RESIN CONTENT OF WHITE PINE BARK.*

H. V. ARNY.

At the request of Dr. William Mansfield, Mr. Jeannot Hostmann and the writer assayed samples of rossed and unrossed white pine bark used by Dr. Mansfield in his microscopic examination and furnished by him to the writer. We found the resin assay a more complicated matter than it appeared at first blush, since every suggested solvent was apt to extract bark constituents other than the oleo-resin, and evaporation of the liquid extract to constant weight meant possible loss of the volatile oil. Moreover, the amount of bark placed at our disposal (about 15 gm. of each) was too small to permit of more than a superficial examination.

The most feasible method seemed to be continuous extraction with hot alcohol in a Landsiedl Continuous Extractor and the subsequent precipitation of the resin from the alcoholic solution by pouring it into water. The resulting turbid mixture had to be acidulated before complete precipitation was accomplished.

The precipitate in each case presented a two-fold character. The alcoholic extract obtained from the unrossed bark, yielded considerable sticky oleo-resin, while that from the rossed, gave only a small amount of oleo-resin. Both extracts, however, gave considerable quantities of fawn colored flocculent precipitates.

The total precipitate in each case was dried at a temperature slightly below 100° C. to constant weight with the following results:

Total precipitate,

Unrossed bark	14.8%
Rossed bark	6.2%

Anticipating that the fawn colored matter was a product other than resin, the total precipitate was extracted with ether, in which the fawn colored matter was practically insoluble. The ethereal solutions were then evaporated to constant weight on a steam radiator, with following results:

Ether soluble precipitate,

Unrossed bark	12.9%
Rossed bark	4.3%

The conclusions are that the unrossed bark yields considerably more precipitate (14.8%) and ether soluble resin (12.9%) than does the rossed (6.2% precipitate and 4.3% ether sol. resin).

Pharmaceutically the question arises, which of the constituents of white pine bark—the resin (or oleo-resin), the tannin (9% according to Bastin and Trimble, A. J. P. 68, 37), or the coniferin of other authorities—is its therapeutically active principle.

As the chief use of the bark is in the form of syrup, which would naturally contain scarcely any resin or oleo-resin, the resin content of the bark seems to be of

*Read before the New York Branch, April 8, 1912.

little importance, but, as no reference as to the resin content of the bark seems easily accessable in literature, this crude effort at establishing same, may prove of some service to future investigators, who have sufficient time and material to go into the subject thoroughly.

COLLEGE OF PHARMACY, COLUMBIA UNIVERSITY, April, 1912.

EFFECTS OF SODIUM CHLORIDE, SUGAR OF MILK, CANE SUGAR, DIFFERENT KINDS OF MILK, ETC., ON THE ASSAY OF RENNIN.*

L. H. BERNEGAU AND GEORGE E. E'WE.

Out of ten lots of Rennin received and assayed by us during the past twelve months, only three came up to labeled strength in milk coagulating power, namely 1:30,000. One sample assayed less than 1:10,000; one sample assayed only 1:13,000; one 1:15,000; two 1:20,000; one 1:23,000 and one 1:28,000, or 93 per cent. of required strength.

The following method is used by us for the assay of Rennin:

Dissolve 0.1 gm. rennin in water to make 100 cc., by gentle inversion of the bottle containing the rennin and water for about half an hour. Avoid any vigorous shaking which tends to lower the milk coagulating power. (This fact was illustrated in a previous paper by L. H. Bernegau). Take some so-called pepsin bottles and place into each 75 cc. of fresh unpasteurized milk, warm to 40-43° C. and add 2½, 3, 4, 5, and 7½ cc. respectively of the rennin solution. Keep at the same temperature in a water bath and remove each bottle at the end of *exactly* 7½ minutes and note whether or not the milk is coagulated.

2½ cc. indicate a milk coagulating power of..... 1:30,000
3 cc. indicate a milk coagulating power of..... 1:25,000
4 cc. indicate a milk coagulating power of..... 1:18,000
5 cc. indicate a milk coagulating power of..... 1:15,000
7½ cc. indicate a milk coagulating power of..... 1:10,000
etc.

Limit of accuracy of above method.

We made many experiments to find out the difference between duplicates made with the same rennin solution and the same milk by the above method.

Experiment No. 1 showed a difference between duplicates of 4.7%
Experiment No. 2 showed a difference between duplicates of 6.0%
Experiment No. 3 showed a difference between duplicates of 4.7%
Experiment No. 4 showed a difference between duplicates of 4.6%
Experiment No. 5 showed a difference between duplicates of 5.2%
Experiment No. 6 showed a difference between duplicates of 3.1%

Average, 4.7%

} Of total activity of the Rennin.

Numerous other experiments gave exact duplicates. As the limit of accuracy between duplicates is about 5 per cent. the figures given in the following tables

*Read before the Philadelphia Branch, April 2, 1812.