

## An Improved Method for Preparing B. P. Tinctures.

By CHARLES E. DODSLEY.

Everyone who has had any experience in the manufacture of tinctures is aware of the great loss of spirit entailed by implicitly following out the directions of the B. P.; this is not, however, the only unsatisfactory point. The process of maceration and percolation as directed is as follows:—A given portion of a drug is ordered to be macerated in a certain measure of spirit for a given time, then the mixture is transferred to a percolator, and when the supernatant fluid has passed through and ceased to drop percolation is continued with the remainder of the spirit. Press the marc, filter, mix, and add sufficient spirit to make up the measure. But little consideration is necessary to pick out the weak points. The first thing that will occur to most is the loss of spirit; this certainly is great during the three transferrings from one vessel to another; there is loss both by evaporation and also in numerous particles of the drug which are saturated with liquid adhering to the sides of the vessels. In the second place, how much dissolved extractive matter and how much spirit is left in the marc after pressing? Another objection to expression is the amount of useless-suspended starchy and mucilaginous matter which is forced out. Especially is this noticeable in treating gentian, rhubarb, squills, calumbra, and others. This extraneous material collecting upon the filter chokes up the pores, retarding filtration and retaining by absorption a quantity of liquid in proportion to its bulk. All this loss and waste has then to be made up. This is decidedly unscientific; the object of all true science is utilitarian in its aim. Thus we arrive at this fact that the process, as set down in the Pharmacopœia, is, from a strictly pharmaceutical and business standpoint, unsatisfactory. With a perfect process a definite measure of liquid, in which is dissolved a soluble portion of the drug, should, when finished, equal the measure of liquid plus the bulk of dissolved matter. Instead, the direction in every case is, add sufficient spirit to make up to the original volume. In the last place, is the drug exhausted by this process? In most instances it is not.

The improved process which I now propose to lay before the readers of the *B. and C. D.* is not a matter of theory, but the result of practical work extending over a lengthened period. The method is to do away with separate maceration, and also pressing, the whole of this part of the process being conducted in one apparatus by repeated and continuous percolation. Briefly a tincture may be described as a spirituous solution of the active principles and soluble portions of a drug or drugs, representing a definite uniform strength.

In preparing a tincture it is necessary first to consider the most suitable physical condition in which to subject the drug for treatment. This the B. P. provides

for in ordering the various degrees of comminution into which the drug is to be divided. And in the second place, the best means of exhausting the drug with the least amount of waste, and to give the best results in every way. For convenience I have tabulated the whole of the B. P. tinctures, under four headings or groups, as under:

Group 1. Simple solution of one or more ingredients.

Group 2. By exhaustion of a single drug (simple tinctures).

Group 3. By exhaustion of a number of ingredients (compound tinctures).

Group 4. Complex tinctures.—Under this heading are included all which do not come within the limit of the other three. This group is sub-divided into three divisions, *a, b, and c.*

*a.* Exhaustion of a drug and solution of one or more ingredients.

*b.* Solution or exhaustion of one or more drugs in a compound menstruum.

*c.* Simple mixtures of other compounds.

### ALPHABETICAL LIST OF TINCTURES.

Complete list of all tinctures in the British Pharmacopœia:

R. signifies Rectified Spirit. P. Proof Spirit. D. Dilute.

#### GROUP I.—SOLUTIONS.

Aloes. P.	Podophylli. R.
Cannabis indica. R.	Benzoin. co. R.
Nucis vomica. D.	Myrrhæ R.
Asafoetida. R.	Tolutana. R.
Iodi. R.	

