Contributed and Selected

SOME PRACTICAL POINTS IN MANUFACTURING PHARMACY.

E. L. MAINES, PH. C., PHAR. D. AND R. J. GARDNER, PH. G.

Pharmaceutical production, on a large scale, is necessarily governed by different methods of procedure than retail or commercial pharmacy. Some of the following hints, however, may be adopted by the retail pharmacist with considerable gain, both as to the time employed in making, and the appearance of the finished product.

Liquor Cresolis Compositus: In the manufacture of Compound Solution of Cresol, it is not advisable to follow the exact directions of the United States Pharmacopœia; the following formula and method of procedure having been found to produce better results.

Cresol	50%
Linseed Oil	35%
Potassium Hydroxide	8%
Water	q. s.

Place the potassium hydroxide in a steam-jacketed kettle or tank, equipped with an agitator, and add sufficient water to dissolve the potassium hydroxide. Turn steam on kettle, keep agitator running, and add the linseed oil. Stir until the soap becomes clearly soluble in distilled water, adding small quantities of water from time to time in order to complete the saponification. The soap must completely dissolve in distilled water and leave no oil-globules floating on the liquid. Add the cresol gradually, constantly stirring the mixture until a clear solution is produced. Finally add sufficient water to make the desired yield, if necessary.

It is not necessary to use any specified amount of water in the manufacture of Compound Solution of Cresol, as any excess may be quickly evaporated in the steam kettle before adding the cresol. Any excess of water can easily be determined by noting the consistency of the soap. This is an important point to be observed, as it is the key to the successful manufacture of this product.

The authors can manufacture one thousand gallons in three hours, the product complying with all government requirements; whereas, to our knowledge, it has taken three days to produce a like amount by others who used the U. S. P. method.

Any galvanized-iron tank equipped with steam coils and a simple mechanical stirring device, is all that is necessary for the manufacture of Liquor Cresolis Compositus, although copper, or enameled steam-kettles may be used.

If the Pharmacopœial directions are strictly followed, it is impossible to make

a satisfactory preparation, or one that will mix clearly with water in any proportion.

Fluidextract Cascara Sagrada Aromatic:—In the manufacture of the various Fluidextracts of Cascara Sagrada Aromatic, a slight modification of the general methods will produce a superior product and one which is not necessary to age for so long a time. Aromatic Fluidextracts of Cascara are generally treated with calcined magnesia to remove bitter principles, then percolated with hot water to extract their active constituents, and made palatable by adding licorice, sugar and aromatic oils. Fluidextracts of Cascara are always aged, to allow the precipitation of inert material before being bottled for the trade. This can be overcome, in a great measure, by percolating the ground licorice separately. Place the licorice in a suitable percolator and exhaust the drug with hot water. Never allow the drug to macerate over three hours. Concentrate the weak percolates, make up to desired yield, place in a suitable container and precipitate the inert material by the addition of stronger ammonia water. This can be accomplished by the addition of about one ounce of stronger ammonia water to each gallon of licorice-percolate. As is well known the ammonia water has the additional advantage of intensifying the sweetness of the licorice.

Syphon off the clear portion and filter the remainder through canton-flannel. Exhaust the ground cascara with hot water after allowing the drug to macerate three hours. Mix the two liquids, add the sugar and aromatic oils dissolved in alcohol, and filter when ready for use.

Note.—The authors are experimenting upon a method which is not yet completed and by which Fluidextract Cascara Sagrada Aromatic can be used within tweny-four hours after manufacture and still have no precipitation.

FLUIDEXTRACT-MANUFACTURE NOTES.

1. *Fineness of Powder:*—Always use a No. 16 to No. 20 powder for percolation. A finer powder than this clogs up in the percolator and does not admit of complete exhaustion. This applies to manufacture on a large scale only.

2. *Alcoholic Percolation:*—In the percolation of drugs with 95% Alcohol, do not moisten the drug before packing in the percolator. Simply pack the drug dry and add the menstruum of 95% Alcohol directly to the percolator.

3. *Aqueous Percolation:*—In the aqueous percolation of such drugs as, cascara, licorice, senna, etc., be sure they do not macerate over three hours. Moisten well, place in percolator, add hot water, macerate three hours and then draw off the percolate. Continue this until the drug is completely exhausted.

If allowed to stand more than three hours the drug gelatinizes in the percolator and makes its extraction extremely difficult and tedious.

4. *Fluidextracts of the Alkaloidal Drugs:*—The percolate from all fluidextracts of the alkaloidal drugs should be concentrated in *vacuo* with the possible exception of opium, ipecac and hydrastis.

If ordinary stills are used there is great danger of decomposing the alkaloids.

Resina Jalapæ,—In the manufacture of resin of jalap, great care should be taken to wash out *all extractive matter* with both hot and cold water. If this is done properly the resulting yield will be non-hygroscopic.

Extractum Cubebæ, By-Product:—In the manufacture of Extract of Cubebs the Oil of Cubebs can be obtained as a by-product by simply re-distilling the exhausted drug.

Three hundred pounds of drug will yield, from fifty to sixty pounds of extract. The exhausted drug, in turn, will yield ten to twelve pints of Oil of Cubebs which complies with all U. S. P. requirements.

Fluid Orange Soluble, By-Product:—Oil of Orange may be obtained in the manufacture of Fluid Orange Soluble by distilling the separated oil.

Eight hundred pounds of drug, yielding sixteen hundred pints of Fluid Orange Soluble, will give a corresponding yield of ten to fourteen pints of oil of orange.

In the production of pharmaceutical products, the manufacturer has called to his aid every mechanical device whereby he may keep pace with pharmaceutical progress.

Vacuum-stills and dryers, mixers, granulators, mills, etc., enable the manufacturer to produce, within two or three days, the same amount of finished product that would ordinarily require one or two weeks to manufacture.

Thus the human factor has largely been eliminated and manual labor superseded by mechanical aids which enable the producer to manufacture with greater accuracy and to market preparations of a better quality.

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AMYL NITRITE; ITS PREPARATION, PURITY AND TESTS.

FRANK O. TAYLOR, PH. C.

From time to time during the past thirty-five years there have appeared articles on amyl nitrite dealing with the maufacture, impurities, assay and therapeutic effects. A number of these record investigations of the quality of commercial grades of amyl nitrite, chiefly by some method of assay and in a less number of cases by fractional distillation, together with some qualitative tests for aldehyde, nitropentane, etc. The collective evidence of these shows that the quality of much of the amyl nitrite on the market has always been inferior and, further, that the improvement following the publication of these investigations and criticisms has been by no means marked.

At the risk of re-treading ground already well explored the writer desires to record here results obtained in both experimental and practical work during some years past, to call attention to a number of facts of which he has seen no published mention and suggest higher standards and better tests than are now universally included in the various pharmacopœias. The pharmacopœial requirements are in some things too rigid and in others not sufficiently severe. The following brief *resume* of the requirements of a number of pharmacopœias is given so that proper comparison may easily be made, reserving comment on these statements until later:

Definition and Description.—Of the nine pharmacopœias examined only two, the U. S. and British, include a definition as distinguished from the description.

*Read at the Rochester Meeting of the A. C. S.