INORGANIC CHEMISTRY, THEORETICAL AND PRACTICAL, AN ELEMENTARY TEXT-BOOK

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649614103

Inorganic Chemistry, Theoretical and Practical, an Elementary Text-Book by William Jago

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

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INORGANIC CHEMISTRY

LONDON: PRINTED BY
SPOTTISWOODE AND CO., NEW-STREET SQUARE
AND PARLIAMENT STREET

INORGANIC CHEMISTRY

THEORETICAL AND PRACTICAL

AN ELEMENTARY TEXT-BOOK

DESIGNED PRIMARILY FOR STUDENTS OF SCIENCE CLASSES
CONNECTED WITH THE SCIENCE AND ART DEPARTMENT
OF THE COMMITTEE OF COUNCIL ON EDUCATION

BY

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LONDON
LONGMANS, GREEN, AND CO.
1881

PREFACE.

THE teacher of classes which are in connection with the Science and Art Department has to face special difficulties. In addition to his desire to give his students a thorough knowledge of their subject, and particularly those portions which have a special application to the industries in which they are engaged, he must necessarily remember that it is all-important to him that good results be obtained at the Department's examinations. Unless, therefore, he is prepared to sacrifice the true teaching of the subject altogether, he must perforce keep in view two ends that are distinct from each other.

The writer of a special text-book such as this encounters the same difficulty: there is, on the one hand, the strong temptation to treat the subject so as to give a sound elementary basis of knowledge, regardless of examiners and examinations; or, on the other, to study the idiosyncrasies of particular examiners, and simply to provide the material for answers to their questions.

The Science and Art Examination *in Chemistry* is unanimously conceded to be a fair one; aiming at no more than should be expected from students with even the limited opportunities of study which evening classes afford. This minimizes the difficulty of reconciling true teaching with examination preparation. In writing and preparing this little work, I have throughout borne in mind the particular sections of the subjects with which students are expected to be acquainted, and have endeavoured to clearly explain them. Where I have felt it necessary, I have introduced explanations of laws not specifically mentioned in the syllabus, but a knowledge of which, I am convinced, renders the subject-matter of that syllabus more easy of comprehension, and at the same time causes the elementary teaching of chemistry to be a surer foundation on which to base the further acquisition of a more extended knowledge of that science.

In explaining atomicity, the laws of combining proportions, and kindred parts of the subject, I have avoided mention of the possible modifications which may have to be made in our views on these points; but in order that the student may not be taught anything which is erroneous, I have indicated those bodies which are exceptions to the general rules. The definitions of atomic weight, &c., might have been made more concise, and apparently simpler, but to have done this would necessitate after-explanations which would appear contradictory; and there is no gain in teach-

ing a law by a simple statement which in the future has to be in great part unlearned.

The student should first read through each chapter, and the laboratory hints given at the close, before commencing his experimental work. Although intended primarily for students working under the supervision of a teacher, most of the experiments may be performed by the self-taught student. There are certain experiments which, according to the discretion of the teacher, may be omitted the first time the book is worked through, and afterwards performed.

Feeling that 'science is measurement,' and chemistry essentially so, I have, very early in the work, introduced the use of the balance: one weighing to about a centigram is sufficiently accurate, and is not very expensive; those made by Becker, and sold by Orme & Co., 65 Barbican, London, at *1l. 17s. 6d.*, answer admirably. These balances (No. 51), with 500 grams in the pan, turn with 15 milligrams. Their No. 31 set of weights of from 500 grams to a milligram, price *18s. 4d.*, should also be obtained.

Through the liberality of the publishers, I am enabled to thoroughly illustrate this work.

To the able teaching of Dr. Frankland at the Royal College of Chemistry, I am much indebted; and have frequently consulted notes of his lectures, taken by my friend Mr. Calvelly and myself.

For purposes of reference, I have used Miller's 'Elements of Chemistry,' Tilden's 'Introduction to