NEW BOOKS.

HEUMANN'S ANLEITUNG ZUM EXPERIMENTIREN. VON PROF. DR. O KÜHLING, Dritte, Auflage. Verlag von Friedrich Vieweg und Sohn. 1904. Price, 19 marks.

The old friends of this excellent book will be delighted to see it in its present form and will find in it much that is new. Those unacquainted with it will be amazed at the abundance of good things which fill its 818 pages.

Heumann died before the second edition was exhausted. He never knew how deeply his efforts in the field of experimental chemistry were appreciated. However, his name will live in the annals of chemical science not only because of the real worth of this volume, but also because of his participation in the snythesis of indigo.

The editor of the present edition, on entering upon his task of revision, did not purpose making any changes in the essentials of the text beyond introducing such experiments as represented the development of experimental inorganic chemistry within the last decade or two. He was, however, soon convinced that the material from which he would be obliged to select was so abundant, so rich and very important that it would be unwise to omit any of it The wonderful strides in physical chemistry, in electrochemistry in chemistry at elevated and at low temperatures had brought to light such a mass of results of the highest importance and interest that he was constrained to take extensively from them. The new experiments, described in much detail, have been chiefly drawn from the domain of electrochemistry. There are also many other made possible through the use of liquid air. Through the electric furnace the preparation of carbides has been presented, and by Goldschmidt's process the methods of obtaining various metals have been outlined. The experiments from the field of physical chemistry are not so numerous, simply because it is rather difficult to present to large audiences the demonstrations which are most convincing. The experiments of this nature, which do appear, have been made possible by the use of projection apparatus and the reader will find most explicit directions as to the handling of such apparatus in lecture work, as well as wholesome advice as to the care and application of the electric current in connection therewith.

The book contains many experiments contributed by such masters as Emil Fischer, Landolt, Volhard, Erdmann, and others. It thus becomes the product of many minds and gains in value.

The thanks of every teacher of experimental chemistry are due Professor Kühling for the admirable manner in which he has performed his duties as editor. EDGAR F. SMITH.

THE ELEMENTS OF CHEMISTRY. By M. M. PATTISON MUIR. Philadelphia: P. Blakiston's Son & Co., 1904. xiv + 554 pp. Price, $3.50.

In this book certain features of an individual character attract attention. The order in which the subject is presented and the apportionment of space are as follows: The first five chapters (104 pages) are introductory and deal with homogeneous substances, the nature of chemical change, the laws of combination, atomic weights (by tacit assumption of Avogadro's hypothesis), equations, acids, basic and acidic oxides, salts, and chemical nomenclature. H = 1 is used as the basis of atomic weights. The two Following chapters (40 pages) deal with oxygen and hydrogen, water and hydrogen peroxide. Chapter VIII (31 pages) covers nitrogen, nitric acid, the oxides of nitrogen, the dissociation of nitrogen peroxide, ammonia, hydrazoic acid, and hydrides in general. The subject is surely too difficult a one for this early stage. Chapter IX (52 pages) treats of sulphur, hydrogen sulphide, the oxides of sulphur, sulphuric acid and sulphates. Space is also found for the allotropy of sulphur and of oxygen, relation of acidic oxides to acids, the theory of ionization, normal and acid salts, acid radicals, the general relations of the basicity of acids and the composition of basic oxides to the composition of the salts derived from them, interactions of acids and salts in general, incomplete reactions between acids and salts in solution, theory of chemical equilibrium, the idea of equivalent weights of acids, the relative activity of acids and several methods of estimating it, the strength of bases, the interactions of salts with strong and weak acids, the ionic explanation of the strengths of acids and ases (7 pages), double decomposition, double salts, comparison of basic and acidic hydroxides, chlorides of sulphur, and, finally, issociation and the calculation of its amount from vapor denities. There are about 6 pages occupied by groups of illustrative quations and tables of formulae. Chapters X to XIV (86 pages) over the metals of the alkalies, iron, manganese and chromium,