

**QUALITATIVE CHEMICAL
ANALYSIS AND
LABORATORY PRACTICE**

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Qualitative chemical analysis and laboratory practice by T. E. Thorpe & M. M. Pattison Muir

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THE PALACE



PREFACE.

THIS BOOK is divided into two distinct parts. In PART I. the student is instructed to perform a series of experiments, in order to familiarise himself with the leading properties of the chief non-metallic elements, and of the principal substances which they form by their mutual union. This portion of the book is, of course, supplementary to the work of the lecture-room, and should be studied in connexion with a manual in which the origin, properties, and relations of the various bodies are fully described.

The experiments are generally of a very simple nature, and are strictly illustrative of the chemical and physical properties of the substances to which they refer. To each lesson is appended a short statement or summary of the facts which that lesson is intended to convey. The object of these *resumés* is to afford the student precise ideas of the nature and extent of the information which he has gleaned from the experiments he has performed. The advantages of this preliminary course are manifest. Not only does the student become practically familiar with the properties of a large number of chemical agents, but he acquires opportunities for the exercise of manipulative skill and dexterity in the construction and arrangement of appa-

ratus, which the few and simple operations of ordinary qualitative analysis are not so well fitted to give. In arranging this course of laboratory practice we have sought to cover the Scheme of Practical Instruction sketched out in the Syllabus of the Science and Art Department.

PART II. treats of Qualitative Analysis; it is divided into five sections.

In the first section the general preliminary operations of testing are described, such as the employment of flame reactions, the use of the Bunsen flame, the spectroscope, and so forth.

The second section treats of systematic qualitative testing. The wet and dry reactions of each of the more commonly occurring bases and acids, inorganic and organic, are first described, after which a synopsis of analytical methods is given.

The third section gives the special tests for the rarer elements, and shows where they may be expected, and how they may be separated, in the ordinary course of analysis.

The fourth and fifth sections have been added mainly for the use of medical students.

We have endeavoured to make this book as practical as possible. The methods of analysis are, of course, mainly founded on established and reliable processes. Still the book will be found to contain a number of novelties both in

the way of shortening the course of systematic testing and in the recognition of bodies by means of special tests. We have hesitated, however, to adopt new methods, unless experience has shown them to be preferable to the older ones. All the experiments described in the First Part have been carefully tried ; and with the exception of certain of the separations of the rarer metals and organic poisons, which, however, will be recognised as well-established processes, all the operations described in the Second Part have been repeatedly tested by ourselves and by students in this Institution.

Our thanks are due to MR. DUGALD CLERK and to MR. STEPHEN MILLER for the attention they have bestowed on the woodcuts.



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