CONCLUSION.

The only assay so far recognized for gum asafœtida is alcohol-soluble extractive. The assay prescribed in U. S. P. IX was indirect and consisted in the determination of the alcohol-insoluble residue from which the alcohol-soluble extractive was calculated. The method was faulty in that the moisture content which was included could not be called properly alcohol-soluble extractive.

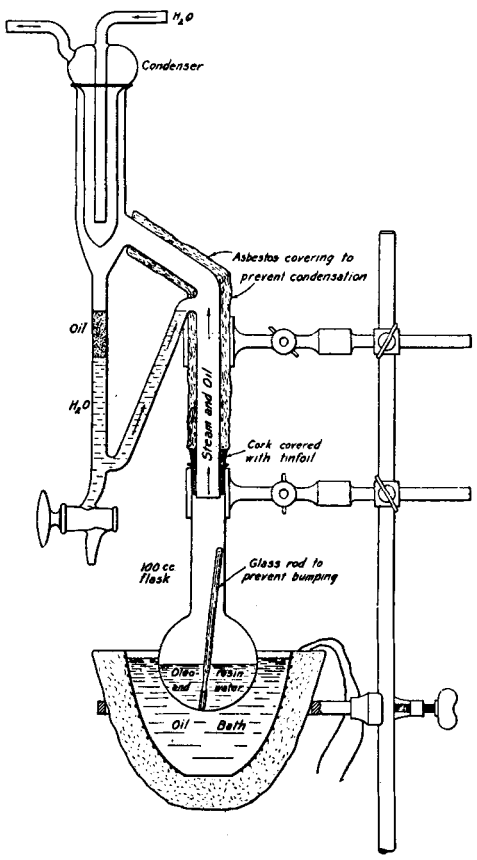

Fig. 1.

On the other hand, the assay in U. S. P. X is direct in that the alcohol-soluble extractive is dried to constant weight. The method is faulty in that an undetermined proportion of the volatile oil is lost and the resulting values for alcohol-soluble extractives are too low.

The method of assay adopted by the New York Station is similar to one used by Bennett and Bickford[1] in determining the alcohol-soluble extractive in gum benzoin and is essentially that given in U. S. P. IX with suitable corrections for moisture.

Since the volatile oil constitutes from 10 to 19 per cent of the alcohol-soluble extractive and since there is a probability of loss of volatile oil in certain manufacturing processes, it is recommended that in addition to the requirement for alcohol-soluble extractive a suitable volatile oil standard for asafœtida be adopted in the forthcoming U. S. P.

TURBIDIMETRIC MEASUREMENTS FOR PHARMACEUTICAL PREPARATIONS.*

BY SAMUEL CLAMAN, C. JELLEFF CARR AND JOHN C. KRANTZ, JR.

INTRODUCTION.

Clarity Standards for pharmaceutical preparations serve a twofold purpose. *First*, they insure that solutions intended for intravenous medication are free from insoluble particles. *Second*, they enable the establishment of a high degree of pharmaceutical elegance in such preparations as the elixirs and waters. In conformity with this view the new Netherlands Pharmacopœia makes the requirement:

[1] *Jour. A. O. A. C.*, 11 (1928), 386.

* Section on Practical Pharmacy and Dispensing, A. PH. A., Miami meeting, 1931.

By clear is understood that the liquid or solution does not appear more turbid than a suspension of 5 mg. of particles (with the largest diameter of the particles 20 microns) per liter. The comparison of clarity is carried out in tubes with flat, colorless bases, with a discernible (or penetration) length of at least 10 cm. and against a dull black background.

In the preparation of the general monographs for the forthcoming revision of the United States Pharmacopœia an effort was made to prepare standards of turbidity and clarity and to develop a suitable criterion of measurement of small difference in turbidity.

EXPERIMENTAL.

In search for a suitable standard of turbidity the standards adopted by the United States Geological Survey in the standardization of the turbidity of water was employed. The standard for comparison is prepared by suspending 1 Gm. of dry, precipitated, fuller's earth, sifted through a 200-mesh sieve into 1000 cc. of distilled water. This stock suspension has a turbidity of 1000. Standards for suspensions of a lesser degree of turbidity may be prepared from this stock suspension by dilution with distilled water after thorough agitation. Thus 1 cc. of this suspension diluted to 100 cc. with distilled water produces a suspension with a turbidity of 10, whereas 1 cc. of the stock suspension diluted to 1000 cc. produces a suspension with a turbidity of one. Turbidities of less than one can be obtained by further dilution.

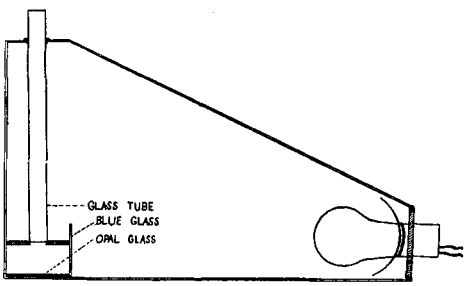

Fig. 1.

The authors have found these turbidity standards very useful in measuring the degree of clarity of solutions which have passed through various filtering media and also in determining the amount of insoluble impurities in solutions of medicinal salts. Ordinary tap water generally has a turbidity of less than one; elixirs and aromatic waters, when filtered properly, should not have a turbidity exceeding one unit on the fuller's earth scale.

The next problem was one of selecting a suitable turbidimeter for the rapid measurement of these turbidities. For this purpose the authors found the Baylis Turbidimeter[1] (with certain minor modifications) admirably suited; an outline drawing of the apparatus is given in Fig. I. The principle upon which the instrument depends is exceedingly simple. The blue light shines from beneath the glass tubes so that the observer sees only blue light if the solution contains no suspended particles. Any suspended matter reflects white light rays and obscures some of the blue light. With tubes containing 50 cc. of liquid (Nessler Tubes) a turbidity of 10 will obscure most of the blue light.

CONCLUSION.

1. Turbidity standards and measurements are described which are applicable to pharmaceutical preparations.

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[1] J. R. Baylis, *Ind. Eng. Chem.*, 18 (1926), 311.