

## Selected Papers.

## Notes on the B. P. Solutions of Iodine, and other Pharmacopœical Preparations.\*

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There are three solutions of iodine in the Pharmacopœia,—the tincture, liquor, and liniment.

*Tinctura Iodi.*—The formula for this is the same as that of B. P. 1864, and the quantity of iodine is equal to that in *tinctura iodini composita*, P. L. 1851, but the iodide of potassium is only one-fourth. This quantity of iodide of potassium does not seem to be of any practical utility that I can conceive,—in fact, for one purpose for which it is used, it is a decided objection. The quantity of the iodide in the London tincture, and it was much in excess for the purpose, rendered it miscible with water, but that in the present tincture does not, as on its addition to water, the bulk of the iodine is precipitated.†

If it be necessary, and for internal administration it is necessary that it should mix with water, why not make it with water in the first instance, more especially as it has been stated that a spirituous solution of iodine undergoes decomposition on being kept? I find practically that 23 grains of the iodide will dissolve 20 grains of iodine in 1 ounce of water. A little excess of the iodide renders the iodine more readily soluble, as in liquor iodi, B. P., 30 grains are employed to dissolve 20 of the iodine in the same quantity of water. This liquor is known as Luggol's solution, when diluted, it is the best preparation for injecting in hydrocele, etc.

I would suggest the use of two liquors, one to be called liquor iodi (in place of the tincture), and the other liquor iodi fortior.

The case in which the presence of the iodide in the tincture is objectionable, is, when it is added to boiling water, to yield the vapour of iodine for inhalation; for this purpose the iodine would be more completely vaporized if not held in solution by the water. The old Edinburgh simple tincture of iodine answers best for this purpose.

For external use spirituous solutions have this disadvantage—they have not "body" enough, as the spirit volatilizes too quickly, leaving the iodine in a free state upon the skin, in which condition little of it is either absorbed, or produces any counter-irritation, as it, too, becomes vaporized.

*Iodine and Oil of Tar.*—A solution, or rather a mixture, as it is not a mere solution, of 1 part of iodine with 4 of light oil of wood tar, makes a useful application. In mixing the iodine and oil of tar great heat is evolved—part of the oil oxidized and becomes resinous. This resinous portion, being held in solution in the excess of oil, on applying the mixture to the affected part, acts like a varnish and prevents the vaporization of the io-

dine. This application is found to be very useful in ringworm and similar skin affections.

*Linimentum Iodi.*—When Iodine is intended to produce counter-irritation, or promote the absorption of glandular swellings, this is a suitable application, but for the reasons I have stated, it has not "body" enough—much of the iodine is vaporized and produces no effect; moreover, when this liniment is applied repeatedly, which is often desirable, the skin gets hardened, and the iodine takes but little effect until this dead skin has peeled off. Its application then causes great pain. Having had it applied to myself for a chest affection, I remember the agony it caused me when painted on the newly formed skins, the deadened cuticle having peeled off. I think the camphor in it might be replaced by an equal quantity of glycerine with advantage. Experiments upon myself and others tend to show that the quantity of glycerine should not be added in excess of that which I have named, that is, one part in forty, especially when employed to produce counter-irritation; if more glycerine be used, its effect cannot be localized, as the application gets rubbed by the clothing before it has sufficiently dried on the skin. The quantity I have suggested seems, likewise, to promote its absorption.

My experiments were not carried far enough to produce constitutional effects, but as a counter-irritant, I did not perceive that an iodine liniment containing iodide of potassium had any advantage over one not containing it.

*The Ointments of Iodine, and Iodide of Potassium.*—The application of these is generally aided by friction, and as, before its addition to the lard, the iodide of potassium is directed to be dissolved, in the one case in proof spirit, and in the other in water, these solvents become evaporated, and the iodide crystallizes out. When, therefore, the ointments are applied, these sharp crystals act like pieces of glass, and irritate the part in such a manner that their continued use, which in glandular affections is necessary, cannot be persisted in. Here again glycerine diluted with spirit for iodine ointment, and with water, for iodide of potassium ointment would be a better solvent. This brings me again to the unfortunate—

*Linimentum Potassii Iodidi c. saone.*—This preparation I consider is a step in the right direction, as, if iodide of potassium produces any effect, when applied externally, in the liniment, the objections I have raised about the ointment are avoided.

