

4. *Emulsions*.—Emulsion of Petrolatum should be deleted; a very important emulsion should be added, *viz.*, Emulsion of Creosote Carbonate.
5. *Fluidglycerates* are very seldom prescribed.
6. *Infusions and Decoctions*.—More should be included.
7. *Solutions*.—Antiseptic Solution of Pepsin should be deleted. Antiseptic Solution becomes cloudy on standing, the formula should be improved; the formula for Solution of Iron Albuminate should be simplified.
8. *Mixtures*.—Compound Mixture of Chloroform and Morphine, and Mixture of Oil of Tar should be deleted. Glycerin should be omitted in Compound Mixture of Rhubarb; physicians prefer to specify the formula of U. S. P. VIII.
9. *Oleates*.—Oleate of Cocaine is seldom prescribed and should be deleted.
10. *Petroxolins*.—Very few are prescribed; some of them should be eliminated.
11. *Spirits*.—Etheral oil is not always obtainable and, therefore, compound spirit of ether should be deleted.
12. *Syrups*.—Syrup of the Bromides is a good preparation and frequently prescribed; formerly Compound Syrup of Asarum was often prescribed but not now; we have had some of the preparation in stock for five years.  
Syrup of Morphine and Acacia and Compound Syrup of White Pine with Morphine should be deleted.
13. *Tinctures*.—Another menstruum should be designated for alcohol in Tincture of Larkspur; Decolorized Tincture of Iodine is not an iodine tincture, the formula should be changed or the preparation omitted from the N. F.
14. *Ointments*.—A simple ointment should displace the wax and lard of the present formula for Camphor Ointment. Ointment of Zinc Stearate is seldom prescribed and should be deleted.
15. *Wines*.—Compound Wine of Glycerophosphates is preferred by most physicians to the Elixir and should displace it. Wine of Wild Cherry is seldom prescribed and should be deleted.
16. *Tablets*.—A chapter on tablet triturates, compressed tablets and hypodermic tablets should be included in the U. S. P., giving full directions for making them.
17. *Ampoules*.—A description of ampoules should be included in one of the standards with methods for preparation and sterilization.

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### FLUIDEXTRACT OF IPECAC.\*

BY FRANTZ F. BERG.

Each succeeding revision of the Pharmacopoeia has found a change in the process of manufacture of Fluidextract of Ipecac. Judging from personal experience and that of others, we have not as yet obtained a preparation of this drug which satisfies the two-fold property of being permanent and at the same time suitable for the preparation of a Syrup of Ipecac.

A review of the literature on this subject and the drug itself reveals the fact that it is a very old subject. Several strengths of alcohol, together with the addition of various acids, have been tried with varied success, none of which have yielded a preparation entirely satisfactory.

The problem, as before stated, is to prepare a fluidextract which will not precipitate on standing and yet be miscible with syrup.

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The first consideration in attempting to prepare a fluidextract from this drug, was the selection of a menstruum which will extract its active constituents. From the writer's experience and from the consensus of opinion among other investigators, and prevailing formulae in other pharmacopoeias, it was concluded that a menstruum containing approximately 70 percent alcohol was the most efficient.

In the U. S. P. VIII a menstruum of 75 percent alcohol was used, but the finished product was not miscible with syrup, at least not without the addition of an acid.

The U. S. P. IX changed the menstruum to about 37 percent alcohol, with an addition of 1 percent hydrochloric acid obviously for the purpose of rendering it miscible with syrup, and as an aid to extraction.

The objections to the present formula are, first: It is extremely difficult to exhaust Ipecac with the menstruum used, and second: the resinous matter which causes the clouding with syrup has not been removed, and as a result we have an unsightly syrup.

With these facts in mind a series of experiments were undertaken to determine if it were possible to produce a preparation possessing the desired qualities.

The following table shows the results of these experiments.

Exp.	Menstruum.	Use of heat.	Appearance or result.	Assay.
"A"	Alcohol 75%, Glycerin 10%	Yes	Percolate gclatinized	None
"B"	Alcohol 75%, Acetic Acid 1%	Yes	Precipitated	1.10 Gm. per 100 Cc.
"C"	Present U. S. P.	No	Precipitated	1.91 Gm. per 100 Cc.
"D"	Present U. S. P.	Yes	F. E. good but syrup unsightly	1.60 Gm. per 100 Cc.
"E"	Alcohol 71%, HCl 0.5%	Yes	Excellent	1.71 Gm. per 100 Cc.

