In such a table a standard temperature for taking specific gravities may well be 20° C. The temperature corrections in such case would be additive below 20° C., subtractive above that temperature. It would be necessary to calculate independently these corrections, a somewhat laborious task, which I have once performed merely for my own satisfaction.

3. A convenient table for rapid determination of alcohol percentages in distillates assumes the use of a 25-Gm. pycnometer with perforated stopper, holding exactly 25 Gm., apparent weight in air, of distilled water at 15.56° C. The pycnometer is furnished of course with a counterpoise. From 50 cc of a preparation containing alcohol a distillate having the same volume is obtained with the usual precautions. Measurements of the sample and of the distillate must be made at 15.56° C. The distillate having been brought to the air temperature of the weighing room, the pycnometer is filled and rapidly but accurately weighed, with counterpoise in place. A portion of the proposed table, which should be self-explanatory, is given.

A table of this type need not extend further than to include percentages up to 25 at 34° C. The volume of the distillate is to be increased sufficiently to bring its strength within this limit. For a sample containing 20 to 40%, distil two volumes from one; between 40 and 70%, three volumes; above 70%, four volumes to one. The percentage taken out from the table is of course to be multiplied by 2, 3 or 4 as the case may be.

LABORATORY OF NELSON, BAKER & CO.,
OCT. 8, 1922.

TANNIN IN WHISKY.

BY R. D. SCOTT.*

In connection with prohibition enforcement it is often of material importance as to whether a seizure of whisky was in defendant's possession, as frequently claimed, prior to 1919. Since counterfeit bottle labels and revenue stamps are not uncommon, an analysis of the liquor is usually necessary before a decision as to its age and composition may be made.

The customary determinations of esters, acidity, extract, etc., will generally yield sufficient information for this purpose, but in addition experience has shown that the amount of tannin present is a valuable index of the proportion of genuine whisky in the sample.

The difficulty, at present, of obtaining an extensive series of authentic whisky samples being obvious, the number of samples in which tannin was determined was not sufficient to permit of making any definite statement of the normal amount present in whisky of various ages and types. However, the 11 authentic samples of different brands of American Bottled in Bond Whisky examined were found to contain from 30.0 to 42.5 grams per 100 liters of tannin.

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It was found that a number of seized samples of stretched whisky, which is ordinarily compounded from equal parts of alcohol, water and genuine whisky, contained in the neighborhood of 10.0 grams per 100 liters and that this was also approximately the tannin content of the few samples of Canadian whisky examined.

The tannin determination was carried out essentially by the Folin and Denis method[1] for the colorimetric estimation of phenols in urine.

One cc of whisky is placed in a 100-cc Nessler jar and made up to the mark with distilled water. One cc of Folin's phenol reagent[2] is then added, followed by 5 cc of saturated solution of Na_2Co_3. After 10 minutes the blue color developed is compared with standards made up at the same time containing 0.0, 0.25, 0.5, 1.0, 2.0 and 5 cc of standard tannin solution, freshly prepared by dissolving 0.1 gram of pure tannic acid in 1 liter of distilled water.

While it is believed that the test described is, with American whiskys, largely if not entirely an estimation of tannin, it would probably include phenols with Scotch whiskys.

THE ESTIMATION OF GADUOL IN TASTELESS EXTRACTS OF COD LIVER OIL.*

BY JOHN C. KRANTZ, JR.

The ever-increasing demand for a medicine possessing the medicinal virtues of cod liver oil, without the disagreeable and nauseating taste and odor of the latter, has made "Tasteless Extracts of Cod Liver Oil" one of the most generally used tonics. As the validity of manufacture of this type of preparation, since the passage of the National Prohibition Act, depends largely upon its gaduol content, the estimation of this active constituent becomes a problem of general interest.

Gaduol, unlike most complex organic bodies, shows a marked variation in its solubilities in alcohol and ether. To illustrate, the general solubility of alkaloids may be cited. Most alkaloids that are soluble in alcohol are found to be just as soluble in ether or chloroform and in a great many cases to be more soluble. However, gaduol, although very soluble in alcohol, is practically insoluble in ether, chloroform, benzene, toluene, etc. The insolubility of the product in these immiscible solvents makes its extraction from a pharmaceutical preparation difficult.

THEORY OF METHOD.

The method used in this laboratory depends upon the immiscibility of alcohol with concentrated saline solutions and the use of alcohol as an immiscible solvent under these conditions. Thus, a sample can be saturated with potassium carbonate and the gaduol extracted with alcohol, in which it readily dissolves.

EXPERIMENTAL.

Transfer 20 cc of the extract to a separator, add 18 Gm. of potassium carbonate and shake until dissolved. Extract the gaduol with two portions (20 cc each) of alcohol. Evaporate the combined alcoholic extractions to dryness on a water-bath, dry the residue to a constant weight at 100° C. and weigh.

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[1] *J. Biol. Chem.*, 12, 239, 1912.

[2] To 750 cc of distilled water add 100 grams of sodium tungstate, 20 grams of phosphomolybdic acid (or 18 grams of 85 percent molybdenum trioxide) and 50 cc of 85 percent phosphoric acid. Boil for 2 hours under a reflux condenser, cool and dilute to 1 liter. *Jour. Ind. Eng. Chem.*, 13, 422, 1921.

* Read before Baltimore Branch, A. Ph. A., October meeting, 1922.