientific centers, further stimulated the output of ideas and students. A histogram of doctoral theses completed under Correns' supervision shows this accelerated trend, marred by a deep cut as darkness and war descended again on Europe. The reputation and fame of the Correns school rapidly brought a resurgence of German and international scholarship to the Institute in Göttingen after the paralysis in the 40's; recovery was this time accelerated by Marshall Aid, which proved to be an economically more efficient scheme than Haber's dream.

In addition to a large number of scientific papers from his own hand, more than 60 doctoral theses were inspired by Correns' guidance and insight. He formally retired in 1962, and thereby somewhat changed his style of expression, but needless to say he has, as Emeritus, vigorously continued to pursue his career.

Correns' inspiration and influence has not been limited to the close circle of students and collaborators, but has been felt widely. The monumental and pacesetting work *The Origin of Rocks* by the trinational triumvirate Barth-Correns- Eskola was typical of the international spirit. I add as a personal note that in my own doctoral research work, that I was privileged to carry out during the next great event in ocean exploration, the Swedish Deep Sea Expedition 1947–1948 and its sequels, there is nobody that I can point to more directly as a source of inspiration and advice than Carl Correns.

It is therefore with great personal pleasure that I present you the innovator, teacher, and inspirer of three generations, Professor Carl Wilhelm Correns.

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Acceptance of the Roebling Medal of the Mineralogical Society of America for 1976

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Mr. President, dear Gustaf Arrhenius, dear Fellows and Members of the Mineralogical Society of America:

I am deeply conscious of the great honour you bestow on me by this award of the Roebling Medal.

Like many of you I began to sample minerals already as a schoolboy. In Leipzig I was fortunate to have a teacher in chemistry at high school, Hugo Lück, who was a mineralogist, a student of Friedrich Rinne. When I came to the university I did not find in my courses the mineralogy I had dreamed of, so I turned to geology and was promoted to Dr. phil. in 1920 with a thesis in sedimentology.

At Christmas time 1920 I got the book of Paul Niggli (Roebling Medalist, 1947) *Lehrbuch der Mineralogie.* This book impressed me deeply, also the book of Boeke-Eitel *Grundlagen der physikalisch-chemischen Petrographie.* I participated from 1922 in the mineralogical seminars of Professor Arrien Johnsen at Berlin in addition to my work at the Prussian Survey. At the same time I worked in the afternoon and the evening at Fritz Haber's Kaiser-Wilhelm-