

## Section on Practical Pharmacy and Dispensing

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### THE MAKING OF TABLETS BY THE RETAIL DRUGGIST.

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Efficiency, elegance, and economy, I take it, are the three points of view from which any class of pharmaceuticals must be judged in the determination of its value. Efficiency, of course, comes first. No matter how expensive the medication, if it produces the desired result better than anything else, it is the one to be chosen. If, however, we have the choice between an elegant and a disagreeable preparation of equal efficiency, common sense will teach us to select the pleasant one. Economy, though the last and least consideration in medicine, is also a matter of importance; for obviously that form of medicament should be chosen that is most economic, both as to original expense and as to trouble of preparation.

Tablets are a dosage form of recent introduction that competes with older and better established dosage forms, such as powders, pills and capsules. Before anything new can replace the old, it must establish its superiority. What claims for consideration have tablets to present? In judging them from the three aforementioned standpoints, we find that there is no question about their efficiency, if they are accurately prepared, excepting in case of volatile substances, such as phenol or creosote, which, of course, will not remain in the tablet, even if they are put into it in proper amount. Compressed tablets made from insoluble substances can, contrary to the statement contained in text books, be made to disintegrate readily enough, if from 15 to 20 percent. of starch be added to the powder; the starch, on becoming moistened, swelling with great force and causing the tablet to fall to pieces. Indeed, well made tablets disintegrate more readily than do pills or capsules. While ordinary tablets are not more pleasant to take than are pills or capsules, they are probably more convenient for administration than are powders. What has, however, decided the present status of the tablet is the economic question. Though introduced by Dr. Robert M. Fuller of New York before the Academy of Medicine on February 21, 1878, (published in "New Remedies," March, 1878, p. 69), in a paper entitled: "Dose-Dispensing Simplified," the simplification was evidently not such that the retail druggist could notice it; for tablets have not as yet established themselves in general pharmaceutical practice. The preparation of tablets in large quantities, on the other hand, does offer economic advantages over other dosage forms to such a degree that tablets are the favorite solid dosage form with the manufacturer, who finds ready market for them among dispensing doctors. The retail druggist has been opposed to

the prescribing of tablets by doctors, for tablets have been considered not suitable for extemporaneous preparation, as they require drying, whether made by the tablet triturate process, in which the drying must be done after the tablet is finished or they be made by compression, when the powder is granulated by being moistened and must be dried before being suitable for compression. Furthermore tablets require a special apparatus, with which druggists as a rule have thus far not equipped themselves. Hence, should a doctor prescribe tablets, the druggist must buy them ready made, which increases the stock of ready made goods that he is forced to carry. The druggist asks why tablets should be prescribed, when freshly made pills or capsules are just as good, if not better, and economically much more favorable to him.

There are, however, three influences at work destined, I believe, to change the relation of the retail druggist to the tablet, they are: First, the use of a solid fat as cohesive and lubricant; second, candy medication; third, inexpensive tablet machines.

The employment of a solid fat as cohesive and lubricant was suggested by A. Schleimer in "The National Druggist" (Feb., 1909, p. 54), who advocates the use of cacao butter in lieu of granulation of the powder and subsequent drying. This brings tablets into the category of extemporaneous preparations. All that is necessary is to add three percent. of cacao butter to the powder, and it is ready for immediate compression in a tablet machine. Having found that cacao butter is liable to become rancid on keeping of some of the tablets made with it, I experimented to find a substitute devoid of this tendency, and found it in paraffin of low melting point. For tablets that are not to be kept for any length of time, cacao butter is preferable, as it melts readily and is digestible. The amount of paraffin however that enters into the composition of each tablet is so small that, in spite of its indigestibility, it seems to me it could not meet with any but theoretic objection. Either of these materials, in form of fine shavings, is added to the extent of three percent. with just sufficient trituration to distribute fairly well. Excessive trituration lessens the efficiency of the lubricating agent. If the tablet has a tendency to stick to the punches, the material can be worked better, if a little talcum, say three percent. is added to the powder by stirring it in with a spatula rather than by trituration. This process renders tablet making no more difficult or time-consuming than the making of pills or capsules. It is true, that there are a few materials that do not lend themselves well to this simple process. These would have to be worked up according to the old process, which is very briefly but with sufficient detail described in a booklet by Frank Edel on "How to Make Tablets," published by the Spatula Publishing Co., Boston, 1896; or, more elaborately, in Joseph R. Wood's "Tablet Manufacture," (Lippincott & Co., Philadelphia, 1906.) This much may be stated with confidence, that a druggist equipped with an inexpensive tablet machine can deliberately cut out of his stock all tablets, excepting those that are very frequently called for.

