alcohol before its sale to render it unfit for use as a beverage. But they cannot sell spirituous liquors or wines not so compounded, even on a physician's prescription, and for purely medical purposes, without the *special revenue license.*

In order to exempt the pharmacist from this special tax, the Internal Revenue Department has approved of the following combinations, by which the alcohol is so denatured that it may be used for bathing and general antiseptic purposes, the intention being that the prescription shall specify the nature and amounts of the ingredients desired in the compound:

1—Alum, 10 grains; Camphor, 3 grains; Alcohol, 4 ounces.

2—Carbolic Acid, 1 part; Alcohol, 99 parts.

3—Formaldehyde, 1 part; Alcohol, 250 parts.

4—Alum, 2 ounces; Zinc Sulphate, 1 ounce; Alcohol, 1 gallon.

5—Alum, 1 drachm; Camphor, 1 ounce; Alcohol, 1 pint.

6—Mercuric Chloride, 1 part; Alcohol, 2000 parts.

7—Alum, 2 ounces; Salicylic Acid, 2 ounces; Oil Gaultheria, 2 ounces; Water, 1 pint; Alcohol, 1 gallon.

8—Carbolic Acid, 2 drachms; Oil Gaultheria, 20 drops; Alcohol, 1 gallon.

9—Mercuric Chloride, 1½ grains; Hydrochloric Acid, 2 drachms; Alcohol, 4 ounces.

10—Sodium Bicarbonate, 3 ounces; Hamamelis Water, 16 ounces; Water, 16 ounces; Alcohol, 16 ounces.

11—Formaldehyde, 2 parts; Glycerin, 2 parts; Alcohol, 96 parts.

12—Oil Cajuput, 1 drachm; Alcohol, 1 pint.

13—Tannic Acid, 12 parts; Alcohol, 125 parts; Water, 125 parts.

14—Carbolic Acid, 1 drachm; Tannic Acid, 1 drachm; Alcohol, 1 part; Water, 1 part.

15—Alum, ½ ounce; Formaldehyde, 2 drachms; Camphor, 1 ounce; Alcohol, 1 part; Water, 1 part.

16—Lysol, 1 part; Alcohol, 99 parts.

17—Compound Solution of Cresol, U. S., P., 10 Cc.; Alcohol 1000 Cc.

In the April 1916 number of the JOURNAL OF THE A. PH. A. appears the following formula which was adopted by the Denver Branch, A. Ph. A.: Antimony and Potassium Tartrate, 1 gramme; Formaldehyde, 4 mils; Water, 125 mils; Alcohol, to make 1000 mils.

The label adopted reads as follows: "Bathing Alcohol. For External Use Only. Poisonous if taken internally. Pure Grain Alcohol, modified to comply with the Federal Regulations." (Label printed in red.)

EFFECT OF THE RAYS OF THE SUN UPON THE FORMATION OF AMYGDALIN IN WILD CHERRY BARK.

BY C. VERNE NICHOLS.

The fact that the bark of "*Prunus Virginiana*" or Wild Cherry, as well as the almond and the peach pit contains a glucoside, which when brought into contact with water in the presence of the accompanying ferment, will produce hydrocyanic acid as one of the reactionary products, is well known. It, too, is well known that the bark collected from different portions of the same tree will yield different amounts of this deadly poison. One writer has shown that the bark of the roots contains the largest proportion of this glucoside which yields hydrocyanic acid, and that the bark from the twigs contains a greater proportion than that from the trunk of the tree. The author will not attempt to explain the cause of this difference but it is presumable that the basis for such a difference is the effect which the rays of the sun has upon the formation of the glucoside.

It will undoubtedly be of interest to some to know that the yield of the glucoside (or of the hydrocyanic acid) from the bark of the different sides of the same tree is not the same, the amount obtained from the north side exceeding that obtained from the opposite side. By comparing the amounts of both hydrocyanic acid and amygdalin in samples of bark taken from both the north and south sides of three different trees, a fairly accurate conclusion may be drawn as to the action of the sun upon this formation and as to the accuracy of the presumption. In order to prove this point beyond the question of a doubt, however, it would be necessary to carry out several times the number of determinations that were made by the author.

The samples used were collected during the month of November, being removed from the trunks of trees at a height of about six and a half or seven feet from the ground. These were dried in an atmosphere slightly above room temperature; when dried they were ground to moderately fine powders and small amounts varying from 5.5 Gm. to 10.4 Gm. were placed in liter flasks, 100 mils of water added, the flasks stoppered securely and set aside to macerate for 24 hours at room temperature. Each flask was, in turn, placed on a water bath and connected with a condenser, a second flask was so arranged that steam might be passed to the bottom of the first flask and after all of the connections were made, the water bath was heated to boiling and a current of steam was passed through the flask.