#### GROUP II.—SIMPLE PERCOLATES.

Aconiti. R.	Geleemii. P.
Arnica. R.	Hyoscyami. P.
Aurantii. P.	Jaborandi. P.
† Aurant. Recent. R.	Jalapa. P.
Belladonna. P.	Laracis. R.
Buchu. P.	† Limonia. P.
Calumbæ. P.	Lobelia. P.
Cantharidis. P.	Lupuli. P.
Capsici. R.	Opi. P.
Cascarilla. P.	Pyrethri. R.
Chirette. P.	Quassia. P.
Cimicifugæ. P.	Krameria. P.
Cinchonæ. P.	Sabina. P.
Cinnamomi. R.	Scilla. P.
Cocci. P.	Senega. P.
Colchici sem. P.	Serpentaria. P.
Conii. P.	Stramonii. P.
Croci. P.	Sumbuli. P.
Cubebæ. R.	Valerian. P.
Digitalis. P.	Veratri virid. R.
Ergotæ. P.	Zingib. R.
Gallæ. P.	Zingib. Fort. R.

† Both prepared from fresh peel, but one directed rectified spirit the other proof spirit; the reason why, it is difficult to fathom.

#### GROUP III.—COMPOUND PERCOLATES.

Cardamomi co. P.	Rhxi. P.
Cinchonæ co. P.	Sennæ. P.
Geutian co. P.	

#### GROUP IV.—COMPLEX TINCTURES AND SIMPLE MIXTURES.

A.	B.
Camphoræ comp. P.	Guaiacum.
Catechu. P.	Lobelia atheria.
Lavandul. co. R.	Opi ammoniata.
	Quinine ammoniata.
	Quinine.
	Valerian. ammon.
	Kino.

C.

Chloroformi et morphinæ.
Chloroformi comp.
Ferri acetatis.
Ferri perchloridi.

Group 1 includes four tinctures, which may be classed as typical, i. e., a stable solution of the active portion of the drug of a definite strength. First is nux vomica, a solution of the standardized extract representing a definite percentage of alkaloidal value; cannabis indica, not standardized; podophyllin, a solution of the resin of podophyllum; and iodi, a solution of iodine and iodide of potassium. I find the best method to adopt in making Tr. myrrh., is to digest the gum in spirit for the stated period, transfer the undissolved portion to a cylindrical percolator, and pass the remainder of the spirit through; when the last portion is added, and has sunk about half an inch below the top of the residue in the percolator, gently pour on a sufficient quantity of water to displace the spirit remaining in the residual mass, by this means the whole available amount of tincture is collected. Asafoetida may be treated in a similar manner. In the case of aloes and tolu, the amount of undissolved matter is so small that the quantity of spirit held in solution is practically nil. From Tinct. benzoin. co. there is a much larger quantity of undissolved matter. With this tincture displacement with water is not applicable. Where these resinous tinctures are prepared in any quantity, say gallon lots, the residues may be reserved in a suitable well-closed vessel and the spirit distilled off at some future time.

Group 2 now claims our consideration. With the exception of tincture of cautharides, which is strictly according to B. P., these may all be prepared by the same process, i. e., maceration and repercolation. The *modus operandi* is as follows:—The new displacement apparatus of the York Glass Co. is the most suitable for small quantities. Pack the prepared drug in the percolator (the upper part of the apparatus) taking care that no powder falls to the bottom, or the pores of the muslin or lint will be choked up. Where rectified spirit is the menstruum, first pour over the drug a sufficient quantity of spirit to cover it, and set aside until it is absorbed, and the drug thoroughly softened; now pour on about half the quantity of spirit that is to be used, and digest for two days, after which allow the liquid to percolate through, taking care that the liquid does not fall beneath the level of the marc;\* pass the percolate through again and reserve. Repeat the process with the remaining spirit, retaining 1 or 2 ounces or more, as the bulk is more or less, which is to be used for washing the exhausted marc, and then displaced with a quantity of water equal to that retained in the marc. These directions are applicable to all rectified tinctures under Group 2. It is necessary to slightly alter the process for proof spirit tinctures. As an example, we will take Tr. calumbæ, using B. P. quantities to produce 1 pint. Take 2½ ounces calumbæ root, cut small, i. e., about the size of a hempseed; put this in-

\*It is important always to watch this point, to avoid air bubbles getting in, and also to prevent forming channels through the marc.