No. 8 • November 1998

Lehigh University
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Flyer

Alumin[i]um

In 1891 a noted metallurgist gave a lecture before the Franklin Institute in Philadelphia, calling his presentation "The Aluminium Problem." Referring to "this new metal," he identified the problem as falling into two parts: the isolation of aluminum, and the production of aluminum cheaply. [N.B. The American spelling, "aluminum," which was based on an old English form, will be used except where a quotation calls for the current British for "aluminium."]

At the time he was speaking, the problem of the production of this metal had been worked on for a hundred years or more, and quantities of it were being extracted from its ore, but not at a price that could be considered cheap. For example, an exhibition of jewelry at the Cooper-Hewett Museum in New York a few years ago featured among its displays an elaborate Victorian jewelry set: necklace, bracelet, pins, earrings—the works. This set was made of two valuable metals: gold and aluminum.

Yet a mere twenty years later the 11th edition of the *Encyclopaedia Britannica* could say in its article on the metal that "the uses of aluminium are too numerous to mention," one of those being the very mundane one of cookware.

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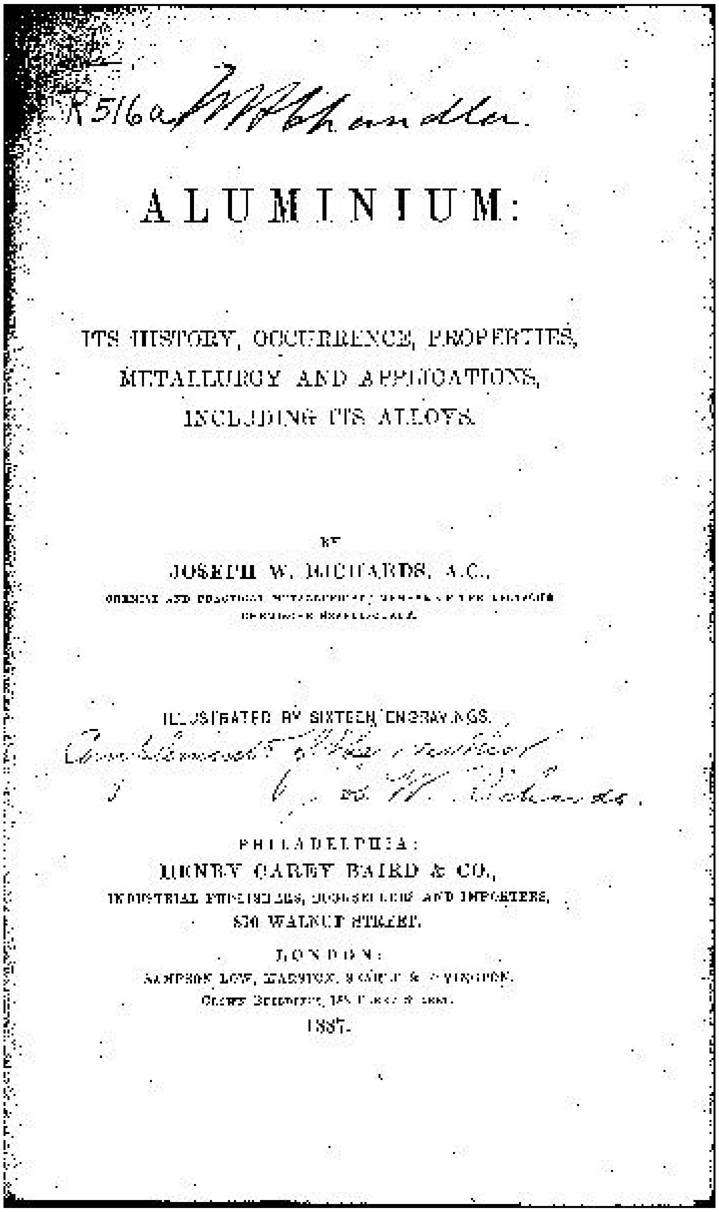
The man who spoke to the Franklin Institute in 1891, Prof. Joseph W. Richards, instructor in metallurgy, mineralogy and blow-piping at Lehigh University in Bethlehem, Pa., had a lot to do with the transformation of this metal from an exotic luxury to an everyday necessity.

Richards came by the English spelling "aluminium" honestly, having been born in Oldbury, Worcestershire, England in 1864. His father, also Joseph, was an engineer and builder who came to Philadelphia, when his son was seven years old, to work in metallurgy. Joseph Jr. was educated in the public schools of Philadelphia, graduating from Central High School in 1882 as the first in his class. He then enrolled in the less-than-twenty-year-old Lehigh University, where he studied chemistry. His senior thesis was entitled simply "Aluminium."

