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 $NaC_7H_5O_2$ 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.

The subject seems important enough to be carried somewhat further in order to explain fully the conditions under which alcohol can affect the pituitary extract unfavorably.

The writer has observed that a commercial sample of pituitrin shows an opalescence from the action of strong alcohol but that a mixture of equal parts pituitrin and 95% alcohol shows no permanent opalescence and no precipitate. Diluted and injected into the circulation of an anesthetized dog in the usual method of testing there is no perceptible lowering of its activity. This is very much in excess of the possible alcohol content from washing the syringe or the site of injection.

A further experiment has been carried out on a highly active dry pituitary product. This material was ground in a mortar and rubbed thoroughly with 95% alcohol adding successive portions and filtering the alcohol to obtain a clear solution.

Three series of tests were made on the resulting products, namely, tests of the dry material after being washed with alcohol, tests of the residue remaining on recovery of the alcohol, first, an aqueous solution of this residue and second a hydro-alcoholic solution of the residue.

The results of these tests showed that 95% alcohol is not a solvent for the active principle nor has it any deleterious action; the active agent was no less active and the residue from evaporation of the alcohol had neither pressor nor oxytocic activity.

The only reaction between alcohol and pituitary extracts is when the former is present in great excess, in which case it acts as a precipitant.

RESEARCH LABORATORY OF PARKE DAVIS & CO.,
DETROIT, MICH.

THE DETERIORATION OF TINCTURE OF DIGITALIS.*

BY PAUL S. PITTENGER.

In a recent publication entitled "The Deterioration of 'U. S. P.' and 'Fat-Free' Tinctures of Digitalis," Pittenger and Mulford, Jr.,[1] gave the results of a series of experiments which were carried out with two objects in view:

First, to show that Tinctures of Digitalis deteriorate quite rapidly and

Second, to advance experimental data to disprove the statements made at several medical society meetings, that fat-free preparations deteriorate more rapidly than the regular U. S. P. tincture.

The results of physiologic assays made on each of 15 samples five and eight months, respectively, after the first test, were given to substantiate the author's claims that "Most tinctures of digitalis *do deteriorate*" and that "Fat-free tinctures of digitalis *do not deteriorate at a greater rate than the U. S. P. tincture.*"

Since publication of the above paper, Hamilton in a recent publication[2] takes exception to the results given because the fifteen samples tested showed an average

* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

[1] Pittenger and Mulford, Jr., JOURNAL AMERICAN PHARMACEUTICAL ASSOCIATION, March 1918, p. 236.

[2] Hamilton, "The Deterioration of Digitalis Extracts," JOURNAL AMERICAN PHARMACEUTICAL ASSOCIATION, May 1918, p. 433.