

**RECENT ADVANCES IN
PHYSICAL AND
INORGANIC CHEMISTRY**

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Recent Advances in Physical and Inorganic Chemistry by A. W. Stewart

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RECENT ADVANCES IN PHYSICAL AND INORGANIC CHEMISTRY

BY

A. W. STEWART, D.Sc.

LECTURER ON ORGANIC CHEMISTRY IN THE UNIVERSITY OF BELFAST
FORMERLY 1851 EXHIBITION RESEARCH SCHOLAR AND CARNEGIE RESEARCH FELLOW

WITH AN INTRODUCTION BY
SIR WILLIAM RAMSAY, K.C.B., F.R.S.

SECOND EDITION



WITH DIAGRAMS

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TO
M. I. M.

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PREFACE TO THE FIRST EDITION

UNTIL a few years ago, most chemical text-books were written on the lines laid down by Regnault: the advanced work differed from the elementary manual in the amount of matter which it contained rather than in the manner in which the material was handled. In recent years, however, a certain change has come over chemical literature; and this has been specially marked in the organic branch of the subject. In place of making the advanced book merely an expansion of the elementary one, some writers have endeavoured to break away from the tradition and write series of essays upon various special branches of a subject instead of attempting to force the theoretical and systematic portions into a rigid mould. The present work is an attempt to treat some parts of inorganic and physical chemistry on these lines.

The volume is to some extent a complement to my *Recent Advances in Organic Chemistry*. Like its predecessor, it deals for the most part with researches which have been carried out in the past two decades; but here also no attempt has been made to adhere rigidly to this period when it was desirable to begin the history of a subject at an earlier point. The chief aim kept in view during the preparation of the work was to avoid as far as possible those themes which have been frequently and fully dealt with in text-books; in this way it is hoped that students will find a certain amount of novelty in the subject-matter, whatever may be thought of its treatment.

In a book of this kind, every reader will doubtless detect the omission of some subject in which he is specially interested. It is obviously impossible to include a title of the researches which have been carried out in these two branches of chemistry during even the last ten years; and many of the most important investigations have been reluctantly omitted on the ground that a full treatment of them would have occupied more space

than could be spared, while a partial treatment would have served little purpose. As far as possible, the chapters have been equally divided between inorganic and physical chemistry.

In conclusion, I desire to thank Sir William Ramsay, K.C.B., for the Introduction which he has written for the book, as well as for suggestions and encouragement. I am also greatly indebted to Professor Collie, F.R.S., and Professor Inglis, who have read the manuscript, and given me valuable criticism; to Assistant-Professor Wilmore, for suggestions with regard to some chapters; and to Assistant-Professor Smiles and Mr. H. T. Clarke, for their trouble in reading the proof-sheets.

A. W. STEWART.

UNIVERSITY COLLEGE, LONDON,
September, 1909.

PREFACE TO THE SECOND EDITION

IN the present edition the material has been rearranged, so that the volume may now roughly be divided into three sections. The first of these, Chapters I. to VI., deals with problems which may be classified as physico-chemical; the next five chapters are concerned with subjects belonging to inorganic chemistry; while the last three chapters of the book give a summary of the phenomena of radioactivity.

Where necessary, the chapters of the previous edition have been rewritten and brought up to date, which in some cases has entailed a very considerable amount of alteration. One chapter of the first edition has been omitted, and in its place an account of the pseudo-acids has been inserted.

As before, footnotes are indicated by asterisks, and references to the literature by numbers; in this way the reader will be saved any unnecessary reference to the foot of the page.

I have again to thank my reviewers for their encouragement and suggestions. Most of the latter have been embodied in the new text.

In the preparation of this edition I have been indebted for assistance to Professors Collie, Inglis, and Wilsmore, and Messrs. Austin, Clarke, and Wright.

A. W. STEWART.

THE SIR DONALD CURRIE LABORATORIES,
THE QUEEN'S UNIVERSITY OF BELFAST,
November, 1911.

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