

R. B. BIRD: "You can lead a horse to water, but you can't make him drink." The public and physicians must be educated, if it is desired to carry our ideas into effect.

T. J. BRADLEY: This question of our advocating the use of metric doses rather than teaspoon doses is an ideal which is probably impossible; but if it is possible, it could probably be brought about if we could induce the manufacturers of medicine glasses to mark their glasses both ways: on one side of the graduation line "1 teaspoonful" and on the other side "5 mils" and then above that on one side "1 desertspoonful" and on the other side "10 mils." I fully agree with Mr. Bird that we can lead the horse to water and not make him drink. We cannot compel the physicians or the public to take mil doses until they are educated to know them.

J. A. HANDY: Let the manufacturers and pharmacists start using the metric system first, buy according to the metric system and manufacture according to the metric system, and then change the medicine glasses and educate the public.

L. F. KEBLER: In my opinion, as long as we teach the other systems of weights and measures and do not teach the metric system in our public schools, we are not going to get anywhere. Why do we not insist on that line of education if we expect to establish the metric system? I think that our educators ought to look to that feature. It is a very important point. It ought to be taught in our schools, particularly the high schools, and I think by so doing we would be successful in general adoption.

J. C. PEACOCK: I see on the list we have a paper entitled "More Profits within Your Reach." I am going to profit by this discussion. When I go back home I am going to write on the label hereafter "Take 5 mils every three hours," and then have the customer buy a medicine glass. We have two physicians who write in the metric system and designate the teaspoonful by 5 Cc. I will write on the label in that way and excite the curiosity of the public to know what that means, and we will sell them medicine glasses when they come back. I think that is one of the practical ways of helping along the proposition—write the metric dose on the label.

## MANNA AS AN EXCIPIENT FOR SOFT MASS PILLS.\*

BY WILLIAM MASKE, JR.

Several manufacturers are now exploiting soft mass pills. It is said that these soft mass pills have a decided advantage over the ordinary varieties in that the latter soon become hard and consequently difficult to digest. Soft mass pill formulas are kept secret by proprietary manufacturers, and so the retail druggist has little chance of dispensing such pills in prescription routine.

In experimenting with the use of manna as a general pill excipient, the writer succeeded in getting two excellent soft mass pill formulas. As these may be of some use to pharmacists, he takes the liberty of contributing them to the profession.

Manna as a pill excipient has been favorably commented upon by German writers,<sup>1,2</sup> which they recommend to be used in combination with starch, yellow dextrin, white dextrin, chalk, gentian, light magnesium oxide, heavy magnesium oxide or glycyrrhiza, as diluents, and water. Noticing, too, the gummy and pliable consistency of manna, the writer conceived the idea of using it as a soft mass ingredient.

The diluents were all of those suggested, but glycerin was substituted for the water. Two of these formulas produced ideal soft pill masses. These are the following:

\* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Indianapolis meeting, 1917.

<sup>1</sup> *Jahresbericht der Pharmazie*, 42, 342, 1907. P. Carles, "Manna als Pillenmasse."

<sup>2</sup> *Ibid.*, 46, 246, 1911. E. Otto, "Ueber die Bereitung von Pillen."

Formula I—Manna 1 part, Glycyrrhiza 1 part, Glycerin Q. S.

Formula II—Manna 2 parts, Yellow Dextrin 5 parts, Glycerin Q. S.

The writer has kept pills made by these two formulas in ordinary pasteboard pill boxes (not the hermetically sealed containers in which market soft mass pills are sold) for over a year; and at the end of that time, these same pills could be squeezed up and re-rolled, as readily as the day on which they were first made, showing that the pliability of these masses after one year's standing is perfect. Furthermore, in another experiment in which the writer subjected these and also market soft mass pills to disintegration tests, he found that these two varieties of soft mass pills disintegrated much more quickly than the proprietary articles. The only difficulty in the way of making these two masses is the fact that the grinding up of the manna with the diluent is an operation which requires not a little "elbow-grease," but to the average druggist, who is continually complaining that he does not get enough exercise, especially in his upper extremities, this operation should prove beneficial, rather than harmful.

UNIVERSITY OF WASHINGTON,  
COLLEGE OF PHARMACY.

## DISINTEGRATION OF PILLS.

BY WILLIAM MASKE, JR.

Realizing that it might be of some interest to know the relative rate of disintegration of various pill masses, and that very little about this subject is to be found in the literature, the following work was done in order that some data may be available. The writer realizes that a mechanical digestion is indeed a very poor imitation of what the human body actually does; he also does not wish the following figures to be taken as the actual time in which these various masses disintegrate in the human body; but this much is in all probability true: that the ratios of the time of disintegration of the pills by mechanical means (especially in the last set) and those of the time of disintegration in the human body do not differ very much.

Two methods were used. The first was somewhat crude, but the results are nevertheless of some interest, so they are herewith given. The experiment is briefly this: Into a number of beakers there was placed an aqueous solution of  $\frac{3}{10}$  percent pepsin and  $\frac{1}{2}$  percent hydrochloric acid. These were then heated in a bacteriological incubator at  $37^{\circ}$  C. When the solutions had reached this temperature, the various pills were immersed in the solutions, and observations made every fifteen minutes. The pills were all blanks, containing no medicinal ingredients, and were all made exactly the same size, and were the same age, so that the time records would be fair for all the different masses. Following is a table of results:

Pill Mass.	Time.
1 Glycyrrhiza, 1 part; manna, 1 part; glycerin, q. s. (soft mass).....	15 minutes
2 Dextrin, 5 parts; manna, 1 part; glycerin, q. s. (friable mass).....	30 minutes
3 Dextrin, 5 parts; manna, 2 parts; glycerin, q. s. (friable mass).....	45 minutes
4 Althaea; syrup, q. s.....	45 minutes
5 Magnesium oxide, 3 parts; manna, 1 part, glycerin, q. s.....	45 minutes