

1 or 2 cc. of a saturated solution of this salt. The solution is then acidified with acetic acid and agitated for half a minute. This treatment completely precipitates the cobalt at once, together with a small amount of nickel, if this was originally present in large amount. The solution is now filtered and tested for nickel with ammonium sulphide. A black precipitate or coloration indicates nickel, which may be confirmed with the bead test.

Since the precipitate obtained in this method of precipitation is extremely fine, it is quite difficult to filter clear unless the solution containing it be previously shaken with 5 to 6 grams of some insoluble powder, preferably barium sulphate, when filtration is not at all difficult.

The modification of Fischer's method above described affords probably the most rapid process for the complete removal of cobalt from nickel solutions where it is desired to test for the latter element by reactions with which cobalt interferes.

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### NEW BOOKS.

A TEXT-BOOK OF CHEMICAL ARITHMETIC. By HORACE L. WELLS, M.A., Professor of Analytical Chemistry and Metallurgy in the Sheffield Scientific School of Yale University. First edition, first thousand. New York: John Wiley & Sons. London: Chapman & Hall, Limited. 1905. 12mo. vii + 169 pp. Cloth, \$1.25.

Although intended especially for students of quantitative analysis, this little book may be read with profit by chemists generally. It gives a clear discussion of the errors of weighing, etc., and the resultant errors in calculations in which the figures found are involved. The futility of carrying arithmetical processes to uncertain decimal points is pointed out, and in this connection abbreviated methods of multiplication and division are explained. Part II shows how to calculate atomic weights, compositions from formulas and *vice versa*, factors and the results of gravimetric analyses in simple cases and also where mixtures and indirect methods are involved. Parts III and IV give discussions of calculations relating to gases and to volumetric analysis, respectively. The latter includes the standardization and adjustment of volumetric solutions. Throughout the book are numer-

ous problems, and the answers to these, together with useful tables, are found in the appendix.

C. E. WATERS.

MILK, ITS PRODUCTION AND USES, WITH CHAPTERS ON DAIRY FARMING, THE DISEASES OF CATTLE, AND ON THE HYGIENE AND CONTROL OF SUPPLIES. By EDWARD F. WILLOUGHBY, M.D., D.P.H. London: Charles Griffin & Co. Philadelphia: J. B. Lippincott Co. 1904. 12 + 259 pp. Price, \$2.00.

The general scope of this book and the object of the author are well indicated by the following portion of the preface: "Though the whole of the chapters will appeal equally to no man save, perhaps, the medical officer of health of a county, it would be well if every farmer and dairyman knew the ways and means by which milk may become a factor in the spread of disease, and had a rational conception of the nature of milk analysis. The analyst would be better able to draw sound conclusions from his estimations, if he understood the influence of breed, food and season on the composition of milk, and in this, as in so many subjects, the medical man is bound to endeavor to 'know something of everything.'" The book contains little that appeals directly to chemists. The treatment of the subject of milk analysis is far from complete. In stating the average composition of cows' milk, the author gives the fat as 3.8 per cent. and casein and albumin as 3.7 per cent. The relation of fat and proteids indicated by this average analysis does not represent American results, since in the United States milk containing 3.8 per cent. of fat would average more nearly 3.2 per cent. of proteids. Then the average analysis stated by the author gives casein as 3.3 per cent. and albumin 0.4 per cent. The normal relation should be nearer 2.50 per cent. of casein and 0.7 per cent. of albumin. The book appears, on the whole, to be carefully written and will be found of special value to veterinarians and health officers.

L. L. VAN SLYKE.

METHODS OF CHEMICAL CONTROL IN CANE-SUGAR FACTORIES. BY H. C. PRINSEN GEERLIGS, Director of the West Java Sugar Experiment Station. Published by Norman Rodger, Altrincham (Manchester), Price, 3s. 6d. net.

This little work of 90 pages is in large part the English version of a bulletin of methods issued originally in Dutch by the West Java Sugar Experiment Station. The English text first appeared in 1904 in the *International Sugar Journal* and is now