Some samples of olive-oil hard soap I have lately tried, even made by the same maker as that which I have found repeatedly to yield good results, have not proved so uniform in this respect. The soap answers better recently prepared, and that bearing the brand of F. Court Payen. I find it makes a satisfactory preparation, if the solutions of the salt and the soap be mixed by trituration at equal temperatures, but it will not keep much above a week without separating.

Iodide of potassium seems to have a similar effect, in a modified degree, on a solution of olive oil and soda soap that chloride of sodium has in its manufacture; it precipitates it in time, but in a hydrated state, so that if more of the soap were used, there would be no separation of water. I find what Mr. Squire states is correct, that if prepared with powdered soap, which contains less water, there is no separation.

Mr. Smith, of Cheltenham, in this month's Journal confesses he has led us into error. The hard soap he meant to be cured soap, which is not officinal in the Pharmacopœia.

On the 24th Jan. last, I made the samples exhibited bearing that date, and this morning likewise prepared a little, marked No. 6, with strictly B. P. quantities. It is what I consider the preparation ought to be, but it will not keep in this condition.

1. B. P. Made 24.1.70.—Separated into two strata; the upper one is about one-third of the whole, and contains all the soap, as the lower one will not produce the lather which is characteristic of soap.

2. Made with powdered B. P. soap 24.1.70—A firm, solid semi-opaque jelly: it has a leoprous appearance against the sides of the bottle, but has not separated.

3. Made with common yellow soap 24.1.70—A solid, white and opaque jelly.

4. Made with white curd soap 24.1.70—White and opaque or semi-opaque, being more translucent than 3.

5. Made with B. P. soft soap.—Clear, transparent, and semi-gelatinous.

6. Made with recent olive-oil hard soap bearing the brand of F. Court Payen. Semi-transparent, more gelatinized than 5, and, when slightly agitated, it exhibits some of the characters of the jelly of the pastry-cooks.

*Actum Scille.*—This preparation, which is one of the oldest galenic formulæ in the Pharmacopœia, its origin by Pereira being ascribed to Pythagoras, has been the subject of some remarks by Mr. Bland. He objects to the addition of proof spirit. My experience of it is that, either with or without the spirit, there is always a deposit formed in it, but I think less when the spirit is added. In the London Pharmacopœia of 1721 spirit was not mentioned in the formula for its preparation, but in the next edition there is directed to be added to it "about one-twelfth its quantity of proof spirit, that it may keep the longer from growing mothy."

The squill has always been directed to be dried before digesting or macerating in the vinegar or diluted acetic acid. The volume Pythagoras wrote on squill not being extant, I am not able to certify that it was not so ordered in the original formula; but it would be more rational to use the bulb in the fresh state, seeing that much of its activity is volatilized on drying the squame. The fresh bulbs are easily preserved in dry sand, being so exceedingly tenacious of life that Dr. Christison says, "My large bulbs, while lying on my museum table, produced two stems two feet tall, and covered with flower buds, many of which became fully expanded; and a small one, after being kept in the same place for at least eight years without any signs of life, began also, without any change of circumstances, to push forth its stem."

As four-fifths of the weight of the fresh bulb consists of moisture, I think an expressed juice mixed with acetic acid, and clarified by defecation or other means, would yield the best preparation. Rectified spirit might likewise be added to the expressed juice in sufficient quantity to separate the greater portion of the probably inert mucilaginous matter, thus a preparation would be produced corresponding to succus taraxaci and other expressed juices. This might supplant the tincture of the present Pharmacopœia.

It is somewhat curious that up to 1851 the fresh bulbs had always been officinal in the London Pharmacopœias, but, as before free-

\*From the Pharmaceutical Journal, London.

† In all proportions between one part of the tincture and from three to forty of water, this precipitation or crystallization of the iodine takes place, but it is most evident on mixing one part of the tincture with six of water. My attention has been frequently drawn to this fact when rinsing with water a measure glass has contained the tincture, the free iodine causes the glass to have a greasy appearance, in which condition it has a repulsion for water. On adding the liniment of iodine to water, a still more abundant separation of the iodine occurs.