

In the fall of 1878 the mining work was given up for the position of Assistant to the Professor of Geodesy and Descriptive Geometry at the Rensselaer Polytechnic Institute. This was the beginning of six years' work as an educator, years which afforded time for further study and for writing on technical subjects. Shortly after taking up his work as an instructor, an opportunity appeared to obtain a better position, that of Assistant to the Professor of Rational and Technical Mechanics, and, after several months' study in preparation, he obtained that position, which he occupied until the fall of 1880. While engaged in this work, one of those lasting friendships, which are of incalculable value to both parties, was formed with his immediate superior, Professor William H. Burr, now of Columbia University and a member of the Panama Canal Commission.

In January, 1881, Dr. Waddell was appointed Chief Engineer of Messrs. Raymond and Campbell, a firm of bridge builders whose headquarters were in Council Bluffs, Iowa, and began his work in bridge engineering, the specialty to which he has since devoted himself almost exclusively. This engagement was terminated in the summer of 1882, when he went to Japan to take up again the work of an educator.

Very early he began to write technical papers, many of which were published in the transactions of the "Pi Eta Scientific Society," now the Rensselaer Society of Engineers. Among them were "Railroad Drainage" and "Notes on Railroad Engineering," which are reprinted in this volume; "Wave Motion Applied to Light Houses" and "Compensating Trusses," which have not been preserved; and "Bridge Pins, Their Sizes and Bearings," "Highway Bridges" and others which were later incorporated in his book, "The Designing of Ordinary Iron Highway Bridges." These papers attracted considerable attention, and early in 1882, brought from the Japanese Government the offer of the Chair of Civil Engineering in the Imperial University of Tokyo.

July 13th, 1882, he was married to Miss Ada Everett, the only daughter of Horace Everett, Esq., of Council Bluffs, Iowa, and soon after they and his sister, Miss Josephine Waddell, sailed for Japan, where he was to take up his new duties.

The Imperial University was then in its infancy, hence the number of students was small and the work light. The spare time was employed in professional work and in the preparation of his first book, "The Designing of Ordinary Iron Highway Bridges," which was published in 1884 by Wiley & Sons of New York. The science of bridge building was then by no means so well advanced as it is now and very little had been written on the subject, hence the work, which was exceedingly full and thorough, was very widely accepted as a standard text-book and still had a steady sale only six years since, when, at the author's request, it was declared out of print. The theory and much of the practice which it contained are still sound, but iron is no