"Candy Medication" will, I believe, become, in future, the children's medication of choice. Would it not be delightful to give all or nearly all our medicine to children in the form of sweet tablets, similar e. g. to those of phenolphthalein that are now, under various names, used so extensively. As a result of my studies, I

can assure you that this is entirely possible. By taking advantage of the fact that some medicines are practically tasteless, that many of the isolated active principles of drugs are easily disguised, and that modern synthetic chemistry has enriched our resources by the production of a considerable number of tasteless or almost tasteless and yet active substances, it has been possible for me to show that as many as four or five dozen different drugs can be worked up into perfectly delicious, not merely palatable, sweet tablets. To furnish a basis for further discussion and experimentation, I have published a "Candy Medication Formulary" in the Journal of the National Association of Retail Druggists, May 22 and 29, and June 12 and 19, 1913. Since then, it has been my good fortune to have had my attention directed to John Uri Lloyd's "Alcresta" alkaloids, which enable one to give the bitterest alkaloids, even strychnine, in "candy form." Having discussed the subject of sweet tablets in another paper I will refrain from occupying your time for its consideration here, excepting to point out that sweet tablets meet all three requirements first laid down. They contain an active dose for a child; though, in case of some medicaments, even an adult dose could be administered in this form, if desired. It is, however, for children that this form is most especially needed. Most adults can swallow pills or capsules. These sweet tablets are more elegant than any other class of preparations in the drug store. It is true, it has been questioned, whether powders made with sugar would not be taken by children as readily as these tablets. Anyone, who would take the trouble to try, would soon find out that the tablets are much more readily taken than powders of the same composition. You do not find powdered sugar in the confectioner's shop. The confectioner goes to a good deal of trouble to make the sugar more pleasant by attractive shape, color and flavor, all in order to increase the relish with which the sugar would be taken. There is really less necessity of making sugar more attractive to a healthy youngster than there is of making medicine as attractive as possible for the sick child. Why not cultivate relish in medication? There is no question of its being possible for the retail druggist to prepare them economically. Mr. J. B. Galloway of Chicago, who has filled most of my prescriptions for sweet tablets, did not find it necessary to charge more for them than he would for as many pills or capsules.

Other form of candy medication has been thought of. Sir James Sawyer, for instance, published in "The Lancet" of August 12, 1911, p. 435, a process for the production of what he calls "cremulae," or medicated chocolate creams. They are prepared by evaporating a mixture of sugar and of milk to the consistency of paste, into which various medicaments might be incorporated, and which is then covered with chocolate, as in the popular chocolate drop. I have quite a number of years prior to Sawyer's publication, prepared medicated chocolate creams as well as other forms of medicated candy. I have, however, come to the conclusion that no other form would be quite as practical as the sweet tablet, most especially for extemporaneous preparation by the retail druggist.

As to tablet machines, Whittall Tatum Co's "No. 25" Tablet Machine is, surely, within the reach of any druggist. All the tablets in my experiments were prepared with a machine of this type at the pharmacologic laboratory of the College of Medicine of the University of Illinois. Should a more rapidly working ap-

paratus be desired, the J. F. Stokes Machine Co., of Philadelphia, could supply it, in form of their "Eureka" Tablet Machines at a figure by no means prohibitive.

In conclusion, then, I would point out that it will pay pharmacists to equip themselves with a tablet machine, first of all, to be able to discontinue carrying in stock a large number of miscellaneous tablets, by being forced to order a bottle of 100, whenever a dozen or two of tablets are called for; and secondly in order to be able to prepare sweet tablets, a form of "candy medication" that physicians will readily take up with, as soon as they are acquainted with them, and a reliable source of supply has been secured.

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### PERSONAL LIBERTY IN BERLIN.

Americans who prize their "personal liberty" very highly have been in the habit of ridiculing what seem to them the petty regulations of the police forces of large German cities. The frequency with which the American tourist in Germany sees the sign beginning, "It is forbidden," gives him the notion that his movements are unnecessarily restricted. Surely, at least, such regulations as the following, in force in Berlin, will appear ludicrous to the gangsters of our large cities who may carry guns with immunity and rob at their hearts' content:

"Persons may not walk more than three abreast or stop or congregate for any extended period of time.

"Persons with umbrellas or walking sticks must not carry or swing them in any manner likely to imperil the safety of passers-by.

"No windows or doors of houses, flats, shops or restaurants in which music is being played may be kept open.

"No whistling, singing, shrieking, shouting, or loud talking of any kind likely to endanger the quiet of the streets is to be permitted.

"Teamsters in charge of wagons, teams, or trucks loaded with resounding metal of any kind are forbidden to drive in a manner calculated to cause nerve-shattering noises.

"No paper, remains of fruit, cigars, or cigarettes may be thrown into the streets.

"The dragging of clothes of any kind—women's dresses or anything else capable of producing dust—is prohibited.

"Householders are required in winter to keep the footpaths in front of their premises clear of snow and ice between 7 a. m. and 8 p. m. After 8 p. m., if the sidewalks are slippery, sand or ashes must be sprinkled."—*Daily Newspaper*.