of the latter being dealt with to some extent in the book as well as ores). Again, in the case of gravimetric phosphorus determinations, the author always finishes by weighing the ammonium phosphomolybdate on a tared Gooch crucible, an admittedly accurate method, but no reference is made to the exact and easy method of finishing by conversion to lead molybdate with which a student will often get better results than by weighing the phospho-molybdate, owing to the ease with which the precipitate can be handled and ignited, and the fact that the phosphorus equivalent is even smaller than in the former method. In the case of molybdenum, again, no reference is made to gravimetric assay by determination as lead molybdate.

With regard to the additional matter in the appendix, it may be pointed out that in what is described as "Watt's" method for determining tungsten in ores, a certain amount of tungsten is almost invariably retained in the residues under the conditions of opening up, when using ammonia for extraction, whether the ore be completely opened up or not, and that for the re-treatment 25 per cent. caustic soda solution should be used, the residues being digested on the hot plate until completely decomposed, and the small remaining amount of tungsten estimated by the usual mercurous nitrate method, in place of the aqua-regia and ammonia re-treatment. With some types of tungsten ore, especially those containing titanium minerals, a low result would be obtained by Watt's method as described.

In the note on uranium on page 376 of the appendix, it is stated that a yellow filtrate from the ammonium uranate indicates incomplete precipitation. This is true, but it might be pointed out that the solution need not be noticeably yellow to hold sufficient uranium (especially if the bulk has increased appreciably by the addition of washings) to render the result of a 1 or 2 per cent. carnotite ore appreciably low; and that it is safer to treat the filtrate in any case by acidifying slightly, boiling, and precipitating again with ammonia, using water perfectly free from carbonic anhydride throughout, and allowing to settle and examining the bottom of the flask after five or ten minutes for any further small quantity of ammonium uranate. On the same page there is a printer's error in line 22 (U_2O_3 , instead of U_3O_8) and repeated on line 28; but speaking generally the book is well and clearly written, and contains but few clerical or printer's errors.

BENEDICT KITTO.

COCOA AND CHOCOLATE: THEIR HISTORY FROM PLANTATION TO CONSUMER. By A. W. Knapp. (London: Chapman and Hall, Ltd. 1920.) Price 12s. 6d. net.

Mr. Knapp, research chemist to Messrs. Cadbury Bros., has written an entertaining but thoroughly well-informed work on the history, cultivation, and manufacture of cocoa. In a happy vein he discourses of the Spaniards' discovery of the chocolate beverage in Mexico and of the dainty seventeenth century chocolate houses in London. Even the statistical matter is enlivened by a ready imagination and by the use of diagrams. Illustrations, maps, and diagrams are alike admirable.

For the general reader this is quite the best book that has yet appeared, and the technical reader will find much of interest, including frequent references in the text to scientific and agricultural publications, and an excellent bibliography. Mr. Knapp is equally at home on the plantation and in the factory; on the Gold Coast or in the West Indian Islands. In his vivid descriptions of the orchards, the collection of pods, and curing of beans

he has succeeded, as no previous writer has done, in conveying something of the remarkable charm of the cocoa grove. A humorous dialogue between a planter and manufacturer brings out the special qualities of cocoa beans desired by the latter. The rapid growth of the cultivation of cocoa by peasant proprietors on the Gold Coast is described; it constitutes one of the most remarkable chapters in the chronicles of tropical agriculture.

We offer two slight criticisms. The illustration of a criollo cocoa-pod, given on p. 27, is scarcely typical, and the least satisfactory section of the book is, perhaps, that on cocoa fermentation. Following the description of the alcoholic fermentation with yeasts, no allusion is made to the important part played by acetic acid bacteria in the normal course of fermentation, if this is prolonged beyond the third or fourth day.

OBITUARY.

LEONARD PHILIP WILSON.

By the sudden and unexpected death of Leonard P. Wilson on October 16, after an operation for appendicitis, applied chemistry is deprived of an investigator of the first rank, and the societies with which he was associated have lost a valued member.

Mr. Wilson, who was born in 1879, was educated at St. Dunstan's College, Catford, and gained a Clothworkers' Scholarship to the City and Guilds' Central Technical College, South Kensington, where he became Leathersellers' Research Fellow and Associate in 1899 and Fellow in 1912. After holding appointments with Messrs. Wilkinson, Heywood, and Clarke and the Vacuum Oil Company, he joined Messrs. Courtaulds, Coventry, as chemist in 1906, and at his death was the chief chemist on the staff. The development of the artificial silk industry and of Messrs. Courtaulds shows the part played by Mr. Wilson in the investigation of the problems of the industry. He was the author of numerous patents and papers in connexion with artificial silk and other subjects, and served on the Patents Committee of the Association of British Chemical Manufacturers. Mr. Wilson took great interest in the welfare of local scientific societies, and as chairman of the Birmingham Section of the Society of Chemical Industry he won the respect and admiration of all the members. The value of his services was recognised in his appointment last year as one of the vice-presidents of the Society.

R. S. MORRELL.

PUBLICATIONS RECEIVED.

THIRD REPORT ON COLLOID CHEMISTRY AND ITS GENERAL AND INDUSTRIAL APPLICATIONS. *British Association for the Advancement of Science. Department of Scientific and Industrial Research.* Pp. 151. (London: H.M. Stationery Office. 1920.) Price 2s. 6d.

PLANTATION RUBBER AND THE TESTING OF RUBBER. By G. STAFFORD WHITBY. *Monographs on Industrial Chemistry*, edited by Sir E. THORPE. Pp. 559. (London: Longmans, Green and Co. 1920.) Price 28s.

HOO CANNEL. By F. S. SINNATT and M. BARASH. *Bulletin 6, The Lancashire and Cheshire Coal Research Association*, 1920. Price 1s.