

**A PRACTICAL MANUAL OF CHEMICAL
ANALYSIS AND ASSAYING: AS APPLIED
TO THE MANUFACTURE
OF IRON FROM ITS ORES, AND TO CAST
IRON, WROUGHT IRON, AND STEEL, AS
FOUND IN COMMERCE**

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A Practical Manual of Chemical Analysis and Assaying: As Applied to the Manufacture of Iron from Its Ores, and to Cast Iron, Wrought Iron, and Steel, as Found in Commerce by L. L. de Koninck & Ed. Dietz

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L. L. DE KONINCK & ED. DIETZ

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BY
L. DE KONINCK, DR. SC., AND E. DIETZ,
ENGINEERS.

EDITED WITH NOTES,
BY ROBERT MALLET, F.R.S., F.G.S., M.I.C.E.,
ETC.

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OF GREAT BRITAIN
AND IRELAND

PREFACE OF THE AUTHORS.

AMONG the numerous works of analytical chemistry which we have consulted, we have not met with a single treatise on the docimacy of iron in an exclusively industrial point of view. We have tried to supply this want by the publication of the present Manual, in which our aim has been to present in a concise form every item of information which we considered of use to chemists in ironworks, for whom our work is specially intended.

We are convinced that our labour will spare them long and wearisome researches, which they would often be obliged to make, through more general treatises often of little practical utility. We hope we shall assist in generalising the processes most in use, or at least

in causing the adoption of uniform methods of operation, the introduction of which would be especially valuable in cases of conflicting analyses.

If we succeed in our endeavour, we shall be sufficiently recompensed for the labour of the investigations we have undertaken.

LIEZ, 1871.

EDITOR'S PREFACE.

THIS small volume deals simply with the practical. It is the work of authors skilful and well acquainted with the analytical methods generally adopted in the great ironworks and factories of Belgium, France, and Germany, which, together with the apparatus and reagents there usually employed, they succinctly describe.

The work appeared to me a useful table manual, even to the accomplished assayer and analyst. It is also one, from the careful study of which, accompanied by the self-instruction derivable from a repetitive course of the operations described, any tolerably intelligent man, with some preliminary knowledge of inorganic chemistry and of manipulation, might become a practical iron-assayer. As much chemistry as that may now be acquired at many of our educational institutions, colleges, &c. Although our national notions and

standard of general education remain so defective, that engineers, mechanics, founders, manufacturers, and traders remain generally ignorant of chemistry and chemical analysis, the knowledge of which is yet so important to all, a clearly written handbook such as this (which deals with the vastest of our metallic industries—that of iron) cannot but prove serviceable now, and must become increasingly so with the progress of education.

I have, therefore, deemed the work of Drs. De Koninck and Dietz worthy of translation, and have added some notes which, it may be hoped, do not detract from its value.

Amongst these is one which may offer several useful hints (derived from personal experience) for the construction and arrangement of industrial and analytical laboratories in ironworks and like establishments. The formulæ, as well as the atomic and molecular numbers, I have left as I found them in the original work.

ROBERT MALLET.

LONDON, 3rd June, 1872.

GENERAL PLAN OF THE WORK.

WE shall give in a few words the plan which is adopted in the arrangement of this Manual.

The First Part contains a description of the reagents to be employed, and the experiments necessary in order to ascertain their degree of purity.

In the Second Part we give some practical suggestions relative to the apparatus employed in the laboratories attached to ironworks.

The Third Part treats of volumetric assaying.

The Fourth is devoted to the analysis of iron ores, slags, and scoriæ, by the wet method.

The Fifth Part treats of the assay of the same ores by the dry or docimastic method proper.