

THE  
AMERICAN JOURNAL OF SCIENCE

[ FIFTH SERIES. ]

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HORACE LEMUEL WELLS.

Horace Lemuel Wells died at his home in New Haven, Connecticut, on December 19th, 1924, in the 70th year of his age. He was born on October 5th, 1855, in New Britain, Connecticut, the son of Levi Sedgwick and Harriet (Francis) Wells. He prepared for college at the New Britain High School, and graduated from the chemistry course of the Sheffield Scientific School in the class of 1877. For a year after graduation, he continued the study of chemistry and mineralogy in the Scientific School; from 1878 to 1880, he was assistant chemist at the Connecticut Agricultural Experiment Station. For a short time, he was in the laboratory of the Pennsylvania Railroad at Altoona, under Charles B. Dudley, and then (1880) became chemist for the Colorado Coal & Iron Co., in South Pueblo, Colo., and remained there four years as chemical supervisor in the development of a large and successful iron and steel plant. He returned to New Haven in 1884 as instructor in analytical chemistry in the Sheffield Scientific School; became assistant professor of chemistry in 1888 and, in 1893, professor of analytical chemistry and metallurgy. He held the latter appointment until 1923, when he retired and was made professor emeritus. He studied for one semester in Munich in 1889.

Professor Wells became an associate editor of this Journal in 1904, though his reviews began more than ten years earlier. During this long period, he reviewed a very large number of books and scientific articles. These reviews are models of fair and scholarly criticism and stand as convincing evidence of his profound and extensive knowledge in the field of chemistry.

A bibliography of Professor Wells' scientific publications is given at the end of this review. From the time

he was an undergraduate, he was associated with three men who were already, or were to become, brilliant mineralogists. These men were G. J. Brush, E. S. Dana, and S. L. Penfield, the latter a classmate. It was very natural, therefore, that with his remarkable ability as an analyst, he should devote much attention to the analysis of minerals. He determined the composition of a number of minerals from Branchville, described (with E. S. Dana) the new mineral *beryllonite*, and analyzed a new platinum mineral which he called *sperryllite*, and he determined the composition of a number of other minerals. In 1891 he obtained a considerable supply of the rare mineral *pollucite*. This mineral is rich in the element caesium which up to that time had been obtained only in exceedingly small amounts. Ultimately, several kilos of caesium salts were obtained, and this furnished material for a remarkable series of investigations on compounds of this element which continued for more than thirty years. About one-half his published articles relate to compounds of caesium. Beginning with a series of new, beautifully crystallized perhalides of caesium, he then undertook the systematic investigation of double salts containing this element. In this way, he prepared a large number of entirely new salts and added greatly to our knowledge of this very interesting class of compounds. Later, he discovered a series of triple salts—particularly triple thiocyanates—and his last published work was on compounds of this type (1923). Along with this work, he prepared compounds of rubidium and of potassium, two elements closely related to caesium, and largely based on these shorter researches were two long and important articles regarding double salt formation in general.

In 1897, he translated Fresenius' *Qualitative Analysis*, which is still a standard reference book on the subject. For laboratory use, however, he published the following year a smaller text book on the same subject which has been of the greatest service at Yale and elsewhere. To facilitate calculations in analytical chemistry, *Chemical Calculations* was published in 1903, a very convenient and practical book which is widely used at the present time. The following year (1905) his text book of *Chemical Arithmetic* was published. At the time of the Bicentennial of Yale University, he edited the two large

volumes called "Studies from the Chemical Laboratory of the Sheffield Scientific School."

The standing of Professor Wells as a brilliant analytical chemist was so well established that it excited little or no comment. Always his object in devising an analytical method or operation was to make it as simple as possible consistent with accuracy. As a single illustration of this, his article on analytical weighing, published in 1920, may be mentioned.

Directly or indirectly, Professor Wells was responsible for most of the undergraduate teaching of chemistry, except elementary and organic, in the Scientific School from 1884 nearly to the time of his retirement. He believed thoroughly in letting the younger men teach their subjects as they wished, but the general plan of the work was his. He also gave all instruction in metallurgy and assaying for many years. His earlier experience in Colorado and, in later years, a close contact with various metal and metallurgical industries, gave him an admirable equipment for this part of his work. A glance at the bibliography will show the large number of investigations which were carried out with graduate students, and many other articles were published independently by them at his suggestion. Nothing could testify better than this published work to his remarkable success in inspiring graduate students to carry on sound scientific research.

In 1893 it became evident that the old chemical laboratory in South Sheffield Hall was no longer adequate, and the new Sheffield Chemical Laboratory was designed and finished in 1895. This laboratory was planned entirely by Professor Wells and Professor W. G. Mixter, and was one of the best laboratories for its purpose in this country until it finally became too small after twenty-five years of service.

There was one significant trait in the character of Professor Wells, that was best known and most thoroughly appreciated by his intimate associates. For a man of his high chemical attainments, there were numerous opportunities for highly profitable work as a consulting industrial chemist. These opportunities never tempted him to swerve from his single purpose to raise chemistry in the Sheffield Scientific School to a unique position.

Professor Wells was awarded the honorary degrees of

M.A. by Yale (1896), and Sc.D. by the University of Pennsylvania (1907), and was elected to membership in the National Academy of Sciences in 1903.

He was married on October 7, 1896 to Sarah Lord Griffin. Their daughters are Mrs. Danford N. Barney, Jr., and Mrs. Charles H. McKinstry.

He was a man of great personal charm. His death is a great loss to his many intimate friends, to his students, and to the readers of this Journal.

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