The syrups were then placed in a cool dark place, samples being taken from them at frequent intervals and tested with the following results:

		Cold	Hot	Invert Sugar
January 28, 1915	(The day the samples were prepared)	.174%	.138%	"
February 10, 1915		.172%	.171%	"
" 25, 1915		.292%	.170%	"
March 9, 1915		.559%	.401%	"
" 23, 1915		1.123%	1.061%	"
April 2, 1915		1.807%	1.595%	"
" 9, 1915		2.029%	1.905%	"
" 15, 1915		2.367%	2.354%	"
May 6, 1915		3.411%	3.566%	"
" 19, 1915		4.978%	4.735%	"
June 3, 1915		6.586%	5.751%	"

These remarkable results not only disprove the statement very frequently made that in making syrups by the hot process much of the sugar is inverted, a statement which my original article above referred to disproved, but they also conclusively show that in making the samples by either the cold or hot process practically no inversion takes place. They show that upon standing the sugar in both samples becomes inverted, the inversion being greater in the cold process syrup than in that where heat is employed in the manufacture.

I am still at work on the samples and hope in my next paper on the subject to report further results of the investigation.

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SOME EXPERIENCES WITH THE SALOL-COATING OF PILLS.*

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The coating of pills with salol in order to render them insoluble in the stomach for the purpose of carrying the medicine into the intestines has been practiced for years past. Methods have been frequently described and one is set forth in the current edition of the National Formulary.

During the past two years salol-coated pills have been frequently called for, and the knack of salol-coating had to be developed by our prescription department. What is about to be said is by no means a discovery, but merely a recitation of experiences in the actual practice of the process, a few simple facts which may help those who are called upon to do this work for the first time.

Two methods of salol-coating have been suggested; first, that of dipping the pills into the melted salol by means of pins and rotating in the air until the salol has solidified, removing the pin when a sufficient coat has been taken on and closing the puncture with a drop of melted salol.

Second, the method in which the pills are placed in a vessel in which salol has been melted, and the vessel rotated until the salol congeals.

The second method is the plan given in the National Formulary.

The first method does not appear to have been as generally used as the second. It is very much more tedious to stick pins into the pills, dip them into the salol

* Read at the meeting of Pennsylvania Pharmaceutical Association, June, 1915.

and rotate a number of pills at one time, than to place the pills all at once, into a vessel, and rotate.

Besides, the salol sometimes chips off when the pin is withdrawn and the sealing produces an unevenness of coat which is not pleasing to the eye.

The second method is therefore much less tedious, and more rapid; and with a little practice gives excellent results both in the amount of salol applied and in the appearance of finished pill.

The pills which were most frequently ordered to be salol-coated, contained silver nitrate, sometimes with extract of hyoscyamus, and sometimes with opium.

The mass should be hard in order to get the best result. It is also desirable to have pills as nearly round as possible. The usual dusting powders can be applied, and while it is best not to leave more of this adhering than is necessary, the slight amount which may be needed in some cases is not objectionable. The size of the pill does not matter, although as in almost all pill work, a pill of one grain weight is easier to manipulate than a smaller one. In the experiments made, mass was added to the very small pills; powdered licorice root, kaolin, talc and confection of rose were used with good results.

The National Formulary (III) page 122, Section 2, enteric pill-coating, paragraph b, Salol-Coating, reads as follows:

"The pills, carefully freed from dusting powder are dropped into a capsule containing enough salol (approximately 0.06 gm., (1 grain) to every 0.8 gm., (3 grains), pill), previously melted by the heat of a water bath and allowed to cool so that by passing the hand along the bottom of the dish there is scarcely any warmth felt, and the capsule is then rotated until the pills are coated and the salol has congealed. The process is repeated twice, each time reducing the salol about one-half. Finally a finishing coat is applied by using only sufficient salol to coat the dish when melted; the dish being now kept quite warm (almost hot), the pills rotated quite rapidly until they are quite shiny, then turned into a cool dish, and the rotation continued until the pills are cool."

This plan was followed to the letter in the first several attempts which were made. The results, however, were not satisfactory, mainly because an insufficient quantity of salol is ordered for the first three treatments. Further, the use of more heat in the fourth treatment is very likely, in fact almost certain, to melt off some of the salol; and again, transferring to a cool dish produces uneven or irregular coating due to a too sudden reduction of temperature.

It was therefore found better to take more salol with which to start the treatment, and also, as nearly as possible, to use the same temperature in all the treatments. After a number of experiments, the following plan was worked out and has been used with constant success by a number of operators.

One of the most important details from the standpoint of practice is the selection of the vessel in which to do the coating.

Concave capsules and similar shaped vessels are not well suited because the pills tend to roll out during the rotation of the vessel, or at least get to some extent out of contact with the melted salol.

