ABSTRACTS OF PAPERS PUBLISHED IN OTHER JOURNALS.

FOOD AND DRUGS ANALYSIS.

Composition of Canadian Bran and Shorts. F. T. Shutt and R. R. Dorrance. (*Trans. Roy. Soc.*, Canada, 1918, **12**, 27-29.)—In the manufacture of Canadian "Government Standard Flour" since April, 1918, 196 pounds of flour must be milled from 258 pounds of spring wheat, whereas prior to this date this weight of flour was obtained from about 270 pounds of wheat. This rise in the percentage of extraction, as would be expected, is reflected in the chemical composition of the bran and shorts, and analyses are recorded comparing flours of 1903 and 1917 with present-day samples, which go to show that the 1918 bran is approximately 0·75 per cent. richer in protein, 0·5 per cent. richer in fat, and contains 1·5 per cent. more fibre, while the 1918 regulation shorts are about 1·75 per cent. richer in protein, and contain 2·5 per cent. more fibre. No digestion experiments have been made with the 1918 products, but so far as cattle are concerned the differences will probably prove but slight. The limits of variation in the 1918 regulation bran and shorts are less than those found in previous years for this class of material.

The (Canadian) legal standards for bran and shorts are as follows:

	Bran, Per Cent.	Shorts, Per Cent.
Protein not less than	14	15
Fat not less than	3	4
Fibre not more than	10	8

(*C.f.* ANALYST, 1918, **43**, 53.) H. F. E. H.

Estimation of Morphine in Complex Products. A. Tingle. (*Amer. J. Pharm.*, 1918, **90**, 788.)—The author's object is to estimate morphine, not only in simple powders or tablets, but in pills of complex composition. Much material for examination has been of Asiatic origin (pills, etc.), and could not be dealt with by simple extraction methods such as that of Williams (*Amer. J. Pharm.*, 1914, **86**, 308-312). The difficulty of getting a filterable solution in the case of pills cannot be

overcome when alcohol, acids, lime, or lead acetate are employed; but in barium hydroxide the author has found an effective reagent which facilitates filtration and completely dissolves any morphine, no matter in what form it is present. The subsequent separation of morphine in a pure form suitable for titration can then be affected by Williams's method (*loc. cit.*). Errors inseparable from the precipitation of morphine by ammonium hydroxide in presence of alcohol render such a procedure undesirable. About 6 grms. of the finely ground sample in a 100 c.c. flask are mixed with about 2 grms. of calcium carbonate, and 20 c.c. of water are then added and warmed till the formation of a uniform thin paste; the mixture is then cooled and 60 c.c. of cold saturated solution of barium hydrate are added, well mixed, and allowed to stand for half an hour. The whole is then diluted to 100 c..c, shaken, and filtered. The residue on the filter is acidified with hydrochloric acid, warmed nearly to boiling, and filtered, the filtrate being all collected and concentrated to about 15 c.c. If, on being tested with ferric chloride, meconic acid is found, then any morphine found in the pills was there as opium, and the method about to be described cannot be employed. In the absence of meconic acid, 50 c.c. of the original filtrate are freed from barium with sulphuric acid (diluted 1 : 5), the solution being left faintly acid to litmus, diluted to 55, and mixed, allowed to settle, and filtered. The filtrate is then in a suitable condition for further treatment by the titration method already referred to, and the presence of morphine can conveniently be confirmed in the titrated liquid. Should the original pills contain soap, sulphates, or substances that react with barium hydroxide, special measures must be taken. Most of the materials which render filtration of aqueous solutions difficult are amenable to barium hydroxide, which is very helpful when such substances as starch, gum tragacanth, or pure acacia are present.

Many test samples of known composition are analysed and described with special details as to working processes. H. F. E. H.

Opium Analysis. **D. B. Dott.** (*Pharm. J.*, 1918, **101**, 318.)—The author criticises and discusses the paper by Annett and Singh (ANALYST, 1918, **43**, 205), in which these writers contend that the B.P. method of morphine estimation in Indian opium gives low results, mainly owing to the presence of codeine exerting a solvent action on the morphine and preventing its precipitation by ammonia from a solution of the lime compound. The author contends that it is hardly correct to speak of precipitation by ammonia, the morphine being really precipitated, because the chlorine of the ammonium chloride combines with the calcium, and the morphinate of lime, being decomposed, causes the precipitation of the morphine in the saline solution, in which it is very slightly soluble. Whatever may be the solvent action of codeine on morphine in aqueous solution, assay conditions are different, in that sufficient ether is present to hold all the codeine in solution. Annett and Singh's procedure of shaking the lime solution with toluene before treating with ether and ammonium chloride was tried, using benzene in place of toluene, with the resulting production of a frothy emulsion which makes extraction troublesome. This emulsion probably contains a small quantity of a basic lime compound which is readily separated by filtration, but is greater in quantity and more impure than the trace which always

forms when using the B.P. process, where benzene is not employed. On comparing the two precipitates (the B.P. and the benzene treated), the latter, although heavier shows on ultimate titration no more, and it may be slightly less, than the former, and it is concluded that there is no sufficient reason for altering the process in the direction suggested by Annett and Singh. H. F. E. H

Effect of Heating Opium on its Morphine Content. H. E. Annett and H. Singh. (*J. Soc. Chem. Ind.*, 1918, **37**, 315-316T.)—When opium is heated in a water-oven at 97° to 98°C., the morphine content decreases gradually. The loss, however, does not become apparent until after four days' heating, but from this time up to 264 hours there is a steady loss of morphine. For instance, a sample containing 6·78 per cent. of morphine showed only 4·26 per cent. after being heated for 264 hours. The loss of morphine does not coincide with the loss of volatile constituents, since no further loss in weight takes place after the seventh day. The physical character of the heated opium is very different from that of opium which has been dried *in vacuo;* the heated opium absorbs moisture very slowly, whilst opium dried *in vacuo* is deliquescent. W. P. S.

BACTERIOLOGICAL, PHYSIOLOGICAL, ETC.

Detection of Small Quantities of Arsenic. O. Billeter. (*Helv. Chim. Acta*, 1918, **1**, 475-498.)—For the detection of small quantities of arsenic in toxicology, it is recommended that the substance be treated with nitric and sulphuric acids to destroy organic matter, the sulphuric acid solution then distilled with the addition of sodium chloride and potassium bromide, the distillate evaporated with the addition of hypochlorous acid, and the residual solution then tested in the Marsh apparatus. The distillation part of the process is essential to insure removal of heavy metals, particularly mercury, traces of which completely mask the presence of relatively large quantities of arsenic in the Marsh apparatus. The addition of hypochlorous acid during concentration of the hydrochloric acid solution prevents loss of arsenic. W. P. S.