

It is now necessary to inquire why Folin's method gives results with urine, which, so far as present knowledge goes, fulfil the conditions for the accurate analysis of urea in urine; while others, such as that of Benedict and Gephart, in which the composition of the hydrolyzing agent is apparently much more constant, and the temperature is kept accurately uniform, produce a decomposition of substances other than urea, while Folin's method attacks that compound alone.

In the mixture employed by Folin at 150° , one has a system containing a saturated solution of magnesium chloride. In this solution, both by reason of the temperature, and of the great concentration of the salt, one has the solubility of hydrochloric acid decreased to a minimum. Furthermore, and probably the most important factor in Folin's method is that at the same time any hydrochloric acid present in the mixture is also dissociated to its minimum extent. The system, however, is such that once the hydrogen ions are removed by the neutralization of the acid a sufficient amount of acid is present, either in the solution, or in the atmosphere of the reaction flask or in the condenser to still provide hydrogen ions for further neutralization by the ammonia formed. One has therefore a hydrolyzing agent which while actively little acid, with the shifting of the equilibrium due to the entrance into the system of alkali, is able to furnish more than sufficient acid for any neutralization and hydrolysis that may be needed. The magnesium chloride has also the very convenient property of keeping the solution at a temperature very favorable to the speedy hydrolysis of the urea.

Summary.

Benedict and Gephart's method cannot be used for the accurate determination of urea in the urine. Urea is quantitatively decomposed, but at the same time uric acid and creatinine yield ammonia by this method. To the decomposition of these substances is due the high results which these authors have obtained when their method has been compared with that of Folin.

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NEW BOOKS.

Quantitative Experiments in General Chemistry. By JOHN TAPPAN STODDARD.
New York: Longmans, Green and Co. 1908. pp. vii + 115. Price, \$1.00.

The nature of this book is sufficiently indicated by its title. It contains almost all the quantitative experiments that have previously been found workable in the hands of beginners, and a great many additional ones. Where the experiments are old, the method is often more or less changed. A very wide choice of experiments illustrating the same point is usually given. Thus, under composition of gases, we have experiments with

hydrogen chloride, ammonia (three ways), hydrogen sulphide, sulphur dioxide, and carbon dioxide. Modes of determining the composition of the oxides, sulphides, halides, nitrates, sulphates, and carbonates of a large number of metals are described. The directions are clear and explicit.

In his preface, the author speaks of "a course which should emphasize the quantitative relations by means of a comparatively large number of determinations," and adds, "this collection of experiments may serve as a laboratory guide for such a course, and also furnish suggestions for the enrichment of the first year's work." Chemists are now unanimous in admitting that quantitative experiments, sufficient adequately to illustrate the quantitative laws, are a necessity. Few feel that time can be spared for the performance of more than the half dozen exercises required for this purpose. There is a real difference of opinion, however, in regard to the epoch in the course at which the quantitative experiments may most fitly be introduced. Professor Stoddard has done a genuine service in working out experiments covering so wide a range. There is hardly a chapter in the text-book in connection with which, with the help of experiments selected from his book, the illustration of the laws might not now be taken up.

ALEXANDER SMITH.

A Text-Book of Physics. By A. WILMER DUFF, KARL E. GUTHE, WILLIAM HALLOCK, E. PERCIVAL LEWIS, ARTHUR W. GODSPEED, ALBERT P. CARMAN, R. K. McCLUNG: Edited by A. WILMER DUFF. Philadelphia: P. Blakiston's Son and Co. 1908. pp. 666. Cloth. Price, \$2.75 net.

This is a novel experiment in text-book writing. Each of the seven sections was written by a single author, but submitted to all the other contributors and to the editor before reaching its final form. This method could not, however, produce complete uniformity either in style or in scientific adequacy. There are several weak places in the work, notably in the paragraphs on electrochemistry, which are vague and sometimes quite erroneous. Nevertheless, on the whole, the work is accurate, well balanced, and practical, and it will doubtless take a place in the first rank of college text-books in physics.

GILBERT N. LEWIS.

Introduction to the Rarer Elements. By PHILIP E. BROWNING, Ph.D., Yale University. 2nd Edition. New York: John Wiley and Sons. Price, \$1.50.

This little volume, covering 206 pages, should be studied by every student of chemistry. Those who carry out conscientiously the isolation of the various elements or derivatives of them, or, let us say one-half dozen of them, will find themselves in the possession of a mass of most interesting facts which can be acquired by no amount of reading or consultation of learned treatises. A respect for inorganic chemistry and an appreciation of its treasures cannot be better obtained than by performing with one's own hand some of the experimental work here offered by Dr. Browning. We may differ with him relative to some of the schemes of