

a pulley to a heavy weight, the other from the front (B) over a pulley to a drum which is attached to the works of a clock, the length of whose pendulum bob is easily adjusted to give a large variation of speed of drum. Clamps of the window sash style have at each point of attachment been used to hold the ends of the wires.

In operation the framework is first swung to the side nearest the clock so that the precipitation flasks are held in an upright position and a slight adjustment of the wire at B will start the liquid filtering. If the clock be then started and the pendulum regulated, the apparatus may be safely left, the final position of the flask being such as to drain it completely.

To wash the precipitate, the apparatus is swung to the middle position and the wash water added, the flask shaken and the liquid filtered off in the same manner as already described.

To transfer the precipitates, the crucibles and mouths of the precipitation flasks are lowered, the framework is hooked back so that the flasks incline sharply to the crucible. The precipitate may be then washed out easily and completely.

The apparatus is believed to have the following advantages: (1) less dust would fall into the analyses; (2) an especially tiresome delay of time avoided; (3) less possibility of the spilling or the overflowing of the crucible while filtering; and (4) two or more filtrations may be conducted simultaneously.

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THE OIL OF THE SOUTHERN CYPRESS.¹

By ALLAN F. ODELL.

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The cones of the southern cypress (*Taxodium distichum*, Rich.) contain considerable quantities of a volatil oil, to which the odor of the cypress is in part due. It is in the fall, when these cones are maturing, that the aroma of the tree is most prominent in the swamps.

The work upon the oil from the cones was undertaken with the view of obtaining in larger quantities the peculiar aldehyde compound which was found in the resin from the wood.²

The difficulties attendant upon the distillation of the resin, which was obtained by extraction, were so numerous that this method of getting the aldehyde was discarded as unprofitable. The yield, also, was so small that definit assurance of its purity could not be had.

The cones were gathered at various periods from September to December, and each lot distilled by steam separately. The cones collected

¹ Read before the New Orleans Section, March 15, 1912.

² THIS JOURNAL, 33, 755.

in September yielded about 1% of a yellowish green oil, smelling strongly of pinene. Those collected later in the year yielded from 1½-2% of oil, which was of a darker color and had a marked citron-like odor.

The specific gravity of the oils varied from 0.86 for the oils first distilled to 0.850 for the oil last distilled. The rotation also varied from +18.0° for the first oil to +35.5° for the last oil (100 mm. tubes).

Saponification by alcoholic potash gave evidence of a very slight ester content. The acetyl saponification gave an average alcohol content of 2.5%.

About 300 grams of the oil were fractionated, at first in a vacuum, but the refractionations were conducted under atmospheric pressure, as none of the several fractions seemed to suffer decomposition by this treatment. About 85% of the oil distilled between 155-160° at atmospheric pressure. Repeated fractionations of this portion gave a fairly pure specimen of pinene, the proof for which is based on the following: d_4^{18} 0.8616; n_D^{20} 1.4655; $[\alpha]_D^{13} = +30.8$; b. p., 156-157°; nitrosochloride, m. p. 103°.

About 5% of the oil distilled from 175-180°, and after purification by refractionation, showed properties which would identify this fraction as limonene: d_4^{18} 0.8567; n_D^{20} 1.4742; $[\alpha]_D^{20} = +98.3$ (in ether); tetrabromide, m. p. 104°; nitrosochloride, m. p. 105°.

A small fraction was obtained distilling from 210-220°. This was the alcohol fraction, as was determined by the acetyl saponification process and by the readiness with which it evolved hydrogen when added to sodium in anhydrous ether. As the fraction was small, no particular attempt was made to identify the alcohol positively. When added to Beckmann's chromic acid reagent, there was immediately precipitated a copious, brown, flocculent mass. Semmler has given this test¹ as one which may be used to differentiate between true and pseudo terpene alcohols, and the only pseudo alcohol which corresponds with this one is sabinol. The constants obtained for this fraction are: d_4^{18} 0.9430; n_D^{20} 1.4881; dextro rotatory in ethereal solution.

The portion of the oil distilling between 220-235° seemed to be a mixture of the alcohol and a ketone, so that the amount of the latter present in the oil could not be ascertained, but it was apparently present in larger quantity than the alcohol.

This ketone in glacial acetic acid solution gave a semicarbazone readily when the semicarbazine hydrochloride (in acetic acid solution) was added to it. This product showed a sharp melting point of 162-163°. A good yield of the oxime could not be obtained.

The ketone was regenerated from 3 grams of the semicarbazone by warming with dilute sulfuric acid, and the mixture extracted. The

¹ *Ber.*, 34, 708.

residue obtained by evaporation of the solvent had the following constants: d_4^{18} 0.960; n_D^{20} 1.500, which approximates the constants found for carvone.

A sesquiterpene was found in the fraction distilling from 260–275° and seemed to be identical with the sesquiterpene found in the wood,¹ though in a state of greater purity. It gave the same color reaction with sulfuric acid in acetic acid solution, and the same amorphous yellow mass on treatment with nitric acid. The constants for this are: d_4^{18} 0.9335; n_D^{20} 1.5039; dextro rotatory. These, while differing from the constants for the sesquiterpene found in the wood, are in accordance with those for a tricyclic sesquiterpene possessing a single double bond.

There was a fraction between the pinene and the limonene fractions which gave the brown flakes with Beckmann's chromic acid reagent, indicating the presence of a pseudo terpene, but no effort was made to place this body definitely, as this investigation was commenced in order to find the aldehyde previously found in the wood, and in this, the investigation was not successful.

A preliminary examination of the oil from the cypress leaves shows this oil to differ widely from the cone oil, and the investigation of the leaf-oil will be undertaken in the near future.

Summary.

The oil from the southern cypress approximates the following composition: Dextro pinene, 85%; dextro limonene, 5%; a pseudo terpene alcohol (sabinol?), 2%; carvone, 3%; a tricyclic sesquiterpene, 3%; the remainder composed of substances boiling above 275°.

No aldehydes were found in the oil.

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FASTING STUDIES. X. A NOTE ON A GLYCOGEN-FREE LIVER.

By P. B. HAWK.

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The presence of sugar in the liver was first noted by Claude Bernard,² who later demonstrated that glycogen was the source of the sugar.³ From that day to the present time the nutritional relationships of this polysaccharide have been the subject of a very large number of investigations.⁴ The result has been that the origin and function of glycogen in the animal organism are now thoroughly understood.

¹ *Loc. cit.*

² Bernard and Barreswil, *Compt. rend.*, **27**, 514 (1848).

³ Bernard, *Gaz. Médicale*, March 28th, 1857.

⁴ For excellent reviews of the literature see Pflüger's "Das Glykogen," Bonn, 1905, and Cremer's review in *Ergebnisse der Physiologie*, **1**, 803 (1902).