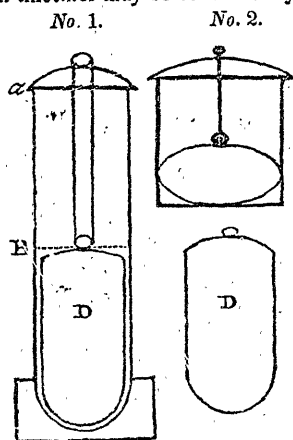


the shape and dimensions of the bag, and adapting them to those of the vessel in which it is to be suspended. When this adaptation is properly effected, all the substances without exception may be effectually covered by, and efficiently macerated in the proportional quantity of spirit.

But in my former paper on this subject, the use of a conical vessel was suggested, and the shape of the bag was that which would result from enclosing a substance in fragments in a piece of linen or calico with string, or a modification of the sphere; and with this arrangement, about thirty-seven of the officinal tinctures may be conveniently prepared; but the remaining eight or nine tinctures being made with very bulky solids, cannot be efficiently macerated in this form of apparatus, but require for the purpose a modification of it, as above noticed, and in which it will be practicable to immerse the solids, without being subjected to forcible compression, in the proportional quantity of spirit.

Whether the vessel is conical or cylindrical, is immaterial, provided it has the requisite capacity; but the bag, when the conical vessel is used, should be likewise conical; and when the cylindrical vessel is preferred, oblong. Their relative dimensions in both cases must be such, that no more space be left unoccupied by the bag, when loosely packed with the dried solid and introduced into the vessel, than is sufficient to allow for the expansion caused by the absorption of spirit by the solid, and be sufficient also to admit of the interposition of a thin stratum of the spirit, which remains unabsorbed between the sides of the expanded bag and the interior sides of the vessel. If this adaptation is made with common care, a free circulation of the resulting tincture will be insured, as its density varies; and an exceedingly thin stratum of interposed spirit will suffice. The bag having been prepared by the sempstress under directions, is to be filled with the substance, previously reduced to the state of disintegration directed in the London Pharmacopœia, and allowed to fall into the bag by its own gravity without the application of additional pressure, except in the examples of hop, hyoscyamus, and conium, in packing which, but particularly hop, a moderate degree of pressure will be required to contract their bulks within the requisite limits.

The bag is next to be closed, a little above the solid, by string, and finally immersed in the proportional quantity of spirit previously introduced into the macerating vessel; and with an apparatus resembling in its proportions that in the annexed sketch, to the exclusion of the conical vessel, all the officinal tinctures may be conveniently prepared.



The sketch is too simple to require explanation, but it is proper to observe, as a general guide in making the arrangement and in conducting the process, that, with refer-

ence to cylindrical vessels of the requisite capacity, their height should always rather exceed twice the height of the packed bag, so as to allow of it being raised under cover, and drained above the surface of the tincture. The diameter of the vessel does not materially influence the process when small quantities of solids are macerated; but when large quantities are employed, a vessel of a larger diameter, and shallower than that represented on the sketch No. 1, with a bag to correspond, and made so as to expose as extended a surface of the solid as possible to the action of the solvent, with the least depth, would be preferable to the oblong bag, as being more favourable to the perpendicular circulation of the tincture through the solid, as in the sketch No. 2.

But while, on the one hand, by an apparatus of the kind suggested, the bulks of the substances to be macerated in it is a circumstance of secondary moment; on the other, their chemical nature and state of aggregation continue to exert considerable influence over the process, and materially affect the rate of circulation through them. The circulation of the resulting tincture, for instance, varies with the solubility and porosity of the solid immersed in the spirit, as well also as with the nature of the insoluble residue left in the bag: thus, when the substance is very soluble, and contains a very small proportion of matter insoluble in spirit, as kino or guaiacum, the rate of circulation is comparatively rapid; so, also, when the substance is very porous, its extractive very soluble, and its insoluble components are likewise very porous, as in the examples of cinchona, hop, and conium, the rate of circulation is rapid, and the process goes on very favourably. But if the substance becomes viscid when saturated with spirit, as squill, and the residue is abundant and gummy, as that of jalap, opium, myrrha, and assafoetida, or is feculent, as that of liquorice, then the rate of circulation, although rapid for some hours after the solids have been thoroughly saturated with the spirit, will become languid towards the close of the maceration, and will require to be stimulated by the interference of mechanical aid.

With the object, therefore, of quickening the circulation of the solvent through the majority of the solids used in making tinctures, the packed bag should be raised, and drained under cover, after it has been immersed in the spirit for one or two days, and again lowered as soon as the tincture has entirely ceased to drain from it. This alternate raising and lowering will have the effect of restoring animation to the circulation of the tincture stagnating in the centre of the congested solids, and should be repeated daily during the process of maceration.

This process is usually perfected in two to four days when small quantities of the respective ingredients are used, as, for instance, an ounce of a solid, and its proportional measure of spirit; but is protracted two or three days when large quantities of similar materials, as eight pounds of cinchona and three gallons of spirit, are macerated together. The influence of quantity, although evident, is nevertheless much less marked than that of the chemical nature of the substance under treatment with spirit; and by no process of maceration can the original affinities between the components of different substances be invariably subverted by the spirituous solvent in equal intervals of time. Some are more readily overcome than others under similar conditions; and this inequality of interval is rendered very apparent when the same kind of substance is macerated in different states of aggregation, and at different temperatures. It is necessary, therefore, to attend to these conditions, with the object not only of abbreviating the duration of the process, but likewise of insuring the exhaustion of the solid, and the uniform strength of the tincture. And generally, a substance in mass cannot be dissolved by spirit at a lower temperature so quickly as when the same kind of substance, being reduced either to fine or coarse powder, is macerated at a