

**THE ELECTRIC FURNACE;
ITS EVOLUTION,
THEORY AND PRACTICE**

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The electric furnace; its evolution, theory and practice by Alfred Stansfield

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ALFRED STANSFIELD

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THE ELECTRIC FURNACE

ITS EVOLUTION, THEORY AND
PRACTICE

BY

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WITH FIFTY-THREE ILLUSTRATIONS



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GENERAL

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P R E F A C E .

On my first visit to Canada, in 1897, I constructed an electric furnace and showed it in operation at a lecture on Canada's metals, which was delivered by the late Sir William Roberts-Austen. The application of electrical heat to Metallurgy has always interested me greatly and I hope that this little book may serve to instil this interest in others, and to help forward the application of electric smelting in a country which is so rich in water-powers and mineral resources.

This book originated in a series of papers, written about a year ago for the "Canadian Engineer," in which I endeavoured to present, as simply as possible, the principles on which the construction and use of the electric furnace depend, and to give an account of its history and present development.

The original papers were written at a time when the experiments of Dr. Haanel, at Sault Ste. Marie, were attracting public attention, and a large section of the book has been devoted to the consideration of these and other advances in the electro-metallurgy of iron and steel.

I wish to thank all who have helped me in the preparation of this book, including Dr. Haanel, whose valuable monographs have formed the basis of my chapter on iron and steel, and to whom I am indebted for additional information on this branch of the subject: Prof. J. W. Richards, who has taken an interest in my work, and whose book on "Metallurgical Calculations" has been of considerable assistance in writing the chapter on furnace efficiencies; Mr. E. A. Colby, who gave me information in regard to his induction steel furnace and a sketch for Fig. 25; Mr. Francis A. J. Fitzgerald, who supplied me with the data for Table X.; the editor of the "Electrochemical and Metallurgical Industry," who loaned the block for the frontispiece, and the International Acheson Graphite Company, who gave me information about their furnaces and lent the block for Fig. 40. I also wish to thank those of my personal friends who assisted me in the tedious work of proof-reading.

ALFRED STANSFIELD.

November, 1907.
McGill University, Montreal,

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