

H. A. B. Dunning said that gelatin coating had been a difficult problem with them. The method finally adopted is to make the pills and stick a pin into them. A highly concentrated gelatin solution is made—the pill is immersed in the warm gelatin solution and a blotting paper is used to get rid of the superfluous drop of gelatin and then the coating is allowed to dry and the pin holes are filled.

I. A. Becker stated that the subject of coating would be a study of the N. F. Committee.

The author was voted the thanks of the Section and by motion he was asked to prepare a paper along the same lines for next year's meeting.

ON BORAX IN COLD CREAM.*

BY W. L. SCOVILLE.

All formulas for Cold Cream—and there are scores of them—call for borax. Seemingly, without borax is no cold cream made.

Why is this unanimity concerning borax in so great a variety of formulas? What is the function of borax in cold cream?

No one seems to have inquired into the question in any experimental way. E. R. Jones said (*Bulletin of Pharmacy*, 1924, page 15) that "although soap does not appear in the formula it is present nevertheless and is formed by the reaction of alkaline borax solution on the free cerotic acid of the beeswax"—but he offers no evidence in support of that opinion. It is an easy assumption and the readiest explanation, but it does not fit well with some facts regarding the saponification of beeswax. The U. S. Pharmacopœia tests for saponifiable adulterants of beeswax by boiling it for half an hour in a 12 to 14 per cent aqueous solution of sodium hydroxide—by which no soap is formed. If beeswax will not saponify, even in part, under as drastic treatment as that, it does not seem probable that any of it will be saponified by a warm but weak solution of borax. The saponification of beeswax requires four hours of boiling in an alcoholic solution of potassium hydroxide.

Another possible explanation is that borax reduces the surface tension of water to an extent which promotes emulsification. We know that surface tension is an important factor in emulsions, and that emulsifying agents act, in part at least, by reducing the surface tension of water.

This hypothesis is no easier to prove than the other, particularly when it is considered that the alkaline salts have a greater influence on surface tension than do most neutral salts. It is known that sodium or potassium carbonate can take the place of borax in making a cold cream, but the substitution of one alkali for another does not throw any light on the question.

Facts regarding the influence of neutral and acid salts, and of organic compounds, upon surface tension are not easily found. It was only after Mr. F. A. Maurina had carried out a series of tests to ascertain the influence of a number of salts and organic compounds, that my interest in this question was brought to the point of experimentation.

Mr. Maurina found that of the neutral salts which he tried, lithium benzoate

* Section on Practical Pharmacy and Dispensing, A. Ph. A., Baltimore meeting, 1930.

was the most effective in reducing surface tension. A 9.5 per cent (one quarter Gm.-mole per liter) solution of borax reduced the surface tension of water from 79.28 dynes to 56.05 dynes, and a 1.8 per cent solution reduced it to 59.61 dynes.

A 12.8 per cent solution (one Gm.-mole per liter) of lithium benzoate reduced the surface tension of the same water to 59.00 dynes. I decided to try the influence of lithium benzoate on Cold Cream.

The following formula was chosen because (1) it contains no saponifiable ingredient except beeswax; (2) it contains the same amount of borax as the official Cold Cream; and (3) it contains a larger proportion of water than most formulas.

White wax	12.50 Gm.
White ceresin	6.25 Gm.
Liquid petrolatum	53.25 Gm.
Borax	0.50 Gm.
Distilled water	27.50 Gm.

On the basis of this formula, a solution of 2 Gm. of borax in 110 cc. of water (4 x 0.5 and 4 x 27.5) was made and the surface tension found to be 59.61 dynes. A similar solution of 2.8 Gm. of lithium benzoate in 110 cc. of water (27.5 cc. = 0.7 Gm.) was found to have a surface tension of 72.74 dynes. A weaker solution had a higher surface tension, and one of 4.2 Gm. in 110 cc. had a tension of 57.55 dynes.

Three experimental lots of Cold Cream were now made, using (a) the above formula, (b) the formula but substituting 1.05 Gm. of lithium benzoate for the borax and (c) omitting the borax and using distilled water only. The three products differed considerably.

That containing borax was snowy-white, smooth, spread easily and showed no separation of water even when manipulated.

The one containing no borax or any other emulsifying agent was homogeneous when just warm enough to pour, but separated water on cooling. It was much darker than *a* in color, much harder in consistency, had a granular and waxy appearance and separated water freely when manipulated.

The one containing lithium benzoate is intermediate. It is white and opaque, but not as brilliant as *a*, is harder in consistency, shows very small drops of water on the surface and separates more water on manipulation. The lithium benzoate has an emulsifying effect, but not nearly equal to borax.

Another chemical which Mr. Maurina found to have a marked effect on surface tension is quinic acid. A 19.2 per cent solution (one Gm.-mole per liter of the anhydrous acid) of quinic acid showed a surface tension of 63.87 dynes, and a 20 per cent solution of 59.8 dynes.

A 20 per cent solution of an acid did not appear very promising as an emulsifying agent, but it was tried. The same cold cream formula was used, but substituting 5 Gm. of quinic acid for 0.5 Gm. of borax. The result was a product which was a little better than the one containing no emulsifying agent, but not much better. It was harder in consistency than Samples *a* or *b*, separated some water on the surface and more water is worked out by manipulation. But considering that the attempt was made to use a 20 per cent solution of an acid for emulsifying the result again shows that surface tension is an important factor.

Whether it is the only factor, or even the main factor we do not know. We cannot fairly compare the emulsifying powers of different salts by use of dissimilar strengths of solution, yet if we are to judge of the value of surface tension in making emulsions of this type we cannot use salts in corresponding strengths.

The question has two aspects. The theoretical one, which is interesting from the purely scientific standpoint, and which would, if solved, lead to a better understanding of emulsions in general. Then there is a practical aspect. Borax, being alkaline and also forming insoluble salts with metallic elements, prevents the use of Cold Cream as a general base for medicinal application. Acids or acid salts will quickly destroy the creamy quality, and salts will, less quickly, act similarly, as well as form insoluble borates. Borax greatly restricts the use of Cold Cream as a vehicle.

This present paper is offered, not as a practical paper or as a solution of the question, but in the hope that some one will become interested in the question and solve it.

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WHAT SHOULD A PRESCRIPTION MAN EXPECT FROM A PROFESSIONAL SERVICEMAN?*

BY CHARLES E. MCCORMICK.

Throughout the length and breadth of this country, not only in the largest cities but in the smaller towns, day after day and week after week, there is a veritable army of men and women representing many different manufacturing pharmaceutical houses, and presenting to the physicians and dentists new products from their respective laboratories.

These professional service people have succeeded in performing for the medical and dental professions a very signal service, in that they not only bring to their attention the best efforts of research men, but place in their hands the best preparations that can be utilized for the good of mankind.

It is no simple task to convince the medical or the dental profession that the preparations which they are introducing have medicinal values or are superior in any way to those older products which the doctor has been prescribing all during his professional career.

After the professional service man has succeeded in convincing the doctor of the value of his new medicinal agents, it is of utmost importance that he place them in such a position that they can be readily obtained by both physicians and their patients, and at that point the prescription pharmacist supplies his greatest service.

It is my earnest desire that before any physician or dentist has had introduced to him a new product, that the professional service man will call upon one or more leading pharmacists of the community and explain to them just as he would to the medical man everything in reference to these products. It is well nigh im-

* Section on Commercial Interests, A. P. H. A., Baltimore meeting, 1930.