Following is the process as used in carrying out Experiment "E."

1000 Gm. of drug in No. 60 powder moistened with 250 Cc. of warm (60° C.) 2 percent hydrochloric acid, placed in covered vessel over night, packed moderately in percolator, covered with menstruum:

Alcohol (U. S. P. 95%)	3 volumes
Water	1 volume

Allowed to macerate 48 hours; percolation allowed to proceed slowly until 800 Cc. of percolate were obtained. This percolate was reserved and percolation continued (using same menstruum as above) until drug was exhausted. The combined weak percolates were introduced into a distilling flask (fitted so that distillation might proceed under diminished pressure) heated on steam bath until bulk of liquid in flask was reduced to  $\frac{1}{3}$  of original volume. (This operation was carried out without use of diminished pressure.) The reserve percolate was now added to contents of flask and distillation continued under reduced pressure until residue in flask had become viscid. Allowed to cool, then added alcohol 40 percent (made from recovered alcohol) a sufficient quantity to measure 1000 Cc. and filtered. (Resins separate and remain on filter.) Assay a portion of filtrate and adjust to U. S. P. strength.

#### CONCLUSIONS.

1. The exhaustion of the drug may be hastened by moistening with warm hydrochloric acid which causes a swelling or cracking of starch cells and woody fiber, and exposes a larger surface to action of the solvent.
2. That a 71 percent alcohol is best solvent for the active principles.
3. By use of a still the alcohol may be recovered and subsequently used with no great loss, and active principles are not injured by excessive heat.
4. By taking up residue in 40 percent alcohol a preparation is obtained which does not precipitate, and is miscible with syrup without the addition of acid.

A fluidextract prepared by this process has been observed during past month, and thus far shows no precipitation whatever, and produces a brilliantly clear syrup, and without the addition of acetic acid.

If this preparation with longer standing remains permanent, it is offered as a substitute for the present U. S. P. process for this fluidextract.

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## ALCOHOL: ITS RELATION TO SCIENCE AND INDUSTRY.

BY WILLIAM L. CROUNSE.

\*In this presence it would be a waste of words to undertake to emphasize the importance of alcohol in pharmacy. I feel, however, that in view of the extraordinary events of the past year and the conflict of counsels as to the policy the drug trade should pursue in protecting itself against the hazards incident to the enforcement of the unprecedented provisions of the Volstead Act, I am justified in appealing to you to do your bit in securing for alcohol the official recognition to which it is entitled as the most essential chemical raw material known to industrial science.

The man in the street is apt to consider distilled spirits solely as the means of producing a condition of more or less delightful exhilaration, with a dark brown taste the morning after. To the extreme prohibition enthusiast all forms of spirits are anathematized as the Demon Rum. But few persons outside the circle of those who actually employ alcohol in science and industry appreciate its indispensable character or realize that if its supply were cut off thousands of manufacturing plants would cease operations, hundreds of thousands of men and women would be thrown out of employment and the science of medicine relegated to the dark ages.

While, therefore, the law of the land, which we all cheerfully obey, requires that adequate safeguards shall be thrown around the use of alcohol to prevent its diversion to beverage purposes, yet we who realize its value to science and the industrial arts should not hesitate to demand that it shall be available for every legitimate purpose and on terms that represent a minimum of expense and hardship to the user.

### USE OF DENATURED ALCOHOL.

No development in the utilization of alcohol is more significant of its great importance to industry than the enormous increase in the consumption of denatured spirits since the passage of the so-called free alcohol law of 1906. It was my pleasant task to assist the manufacturers of the country in the efforts to secure the passage of that statute and it has been a matter of great satisfaction to me to note the rapid development of the use of denatured spirits under its beneficent provisions. Beginning in 1907 with a total consumption of completely and specially denatured alcohol of 1,780,276 wine gallons, the total rose in 1914 to 10,404,975 gallons. In 1914 the World War began and the demand for alcohol, first, for the manufacture of smokeless powder and, second, for the production of our allies and for the United States of various gases, including the deadly mustard