Liquor Bismuthi.

BY GEORGE F. H. MARKOE.

The writer has been called upon to prepare this solution quite frequently, and in considerable quantities, and after a careful trial of all the published formulas for its manufacture has found some objection to all of them. The writer cheerfully acknowledges his indebtedness to Mr. N. Gray Bartlett, to whom we owe the first good working formula given in the *Am. Jour. Pharm.*, Jan., 1865. Mr. Albert E. Ebert, in the same journal, Jan., 1866, gives an improvement on Mr. Bartlett's process by which he avoids the use of crystallized citrate of potassa, and forms the citrate of bismuth by adding citric acid to the nitrate of bismuth and then adding hydrate of potassa, by which means citrate of bismuth is precipitated and nitrate of potassa is obtained in solution, and is got rid of by washing the bismuth salt on a filter. Ebert's process is a good one, indeed the best that has been published, and the only objection the writer has to it is the use of caustic potassa to neutralize the nitric acid. The idea of adding the citric acid to the solution of nitrate of bismuth, must in justice be credited to Mr. Thomas P. Blunt, who first suggested it in the *Lond. Pharm., Journ.*, May, 1865.

The objections to caustic potassa are, that great care must be used to avoid an excess, from the fact that citrate of bismuth is freely soluble in potassa, and thus involves a loss of bismuth if any excess happens to be used; caustic potassa is a very troublesome chemical to keep in good condition, being very prone to attract both moisture and carbonic acid from the atmosphere, by which means it becomes in a great degree unfitted for use. It is a difficult matter to get caustic potassa free from carbonate, and still more difficult to keep it so, even if free from this impurity when the bottle is first opened. Another objection is that caustic potassa is expensive.

The following modified process offers a substitute for the caustic potassa that gives excellent results. This substitute is well crystallized carbonate of soda, a salt that can at all times be obtained of good quality at a very low price. Citrate of bismuth is less soluble in carbonate of soda than in caustic potassa, hence a gain is made by using the former.

The process is the following:

Take of subcarbonate of bismuth, one troy oz.
Citric acid (in powder), 420 grains.
Nitric acid (sp. gr. 1·42), one and a half troyounces.
Crystallized carbonate of soda, 1150 grs.
Distilled water.
Alcohol, each a sufficient quantity.

Dissolve by gradual addition the subcarbonate of bismuth in the nitric acid, and when the solution is completed, dilute it with a fluidounce of distilled water, add the citric acid, stir it until it is dissolved. Dissolve the carbonate of soda in ten fluidounces of distilled water and gradually add the soda solution to the bismuth solution, constantly stirring the mixture. After standing for six or eight hours, transfer the mixture to a moistened paper filter, and wash to remove nitrate of soda. Transfer the magma to a mortar or evaporating dish and carefully add water of ammonia until the citrate of bismuth is dissolved. Dilute the solution with an equal volume of distilled water and treat half a fluidounce (14·7 cubic centimetres) with an excess of sulphide of ammonium, or, better still, "*sulphide of sodium,*" (as suggested by the writer in a paper presented to this Association, and published in the proceedings for 1866, 252); collect and wash the sulphide of bismuth on a tared filter, (which has been exposed to the heat of a water bath, previous to being tared), and heat on a water bath until thoroughly dry; allow the filter and contents to cool under a bell glass over sulphuric acid, and carefully weigh. Multiply the weight of the sulphide of bismuth by the fraction ·908 to find its equivalent in teroxide of bismuth. Apply the same ratio to the remainder of the bismuth solution, and dilute it to such a degree that each fluidrachm shall contain one grain of teroxide of bismuth, seven-eighths of which measure must be made with distilled water, and the remainder with alcohol. The average product of liquor bismuthi obtained in several trials was 51 fluidounces, being about two per cent. better results than those obtained by Mr. Ebert's process.—*Proc. Am. Phar. Assoc.* 1868.

Notes on Unguentum Hydrargyri Natratis.

BY GEORGE M. HALBRIGHT.

Most all our standard works on Chemistry and Pharmacy give formulas for the preparation of products used by the apothecary in the pursuit of his profession, which, if strictly followed and properly understood, will generally give the desired result. Yet, notwithstanding the greatest care and precaution on the part of the manipulator, the operation will sometimes fail, thereby causing him to regard the prescribed process as faulty, which would really have yielded a satisfactory preparation if followed with proper attention to its minor details.

Uniformity of strength, permanence and *therapeutical goodness* of Pharmaceutic preparations are ends to be desired by the *conscientious dispenser.*

The amateur usually seeks for the second quality, although the others are equally, if not more important; yet they are not as difficult to attain.

The object of this paper is to point out several difficulties which are encountered in preparing the *Unguentum Hyd. Nitratis* of the U. S. P., and also to offer a few suggestions by which such perplexities can be overcome.

As yet the standard formula gives everything but a permanent ointment, even at the hands of many of our best Pharmacists. One of the first considerations in the preparation of this useful and beautiful ointment. is *purity of material,* and secondly the *degree of heat* employed in manipulating.

The acid should be of full strength, the mercury free from *contamination,* and the fatty bodies fresh and pure.

After repeated experiments with material obtained from different sources, in the preparation of this ointment, I do not hesitate to attribute nearly all the failures reported in making Citrine Ointment, to the undue amount of heat and the quality of the fats used, more especially the lard.

I do not intend my remarks to apply to pure lard, but to such as is usually offered for sale by grocers, butchers and dealers generally, samples of which will be found to contain as adulterations various chemicals and other substances, rendering it unfit for the