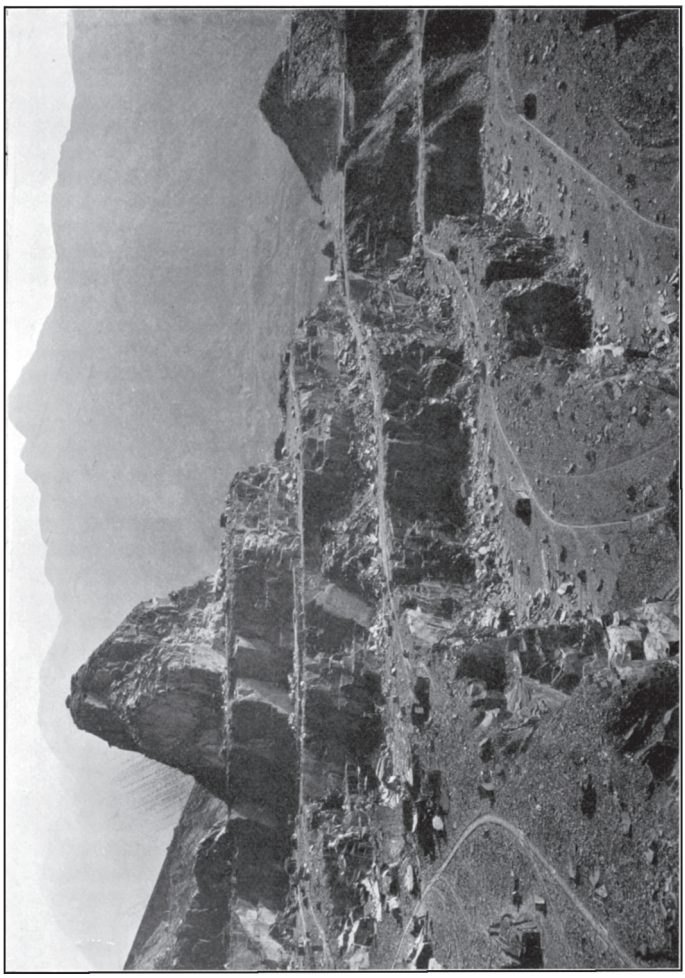
A METHOD OF TEACHING CHEMISTRY IN SCHOOLS



Slate Quarry at Llanberis.

A METHOD OF TEACHING CHEMISTRY IN SCHOOLS

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PREFACE.

IN this little book we have endeavoured to work out a new method of teaching elementary chemistry in schools—a method based entirely upon the principle of working from the known to the unknown. Although not actually indicated in the book, it is intended that every experiment should be suggested and carried out by the pupils, the part of the teacher being only to guide and supervise. At the same time the teacher must reserve the right of selecting the experiment to be done by the class when several have been suggested, and, in this way, preventing time being wasted in trying experiments which would be of little value to the children and which would break the sequence of their work.

It will be found that by following this method of procedure, the class can work along the main lines suggested by us, although naturally the work must vary considerably in the hands of different teachers. When working along heuristic lines, every teacher knows that questions con-

stantly arise which the children cannot answer until they have a wider knowledge of the subject. These questions are generally put on one side at the time, with the result that they are forgotten. We insist that the children should write these questions in note-books kept in the laboratory for the purpose, so that they can always be referred to, and by being kept in this way constantly in the memory of the children, these questions will prove not only a valuable stimulus to further endeavour, but also form a basis for future investigation when the children know more about the subject. These question-books will be found a source of great interest, and will prevent much waste of time, as the children will frequently, while waiting for a solution to evaporate or a crucible to cool, try to answer some question in their books to which they think they have found a clue.

Another point in this course we wish to emphasise is that, starting from a few familiar substances in every-day use, the children build up step by step their knowledge of many chemical substances which they have themselves prepared and of which they have found the properties. Only in a very few instances are they given a new substance, and even then it is introduced in connection with their work from a historical standpoint, or because it is used in a manufacturing process. In this way the children are taught to realise that the science is intimately connected with their every-day life. It must

be clearly understood that at first the experiments are not regarded entirely from the chemical standpoint, the object being mainly to cultivate powers of observation and dexterity in manipulation. At first also the children are allowed to recognise a substance from one or two properties; as their knowledge increases, however, they will themselves realise that several confirmatory tests are necessary. Although, from the beginning of the course, chemical nomenclature is used, the terms are names only to the children and convey no idea of composition. Symbols must not on any account be introduced, but at the end of the course the class will be ready to understand the principles underlying the atomic theory.

Throughout this course we have suggested that the children should keep a specimen of each substance they have themselves prepared, and that they should use these collections for purposes of identification and comparison.

It is advisable to keep these specimens in small test-tubes or specimen-tubes about two inches in length. To make them easy of access, and to prevent confusion, these tubes, carefully labelled, should be kept in racks fitted in convenient spaces on the laboratory walls, a rack being provided for each set of workers.

These racks can be made quite inexpensively of a piece of wood about two feet long and a foot wide, from which project ledges an inch wide at intervals of four inches. At $1\frac{1}{2}$ inches above each ledge there should be

a rail of stout wire, or a row of clips, to keep the tubes in position and allow the labels to be seen.

A rack of this size will hold about one hundred tubes, and the contents of the tubes can be viewed at a glance. It will be found that the endeavour to get good specimens for the collections will produce a spirit of healthy rivalry in the class, and prove an excellent stimulus to careful and painstaking work.

A. M. H.
R. S.

October, 1906.

CONTENTS.

CHAPTER I.

CHAPTER II.

CHAPTER III.

CHAPTER IV.

CHAPTER V.

PLATES.