

UTILIZING SURPLUS STOCK IN THE MANUFACTURE OF HIGH PRICED CHEMICALS.*

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Many druggists, during these days of aeroplane prices, are offered opportunities to use their knowledge of chemical reaction for money saving purposes. Strange to say, however, not many of them, for one reason or another, seem to possess enough self-confidence to tackle these problems. In a sense this lack of confidence is justified when we consider that the pharmacist, much to the detriment of his professional ethics, has become accustomed to having most of his thinking done by someone else.

Sometimes we sigh for the good old days when the corner druggist made his own blue ointment, his own bromides and his own elixirs and made them with care and thoroughness, qualities that we often feel are not prominent enough in the make-up of the druggist of to-day. Not that the modern pharmacist lacks these good points, but simply that he does not accept opportunities to display them as he should.

A few weeks ago a country-town druggist complained, to the writer, of his "terrible misfortune" in having on hand about ten pounds of salicylic acid; formerly he had sold this preservative to the "home canning" folks who now use boric acid instead. My friend explained that if it had been sodium salicylate it would not have mattered much, because his stock of that was practically exhausted and he would very soon have to buy more. When I suggested that he manufacture the latter out of his stock of salicylic acid he laughingly retorted, that he would not care to take sodium salicylate of his own manufacture or dispense any for his good friends. While we cannot call this man a good representative of our calling, we must admit the presence (sad to relate) of many of his kind among us.

To bring matters closer home, how many here have bought at a ridiculously high price a chemical that could have been prepared from material on the shelf that had been bought at pre-war prices, simply by using a little ingenuity and care in its manufacture? To return, however, to our subject, we have endeavored in the following matter to assemble in a condensed, yet practicable, form as many processes and reactions as might be of use to those druggists who have enough self-confidence and are anxious to save money as well as gain experience by carrying out some of these processes in their own laboratories:

Sodium Salicylate.—Mix 100 grammes of salicylic acid with sufficient distilled water to form a paste, and then add 104 grammes of pure crystallized sodium carbonate or 45.18 grammes of monohydrated sodium carbonate, in a glass or porcelain dish of large capacity. When the reaction is over, heat gently to expel all of the carbon dioxide. Strain through well moistened muslin. Test the solution with litmus paper and, if alkaline, add sufficient salicylic acid to make the solution slightly acid. Evaporate carefully, avoiding contact with metal. The dried salicylate will be white, if properly made, and colored grey if carelessly made. The latter can be corrected by redissolving in distilled water, adding a slight excess of salicylic acid and again carefully evaporating to dryness. To prepare a solution of sodium salicylate from salicylic acid and sodium bicarbonate,

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the following proportions of the constituents are employed: To make 10 grammes of sodium salicylate use 8.175 grammes of the acid and 5 grammes of sodium bicarbonate. This latter method is convenient for the manufacture of a stock solution.

Ammonium Salicylate.—Dissolve 89.0 grammes of salicylic acid in 39.28 grammes of 28° ammonia water or 109.98 grammes of 10° ammonia water, in a glass container. Evaporate the solution to a concentrated form and test with litmus. If alkaline, add enough acid to render it distinctly acid and crystallize in a muslin-covered vessel.

Strontium Salicylate.—Dissolve 10 grammes of salicylic acid in 100 mils of boiling distilled water in a glass or porcelain container. Add 5.3 grammes of pure strontium carbonate. Filter and add enough acid to cause a slight excess. Evaporate and crystallize.

Lithium Salicylate.—To 25 mils of hot water in a glass or porcelain dish add 10.9 grammes of salicylic acid and 3.0 grammes of lithium carbonate. Heat till effervescence ceases. Filter, add enough salicylic acid to render slightly acid and evaporate to dryness.

Sodium Benzoate.—Mix 84.7 grammes of benzoic acid with 43.29 grammes of monohydrated or 99.59 grammes of crystalline sodium carbonate in 200 mils of distilled water in a porcelain evaporating dish. Heat gently and when effervescence has ceased filter, render acid by the addition of a little more salicylic acid when necessary, and evaporate to dryness. These quantities produce about 140 grammes of the salt.

Ammonium Benzoate.—Treat 87.75 grammes of benzoic acid with 43.8 grammes of 28° or 122.63 grammes of 10° ammonia water in a similar way to make 138.06 grammes of this salt.

Several weeks ago, the pharmacist at a Philadelphia hospital found some twenty odd ounces of pure bromine, that had been used in urea estimation at the pathological laboratory, in a test now replaced by Dunning's Urease Reagent. The bromine was therefore practically useless to them until bromides commenced to skyward, when the pharmacist conceived of a plan for its use in making potassium or sodium bromide after the method outlined in the sixth revision of the U.S.P., which is as follows: Take of bromine 62.2 grammes; pure iron filings, or card teeth, 31.1 grammes; crystal potassium carbonate, 66.10 grammes; distilled water, 2 liters. Add the iron and afterwards the bromine to 750 mils of distilled water, stirring the mixture frequently, with a glass rod, during half an hour. A shallow vessel containing weak ammonia water, standing beside the bromine container, will absorb the suffocating odor of the bromine. At the end of the half hour apply a gentle heat, and when the liquid assumes a greenish color add gradually the potassium carbonate, previously dissolved in 750 mils of distilled water, until it ceases to produce a precipitate. Continue the heat for a half hour and filter. Wash the precipitate with 500 mils of boiling distilled water, and again filter. Mix the filtered liquids and evaporate. Set aside for crystals to form and discard the mother liquor.

Sodium bromide can be prepared in the same manner, using, however, 57.44 grammes of pure crystallized sodium carbonate or 24.97 grammes of monohydrated sodium carbonate instead of the equivalent amount of potassium carbonate.