Hydrogenated vegetable oil, while showing a trifle lower efficiency than yellow petrolatum, anhydrous eucerin and coconut oil, seems to be the most practical base for iodine ointment.

Attention is especially called to the extreme cheapness of the 3 percent ribbon tragacanth base mentioned in the table. This paste showed quite as good keeping qualities as iodine ointment made with benzoinated lard and appeared to be somewhat more effective, physiologically, according to the following results:

Iodine ointment made with benzoinated lard and containing 4 percent free iodine caused cracking of the skin when applied to the shaved abdomen of a guinea pig every morning for 7 days.

An iodine paste containing 4 percent free iodine, prepared according to the U. S. P. process for iodine ointment, but with the benzoinated lard replaced by a 3 percent ribbon tragacanth paste caused cracking of the skin when applied to the shaved abdomen of a guinea pig every morning for 4 days.

—Reported by Geo. E. Ewe.

REFERENCES.

[1] *Pharm. Jour.*, 1912, 89, 610.
[2] *Rep. Chem. Lab., A. M. A.*, 1917, 10–38.

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A SUGGESTED CHANGE IN THE TECHNIQUE OF THE U. S. P. ASSAY OF OPIUM.*

BY H. W. JONES.

The method of assay for opium and its preparations given in the ninth revision of the United States Pharmacopoeia, while in general giving satisfactory results, contains certain directions, which, if followed specifically, may yield varying figures in the hands of different analysts, and indeed the results are apt to vary in the hands of the individual analyst unless he is unusually methodical in carrying out the details of analysis.

The directions for the extraction of the drug and for the crystallization of the alkaloid are quite definite and are scarcely capable of misconstruction, but the method directed for collecting the morphine crystals may allow a considerable variation in results even in the hands of the same operator. For this purpose the Pharmacopoeia directs that: "a small funnel, the neck of which has been previously closed with a pledget of purified cotton" be used. Through this pledget of cotton one is directed to pass the mother liquors from which the morphine has crystallized and which will contain fine crystals of morphine in suspension. I find that whether the pledget is thick or thin, pressed loosely or tightly will influence the quantity of these morphine crystals which will pass through with the mother liquors. That they do pass through has been observed repeatedly in this laboratory, for they may readily be seen upon allowing the filtrate to stand, and for this reason a second assay has been made on a number of samples already assayed by the U. S. P. method, using a quantitative filter paper instead of the

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pledget of cotton. In each case higher results were obtained by using the filter paper as shown by the following figures:

Sample.	Assay with cotton.	Assay with filter paper.	Difference percent.
Powd. Opium	9.79	9.97	1.84
Gran. Opium	10.26	11.36	10.7
Fluid Opium, Conc	3.89	4.22	8.5
Tinct. Opium, U. S. P.	0.89	0.96	7.86
Tinct. Opium, U. S. P.	0.977	1.01	3.37
Tinc. Opium Deod	1.034	1.15	11.2

These results show a difference of from two percent to eleven percent above the U. S. P. assay by substituting filter paper for the pledget of cotton, a difference which is well worth considering. Aside from the higher results obtained, and the object of the assay is to ascertain the total morphine content of the sample, the filter paper is certainly more convenient to use than the cotton. After the morphine crystals are collected and washed upon the filter paper, it is only necessary to remove the filter and transfer it back to the flask in which crystallization took place, when one may add to this flask the required twenty mils of tenth-normal sulphuric acid without being obliged to run it drop by drop through the funnel in order to remove any crystals which may have adhered to the glass. The presence of the filter paper in the flask is no more of a hindrance to final titration than is the cotton.

In view of these facts it is suggested that the wording of the assay of the Pharmacopoeia beginning with the twenty-sixth line on page 306 be changed to read as follows:

> "Decant the ethereal layer upon a filter having a diameter of nine cm. which has been moistened with ether. Rinse the flask and contents with fifteen mils of ether and, when the ether has passed through, wash the filter and contents with a small quantity of ether and then pour the aqueous liquid upon the filter without trying to remove the crystals. Wash the crystals in the flask, and the filter and its contents with distilled water previously saturated with morphine, until the washings are colorless. Then add a few drops of distilled water to replace the morphinated water. When the filter has drained, remove it from the funnel and place it in the flask containing the remainder of the crystals. Add to the flask twenty mils of tenth-normal sulphuric acid V. S.
>
> Replace the cork, warm gently."

etc., the remainder of the text being unchanged.

A sample of opium might be rejected on the basis of an assay in which cotton was used and still yield the required proportion of alkaloid when a filter is substituted for the cotton, and it is rather a nice question whether the deficiency by the cotton process would be recognized as legal grounds for the rejection. In practice such disputed cases are usually submitted to a referee and any chemist to whom such a dispute was referred would probably not confine his assays strictly to the technique of the U. S. P. but would try to ascertain the total amount of the alkaloid present, using various means of doing so.

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