THE PHYSICAL CHEMISTRY OF THE METALS

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Trieste

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BY

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PREFACE

THERE is perhaps no field where physical chemistry is of more value than in the field of metallurgy and metallography. In the latter field its usefulness has been recognized almost from the first but in the field of metallurgy its application has not been so general. It is hoped that this translation may aid in making the value of chemical dynamics and equilibrium clear to the metallurgist and metallurgical student.

Such additions as have seemed necessary have been incorporated in the text and the numerical data have been revised to agree with the accepted values. I have deemed it advisable not to go into the recent investigations concerning the electron theory since the scope of the work did not seem to warrant an extended treatise on this subject.

The book has been changed from lecture to text-book form and the references shifted from the appendix to the body of the book.

My thanks are due to Mr. A. T. McPherson of the U. S. Bureau of Standards for reading the manuscript as well as for many valuable suggestions. I wish also to thank Dr. Edward Schramm, director of this laboratory, for his encouragement and cooperation in the work of translation.

REGINALD S. DEAN.

ST. LOUIS, MO.
March, 1919.

PREFACE TO THE GERMAN EDITION

THIS little book is the outcome of a series of lectures which I delivered in 1907, in the " Technischen Hochschule," at Aachen. Their purpose was to show the engineers of the Rhenish industrial district, before whom they were delivered, the use of chemical statics and to deepen their understanding of smelting operations and metallurgical processes.

I have endeavored, especially, to develop the principles of equilibrium clearly and so far as possible by the use of pertinent examples.

In the systematic survey of such a field new problems naturally arise and there is found in these lectures some heretofore unpublished data bearing on these problems, among which may be mentioned: the equilibrium between the various components of steel, the quantitative determination of amorphous carbon and graphite, and the investigation of the sulfatizing roast.

It has not been possible to consider here, all of the experimental matter relating to the physical chemistry of metals, but all fundamental questions have been treated rather thoroughly.

I wish to thank Dr. P. Goerens, for the preparation of the metallographs and photographs; Dr. Hemplemann, for his assistance in the preparation of the index, and Dr. Ratzbach, for the preparation of the diagrams.

THE AUTHOR.

AACHEN.
July, 1908.

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