Flat bottom vessels with flaring sides are better suited because the pills are not so likely to be thrown away from the salol during rotation. But there is still the chance of the pills flying over the flaring sides. The vessel which ap-

pears to be best suited is a flat-bottomed, white enamel pan, with perpendicular sides; a handle gives additional convenience to this vessel; a size convenient for coating 24 to 30 pills is about 4 inches in diameter by about 1¾ inches deep. The inner surface should be smooth. The material of this vessel seems well adapted to the gradual cooling of the salol, a feature which is essential to success.

The perpendicular sides of this vessel prevent the pills from flying out, and the flat bottom keeps the pills in constant contact with the salol.

For 24 pills of 1 grain each, twenty grains of salol were usually found to be sufficient for the first three applications, and for the fourth and final treatment about seven grains additional were required.

The vessel having been decided upon, the proportionate amount of salol is placed in it then warmed over a flame (a water bath is not needed), just sufficiently to melt the salol, and the liquefied salol flowed over the bottom and into the angle of the vessel. The temperature is now allowed to fall until the salol is nearly ready to solidify, at this point the pills are placed in the vessel which is immediately rotated to prevent the pills from sticking together either from capillarity through melted salol on neighboring pills, or from sudden reduction of temperature, congealing the salol on the pills.

A thump against a block or the hand will separate pills when rotation alone does not.

Rocking the vessel at an angle will also keep the pills separated and in motion well suited to proper coating. The pills must not be rotated too rapidly, even in the flat bottomed dish with perpendicular sides, as the contrifugal force may throw the pills against the wall of the dish and out of contact with the salol.

Resting the vessel upon the counter or the hand during rotation, and using just enough rotation to keep the pills separated, gives the best results. The vessel should be rotated or rocked until free from sensible heat. The pills are then turned into a box. The coat of salol taken on in the first treatment will not usually mask the color of a black pill.

For the second treatment the dish is again heated, just sufficiently to melt the salol remaining; when it has cooled to some extent, the salol still liquid, the pills are put back into it, and rotated as before until cold. The second treatment will show a decided change in appearance.

A third application of salol is made in the same manner: This treatment appreciably increases the shell of salol.

For the fourth coating it is necessary to supply more salol, usually about one-third of the original amount taken, it being added to whatever remains in the vessel. For the fourth and final coating the vessel does not need to be made any warmer than for the first three coatings, nor is it necessary to transfer the pills to another dish as suggested by the National Formulary.

The rough uneven appearance of the coating that may be met with in one's first efforts can be repaired by heating sufficiently to melt off all the salol, and then resorting to proper conditions. This rough appearance is usually due either to insufficient salol or to a sudden drop in the temperature of the melted salol. Should the partly coated pills be thrown into a vessel that is too hot, the salol will be melted at the point of contact and the pills show unevenness when salol

has been lost or even bare spots. To remedy this appearance, melt off all the salol and return to the conditions outlined.

As to the number of pills that can be coated in a vessel of given size from twenty to thirty can be conveniently done in the one described. Even fifty can be done in this vessel, but experience will be needed; for fifty or more pills a larger dish should be provided, or the lot divided for treatment.

To indicate the wide scope of possibilities in salol-coating, pills which had been massed with petrolatum have been coated.[1] Gelatin capsules are also ordered to be salol-coated. This can be done by the same method. Even hard capsules containing liquids such as creosote can be coated by first placing the capsule inside of a slightly larger one.[1] Soft elastic capsules may also be enveloped in salol as the sample shows.

A MEDLEY.*

GEORGE M. BERINGER, JR., P. D.

Few men have so many problems and difficulties presented to them in their daily work as does the pharmacist. Accidents happen, preparations go wrong, materials are spoiled or rendered unfit for further use, by what, to the casual observer would seem the sheer perversity of the things themselves. To him who yields without struggle to such conditions, life is but "an empty dream." To him who, by the application of some almost insignificant bit of knowledge, conquers them, there comes the wild joy of wresting from an apparent defeat, an assured victory.

An illustration is furnished by a happening of a few months ago. A barrel of potassium bicarbonate, of German manufacture, had been on hand for some time. It was lined with parchmentized paper. Through some defect in the manufacture of the paper or the action of the salt upon it, the paper began to disintegrate. The more one tried to separate the salt and the paper the more they mixed. A boy was put to work spreading it on a table and picking out the bits of paper. It looked all right, but the first pound sent out was returned in a hurry. The paper was still there.

With the facilities at hand, recrystallization was out of the question, but nearly 200 pounds of material could not be wasted, especially, in the face of a rising market. Then came the magic inspiration of the electric fan. A small fan was set awhirl at one end of a long, narrow table. The table was covered with clean, heavy paper, and, along the edges was placed a row of wooden boxes to prevent the potassium bicarbonate from rolling to the floor. The end was left open.

Through the swift current of air, passing along this narrow channel, the material was allowed to drop, a handful at a time.Away went the paper—big bits and little bits—in a merry whirl, while the heavy chemical—bright and clean—dropped on the table—freed from its troublesome companion. Scarcely a pound of material was lost.

[1] Samples were shown.

*Read at the meeting of the New Jersey Pharmaceutical Association, June, 1915.