The distillate, which was collected in a small Erlenmeyer flask containing 10 mils of tenth-normal silver nitrate V. S. and 40–50 mils of distilled water, was received by means of a delivery tube reaching to the bottom of the solution which absorbed the hydrocyanic acid. After obtaining 50–60 mils of the distillate, the excess of the silver nitrate solution was determined by the "Volhard Method of Residual Titration," which, briefly, is carried out by acidifying the solution with nitric acid, adding a few mils of ferric ammonium sulphate T. S. for use as an indicator and determining the uncombined excess of silver nitrate V. S. by titrating back with a tenth-normal potassium sulphocyanate V. S. until the end-reaction is reached. This end-reaction, according to the United States Pharmacopoeia, is the formation of a permanent pale reddish tint. The number of mils of tenth-normal silver nitrate V. S. minus the number of mils of tenth-normal potassium sulphocyanate V. S. equals the number of mils of the silver solution which react with the hydrocyanic acid. Each mil which is used up represents 0.002702 Gm. of hydrocyanic acid, then the number of mils of the silver solution neutralized multiplied by the factor gives the number of grams of hydrocyanic acid present in the given amount of bark. By proportion, the percentage of acid may be determined as shown by the following figures, which are those of the sample taken from the south side of "Tree No. 1:"

Weight of bark taken..... 9.9790
Mils of $N/10$ $AgNO_3$ absorbed..... 6.5000
0.002702 × 6.5 = 0.017563 Gm. of hydrocyanic acid in the bark used.
Wt. of bark used: Wt. of HCN found:: 100: x
9.9790 : 0.017563 :: 100: x
$9.9790\,x = 1.7563$
$x = 0.175998$ percent of hydrocyanic acid in the bark.

The reaction of the emulsin upon the amygdalin in the presence of water to form benzaldehyde, hydrocyanic acid, and glucose is shown by the following equation:

$$C_{20}H_{27}NO_{11} + 2H_2O + \text{emulsin} = C_6H_5CHO + HCN + 2C_6H_{12}O_6$$

If the percentage of hydrocyanic acid is known, the percentage of amygdalin may be determined by the use of the following proportion, since each molecule of amygdalin yields one molecule of hydrocyanic acid:

Amygdalin : Hydrocyanic acid :: y : 0.175998
$C_{20}H_{27}NO_{11}$: HCN :: y : 0.175998
457.226 : 27.018 :: y : 0.175998

$$27.018\ y = 80.4708$$

y = 2.9782 percent of Amygdalin in the sample.

By like proportion the percentages of hydrocyanic acid and amygdalin were found in the other samples, the results of the twelve determinations being as follows:

Tree No. 1.....	South side	HCN 0.1760%	Amygdalin 2.9782%
Tree No. 1.....	Check	HCN 0.1740%	Amygdalin 2.9441%
Tree No. 1.....	North side	HCN 0.2125%	Amygdalin 3.5958%
Tree No. 1.....	Check	HCN 0.2097%	Amygdalin 3.5458%
Tree No. 2.....	South side	HCN 0.1806%	Amygdalin 3.0563%
Tree No. 2.....	Check	HCN 0.1800%	Amygdalin 3.0454%
Tree No. 2.....	North side	HCN 0.2188%	Amygdalin 3.7027%
Tree No. 2.....	Check	HCN 0.2161%	Amygdalin 3.6204%
Tree No. 3.....	South side	HCN 0.1682%	Amygdalin 2.6468%
Tree No. 3.....	Check	HCN 0.1709%	Amygdalin 2.8921%
Tree No. 3.....	North side	HCN 0.1890%	Amygdalin 3.1981%
Tree No. 3.....	Check	HCN 0.1804%	Amygdalin 3.0534%

The above series of determinations tends to show that the theory regarding the action of the sun upon the formation of the glucoside, amygdalin, in Wild Cherry Bark, is correct.

UNIVERSITY OF OKLAHOMA,
SCHOOL OF PHARMACY.

NEW YORK COLLEGE OF PHARMACY OFFICERS

At the annual meeting of the New York College of Pharmacy, held recently, the following officers were elected: President, Nicholas Murray Butler; Vice-President, Prof. Chas. F. Chandler, Dr. William Jay Schieffelin, and Dr. H. C. Lovis; Treasurer, Clarence O. Bigelow; Secretary, Thomas F. Main; Assistant Secretary, Charles W. Holzhauer; Trustees, Jacob Weil, F. K. James, Irving McKesson, Theodore Weicker and Edward Plaut.