After graduation Richards spent a year working in industry, but was then brought back to Lehigh to join the faculty. He earned an M.S. degree from Lehigh in 1891, and in 1893 became the first person at the institution to earn the Ph.D., for a dissertation not on aluminum, but copper. (This dissertation as well as the bachelor's thesis are unfortunately now lost.)

With the exception of the 1897–1898 academic

JOSEPH W. RICHARDS



R516a W. H. Chandler

ALUMINIUM:

ITS HISTORY, OCCURRENCE, PROPERTIES, METALLURGY AND APPLICATIONS, INCLUDING ITS ALLOYS.

BY

JOSEPH W. RICHARDS, A.C.,

ILLUSTRATED BY SIXTEEN ENGRAVINGS.

PHILADELPHIA:
HENRY CAREY BAIRD & CO.,
INDUSTRIAL PUBLISHERS, BOOKSELLERS AND IMPORTERS,
810 WALNUT STREET.

LONDON:

1887.

THE FIRST EDITION OF RICHARDS' *MAGNUM OPUS*

year, which he spent as a student at Heidelberg and Freiburg, Germany, Richards taught continuously at Lehigh until his death in 1921.

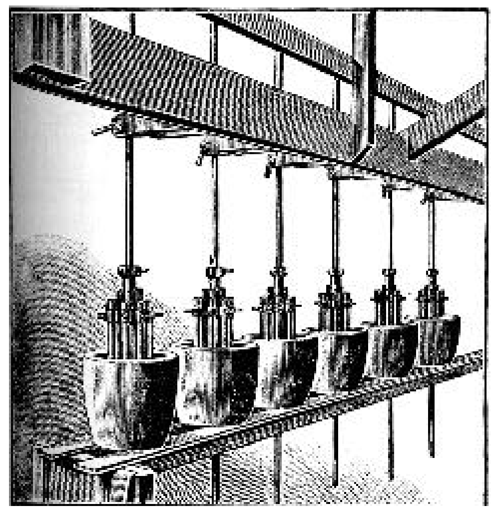
Richards' first significant publication was his *Aluminium: Its History, Occurrences, Properties, Metallurgy and Applications, including Alloys*, published jointly in Philadelphia and London in 1887. One copy in Special Collections (above) is inscribed to William H. Chandler, professor of chemistry at Lehigh and later head of its library. The work was reissued in 1890 and 1896, each time with extensive revisions.

Other publications by Richards include *Metallurgical Calculations*, which was published in Italian in 1909 as *Calcoli Metallurgici*, and in German in 1913 as *Metallurgische Berechnungen*. It also appeared in a number of American editions. Two articles of many by Richards are especially important: *The Engineering Uses of Aluminum* (1915), and *The Electometallurgical Revolution in the Iron and Steel Industry of Norway and Sweden* (1911). These and many other works by Richards are available in Special Collections.

It is due also to Richards' interest in the history of aluminum metallurgy, an interest that benefitted him in his own writings, that Special Collections possesses two rare early works on aluminum: Charles and Alexandre Tissier's *Recherche de l'Aluminium* and Ed. Uhlenhuth's compilation *Die Darstellung des Aluminiums . . .*, both published in 1858.

Thus it was that Lehigh University, an institution in the heart of iron and steel making country in the United States, and closely tied to that industry, harbored in its midst the scholar of a metal that has contributed not insignificantly to the economic decline of iron and steel.

— P.A.M.



AN EARLY ELECTRICAL DEVICE FOR PRODUCING ALUMINUM FROM BAUXITE (RICHARDS, 3RD ED. 1896. FIG. 35)

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Special Collections is pleased to have an exhibition of its books in the permanent gallery of the Lehigh University Art Galleries in the Zoellner Arts Center. The exhibition includes a volume of Audubon's *Birds of America*, along with eight other books illustrating the role of books in physical and intellectual exploration. The gallery is open from 11 a.m. to 5 p.m., Wednesday through Saturday, and 1 to 5 p.m. Sunday.

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Special Collections materials are available for research and consultation without restriction. For further information contact Philip A. Metzger, Special Collections Librarian or Marie Boltz, Special Collections Assistant. Reading room hours are Monday through Friday, 1 p.m. to 5 p.m. or by appointment. Telephone: (610) 758-4506; fax (610) 974-6471; e-mail: inspc@lehigh.edu.