

While most of the medical schools entered into the S. A. T. C. plan, because it was a war measure, they were ready to discontinue the program when hostilities ceased. It is probable that pharmacy and technical schools would have preferred to continue the course under a rearrangement of the teaching schedule. And, if a system of universal training, applying to the young men under twenty years, is to be established, this might have afforded an opportunity for studying applicable educational methods.

Evidently, retrenchment is the chief reason for the order, though there has been an expressed disappointment at the working plan; experience would certainly have developed improved and more satisfactory methods. If the order is put into effect schools will sustain a financial loss which the Government should adjust.

E. G. E.

OFFICIAL STANDARD FOR CAFFEINE SODIO-BENZOATE.

BY A. B. LYONS.

According to the U. S. P. IX caffeine sodio-benzoate when dried to constant weight at 80° C. contains not less than 46 percent nor more than 50 percent of anhydrous caffeine, the remainder being sodium benzoate ($\text{NaC}_7\text{H}_5\text{O}_2$). It is not easy to account for so wide a margin of variation as this in a product which calls for so little skill in its manufacture. It is understood that originally it was prepared by combining caffeine and sodium benzoate in equal proportions. Official caffeine is a crystallized product, not liable to contain impurities, but variable in the amount of water of crystallization it carries. The crystals contain nearly 8.5 percent of H_2O to begin with, but by exposure to dry air they lose a considerable proportion of this, so that under ordinary conditions they retain less than half the original quantity. By exposure to a moist atmosphere they recover the water they have lost unless they have been rendered quite anhydrous, in which condition they apparently refuse to take up more than about 3 percent of moisture, practically one-third of one molecule of H_2O .

Grant that caffeine may contain as much as 9 percent of H_2O , and that it may possibly be quite anhydrous, a mixture of this with an equal weight of pure dry sodium benzoate would contain after drying completely at 80° C. at least 47.69 percent, at most 50 percent, of anhydrous caffeine. An allowance of 0.5 percent for inaccuracies in weighing would make these figures, respectively, 47.45 and 50.25 percent.

The assumption that the remainder of the product is pure $\text{NaO}_7\text{H}_5\text{O}_2$ is not consistent with the "rubric" for official sodium benzoate, which is allowed to contain 1 percent of impurity as shown by alkalinity of the ash. Whether or not this impurity is non-volatile the test does not show, so that it is not possible to say exactly how the figures arrived at above will be affected, but it would appear that a range of 47 to 50 percent ought to cover the practical possibilities, making no assumption of expert knowledge on the part of the manufacturer.

But it is the manufacturer who is most competent to decide the question what standard is most just to all parties concerned. Money values of course come

into consideration where costly drugs are concerned, but only subject to the standards and requirements of the pharmacopoeia, where such exist. In the present instance, we have the clear statement that official caffeine has a molecular formula including nearly 8.5 percent of water of crystallization. It is this product and no other which he will use in making the double salt, just as it is sodium benzoate containing not less than 99 percent of $\text{NaC}_7\text{H}_5\text{O}_2$ that he will use as the second constituent of an ideal product.

In practice he will find probably that the caffeine has lost a portion of its water of crystallization, and it may be that the sodium benzoate contains some hygroscopic moisture, and so the quantities of each which he will take to make caffeine sodio-benzoate will be adjusted to the ideal standard and his product will assay for the U. S. P. method somewhere near 47.7 percent of anhydrous caffeine. Merck's product is stated to contain 47.9 percent. There is no reason why any great range of variation should be permitted, since the manufacturer can be trusted to make a correct adjustment in the quantities of caffeine and of sodium benzoate which he uses. In the case of official chemical salts and similar products it appears that variations of more than one-fourth of one percent are not considered excusable. It is certainly not more difficult to adjust the caffeine content of the double salt to a correspondingly narrow range, perhaps between 47.3 and 48.0 percent, and the range having been fixed, there should be no difficulty in keeping within such limits.

It will be noticed that this range is much narrower than that arrived at in the initial discussion above. The reason for the discrepancy is that in that discussion the possibility was admitted of presence in the sodium benzoate of a considerable quantity of hygroscopic moisture, whereas the manufacturer maintains the ideal of a salt which *without drying* is at least 99 percent pure. We can see no reason why his assumptions should not be adopted as a basis for the official requirements for this product.

THE EFFECT OF ALCOHOL ON PITUITARY EXTRACT.

BY HERBERT C. HAMILTON.

It not infrequently happens that when a salesman, detail man or other member of a firm of manufacturers of pharmaceutical products is confronted with the statement that a certain preparation fails to act in its accustomed manner, he points out a number of possible factors in attempting to find the cause in the particular case.

Pittenger presented a paper before the Scientific Section of the A. Ph. A. 1918 meeting (published in the October issue of the Journal) in which he notes one such instance where the well-known fact that alcohol precipitates the active constituent of pituitary extracts had been advanced as the possible explanation of a failure of this preparation to act on the uterus muscle.

The writer whose discussion of this paper on the floor is not given in the published proceedings corroborated the facts there presented and noted that the question had come up on more than one occasion and that laboratory experiments had in every case shown that alcohol in the quantity present could not affect the activity of this preparation unfavorably.