

## THE TYRANNY OF THE TEASPOON.\*

BY H. V. ARNY.

In preparing a paper for a medical journal on the use of the metric system in prescriptions, the writer was struck by the fact that in the calculation of doses of liquid medicines directed in the average prescription, those written for metric quantities presented little or no time-saving advantage over those prescribing medicine in terms of apothecary weights and measures. A study of the situation revealed the cause of this curious state of affairs. The directions to the consumer of the average liquid prescribed medicine calls for drop doses or teaspoonful doses.

This is not the time to discuss the fallacy of drop doses, but in passing, it might be stated that in one prescription cited in the paper just mentioned, each dose of mercuric chloride called for was either 0.8 or 0.3 milligramme according as to whether the 12 mils of finished prescription contained 25 or 75 seven-drop doses, with a strong presumption that the latter figure was correct.

But the problem concerns teaspoonful doses. Discussion of this matter, notably in the contributions of our lamented friend M. I. Wilbert, led to the adoption by this Association in 1902 of a resolution (*Proc. A. Ph. A.*, 50, 413, 1902), which read as follows:

"RESOLVED, That for use in connection with the metric system of weights and measures, the adoption of the following approximate equivalents of spoonfuls:

"1 teaspoonful equals 5 Cc.

"1 desertspoonful equals 2 teaspoonfuls, or 10 Cc.

"1 tablespoonful equals 3 teaspoonfuls, or 15 Cc."

Despite this resolution, which was also adopted by the Section on Pharmacy, Materia Medica and Therapeutics of the *American Medical Association* in 1903, both revisions of the United States pharmacopoeias appearing since that time have given in a table of approximate measures the value of a teaspoonful as 4 mils.

My contention is that such a standardization bodes ill for the popularization of the metric system in prescribing and that we should take what steps we can to enforce the 5-mil basis for the teaspoonful even as directed in the French and Belgian pharmacopoeias.

The metric system is a decimal system and all units used in connection with it should be figures in harmony with decimal units. This is not the case with the figure "four." If the teaspoon is considered as holding four mils, then the only logical liquid prescriptions would be those calling for 100, 200, 300, 400 or 500 mils. A 50-mil mixture will contain  $12\frac{1}{2}$  teaspoonfuls of 4 mils each, a 25-mil mixture will contain  $6\frac{1}{4}$  teaspoonfuls. To prescribe by the octonary system, 16, 32, 64-mil mixtures is merely to prescribe by the old system in somewhat masqueraded form.

On the other hand, if the 5-mil teaspoonful obtained here as in France, we

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would have a unit in entire harmony with the metric system and the doctor could prescribe 10, 25 or 50-mil mixtures with an assurance that such mixtures would represent an exact number of teaspoonfuls.

But how about the capacity of the average teaspoon? Already much has been written about the folly if not danger in using domestic teaspoons for the administration of medicines. Choosing at random in my own home, nine teaspoons, I found their capacities were 4.6, 5.5, 5.8, 6.0, 3.8, 7.8, 5.5, 6.1, 7.8 mils, respectively. I also found that one molded medicine glass used in my household measured 3 mils to the teaspoonful and 7.4 mils to the desertspoonful, while a second more accurate one measured 4 mils to the teaspoonful and 7.7 mils to the desertspoonful.

Eliminating from the above teaspoons, the two holding 7.8 mils, as short desertspoonfuls, we have in one home seven kinds of teaspoonful with only one approaching the 4-mil basis, all the others being closer to the 5-mil than to the 4-mil mark.

Thanks to the propaganda conducted by the pharmacists of this country under the leadership of the American Pharmaceutical Association, the public is learning to use measuring glasses, and the only unfortunate feature of the propaganda is that, following the lead of the Pharmacopoeia, the average American medicine glass is based upon the 4-mil teaspoon.

There is still time to correct this error, for it is certain that the comparatively few manufacturers of medicine glasses in this country would be progressive enough to modify their molds on a 5-mil basis, if there were sufficient demand for the change. Moreover, the values of the two average medicine glasses referred to indicate the need of some revision of this handy and useful appliance.

Our Committee on Weights and Measures can perform a distinct service along the lines already laid down by the Association in its resolution of 1902, first, by seeing that the pharmacopoeial standards for domestic measures be placed upon a 5-mil teaspoon, a 10-mil desertspoon, and a 15-mil tablespoon; and secondly by persuading manufacturers of medicine glasses to adopt the same 5- 10- and 15-mil standards.

#### ABSTRACT OF DISCUSSION.

R. W. TERRY: I would like to ask Professor Arny how the teaspoonful was measured, brimful or levelful?

H. V. ARNY: Mr. Wilbert, on this very subject, pointed out that it was not merely the teaspoon, but how the teaspoon was filled, that the capacity of the teaspoon could be increased anywhere from 25 to 50 percent. I tried, as nearly as possible, to make it levelful.

CHARLES H. LAWALL: I do not wish to be considered at all as disagreeing with Professor Arny about the propriety of change, but I do see an inconsistency. In his argument he assumes that the four cubic centimeter teaspoon would not lend itself to the dispensing of medicine on the metric basis of 50 or 100 mils because it would not come out even. I do not think it would be possible ever to measure so accurately, even with a medicine glass, as to make the doses come out even.

E. H. WISNER: We will no doubt in time come to use 50-mil prescription bottles and 100-mil bottles rather than 6-ounce and 4-ounce bottles, and when that time comes the physician probably will no longer prescribe teaspoonfuls and tablespoonfuls, but he will prescribe mil doses.

I. A. BECKER: Why not get away from the teaspoon, which is a very poor measure, and have measuring glasses and metric quantities only? I think the thing to do is to get away from the old style of measure entirely and advocate only a metric measure.

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."