

# A BRIEF HISTORY OF CORROSION SCIENCE AND ITS PLACE IN THE ELECTROCHEMICAL SOCIETY

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While several papers published in the 1800s had alluded to the fact that corrosion was electrochemical in nature, it was the classic 1903 paper by Whitney that persuaded others that corrosion was an electrochemical process. That same year two papers on the subject of corrosion were presented at the third meeting of The American Electrochemical Society (incorporated as The Electrochemical Society in 1930) and published in the *Transactions of The American Electrochemical Society*. This was just one year after the first meeting of The American Electrochemical Society in Philadelphia. Clearly, the history of modern corrosion science and The Electrochemical Society share a common beginning and have been intertwined since.

During the first two decades of the twentieth century, significant work was done on electrolytic corrosion and reported at Society meetings. In 1905, the Society awarded \$100 to A. T. Lincoln for his research on the electrolytic corrosion of brass. In 1908, President C. F. Burgess presented his presidential address "Corrosion of Iron from the Electrochemical Standpoint." The first Society symposium devoted to corrosion took place in 1912.

In 1921, the Technical Committee on Corrosion, the forerunner of the Corrosion Division, was established. In the 1920s, the logarithmic and parabolic equations for tarnishing and high temperature oxidation were proposed. In the 1930s, Carl Wagner showed both (a) that dry oxidation reactions were electrochemical in nature and (b) that the uniform dissolution of metals did not require separate anodic and cathodic sites but that metal dissolution and the accompanying cathodic reaction can occur randomly with respect to space and time over the surface. At the same time, the Society was presenting more frequent and larger corrosion symposia.

The Corrosion Division was formally established in 1942 with L. G. Vande

Bogart as its first chairman. The new Division grew rapidly from about 60 members to more than fifteen hundred members today. During the 1950s and 1960s, the importance of corrosion to the economy, safety, conservation, etc. became evident, and was accompanied by sharp increases in the corrosion literature, conferences dealing with all aspects of corrosion, and compilations of corrosion data. In the 1950s, potential-pH diagrams, Pourbaix diagrams, appeared; their importance was quickly realized. During the 1960s significant advances were made in understanding the growth, properties, and breakdown of passive films. This era also saw the emergence of new electrochemical and non-electrochemical techniques for the study of corrosion reactions and corrosion products, a trend that greatly accelerated during the 1970s and has continued to the present day.

Besides sponsoring symposia at both the Spring and Fall Society meetings, the Division has published proceedings volumes from its symposia as well as the monographs that form the Corrosion Monograph Series. The Corrosion Division has actively contributed to the welfare of the Society. For example, the royalties from the first edition of the *Corrosion Handbook*, the best selling book in the Society's history, were used to found the Palladium Medal Award of The Electrochemical Society. The Division also contributed generously to the endowment for the Carl Wagner Memorial Award of the Society. Many Division members have been active in the governance of the Society serving on committees or as officers. Six past chairmen of the Division have served as president of the Society. Two other well-known members of the Division, Frank LaQue and J. C. Warner, although not past chairmen of the Division, also were presidents of the Society. The active involvement of the Corrosion Division in the activities of The Electrochemical Society continues at the time of the Society Centennial.