tions and could be used to characterize the cellulose, but in the presence of wool, the formation of oxycellulose is more difficult than the transformation of cellulose into carbohydrates.

EDM. JANDRIER.

Repairing Beckmann Thermometers.—It often happens that a Beckmann thermometer is broken, leaving the inner tube, containing the mercury, intact.

I have repaired such breaks as follows:

Select a piece of glass of the same kind as is used in the thermometer (usually Jena glass) of sufficient length to take the full length of the scale, plus the length necessary to make the joint come below the scale. This is necessary in order to avoid a joint opposite the scale which would make the reading inaccurate or impossible.

Cut off the broken end at the proper point, and wrap the inner tube with a piece of asbestos three or four inches long, tying it on with a piece of wire. Slide the asbestos down until the middle of it is opposite the place where the joint is to be. Slip the large tube over the inner tube and make the joint with a small flame from a blast-lamp. Cool, and dissolve the wire from the asbestos in a suitable acid. Wash out the asbestos, and dry with alcohol and ether. Insert the scale and put on the cap.

The thermometer is practically as good as new if the joint has been properly made. Anyone who can make a *good* joint can repair a thermometer in this way.

J. C. CHRISTENSEN.

NEW BOOKS.

INDICATORS AND TEST-PAPERS: THEIR SOURCE, PREPARATION, APPLICATION AND TESTS FOR SENSITIVENESS. A Résumé of the Current Facts regarding the Action and Application of the Indicators and Test-papers which have been Proposed from Time to Time, and are in Present Use in Chemical Manipulations, with a Tabular Summary of the Application of Indicators. Designed for the use of Chemists, Pharmacists, and Students. BY ALFRED I. COHN, PH.G. New York: John Wiley & Sons. 1899. pp. ix + 249. Price, $2.00.

A practically very useful compilation of the methods of preparation, uses, and tests for a very large number of indicators and

test-papers is given. The work is, unfortunately, defective in its theoretical discussions. While a very brief and not altogether satisfactory chapter is given on the theory of indicators as based on the modern theory of solutions, no use is made of the theory in other parts of the book. Statements with regard to individual indicators are almost exclusively from the purely empirical standpoint.

The theory of F. Mohr, on p. 19, can scarcely be considered otherwise than as a historical curiosity and would have been better omitted. WILLIAM A. NOYES.

A COURSE IN QUANTITATIVE CHEMICAL ANALYSIS, GRAVIMETRIC AND VOLUMETRIC. BY NICHOLAS KNIGHT, A.M., Ph.D., New York: A. S. Barnes & Co., 1899. x + 110 pp. Price, 80 cents.

This book is offered as a course which "will constitute a sufficient basis for advanced work in organic chemistry, including the ultimate analysis of substances by combustion, and for industrial chemistry which requires quantitative methods." After a brief general introduction in regard to the care of the balance, precipitation, filtering, etc., the author devotes fifty pages to the methods of gravimetric analysis.

The choice of examples for practice is not all that can be desired. In the preliminary operations the directions given are not adequate for a beginner in analytical chemistry, neither in detail nor in substance, and do not form a sufficient foundation for the student to continue with such complex analyses as those of smaltite, tetrahedrite, and granite. The schemes for the analysis of these more complex substances would be much better suited to qualitative than to quantitative analysis, no attempts having been made to utilize the more recent and more special methods. The directions are often arbitrary and always mechanical, lacking in clearness, and with no attempt to explain the course of any reaction. Even if the student were entirely familiar with his general chemistry, he would have much trouble in trying to learn the whys and wherefores of analytical methods.

Twenty pages are devoted to volumetric analysis in the same arbitrary mechanical style. It would be useless to criticize this part of the book as well as the *seven* pages devoted to the analysis of drinking-water inasmuch as the whole of it shows a woeful lack of intimacy with the subject. The less said of the English in the book, the better; it is inexcusable.