REPORT

OF

The Committee on Food Standards

OF THE

Association of Official Agricultural Chemists

OCTOBER, 1907

Members of the Association of Official Agricultural Chemists:

The Secretary of Agriculture declined to authorize the printing in the proceedings of the Association for 1907 of the report of your Committee on Food Standards.

The Committee understands that the Secretary, in view of the fact that Congress had dropped the authorization previously given to him to establish standards of purity for food in collaboration with this Association, deemed it improper to publish an account of the independent action of the Association on this subject.

Your Committee has therefore printed this report as a separate pamphlet.

WILLIAM FREAR,
Chairman.

State College, Pa.

Mr. President and Members of the Association:

On behalf of the standing Committee on Food Standards, I beg leave to submit the following brief report of the operations of the Committee during the past Association year:

At the last annual meeting of the Association, it was pointed out in the Committee's report that the language of the act continuing the authorization to the Secretary of Agriculture and your Committee was modified by the substitution of the phrase "to ascertain the purity of" for the phrase "to establish standards of purity for," the second clause being unchanged; namely, that clause giving authority "to determine what are regarded as adulterations therein." It seemed of doubtful legality to attempt the establishing of standards under this authorization, at least so far as such standards might be held to be other than mere bases of executive judgment prepared to guide executive action in the enforcement of existing laws. It was clear that the power still remained to ascertain the condition with respect to purity of the various commodities upon the market and to determine what are regarded as adulterations therein, and these powers necessarily implied the pre-existence of some concept of purity for each of the articles under consideration. It was furthermore clear that your Committee and the corresponding Committee of the Association of State and National Food and Dairy Departments were still authorized to act for their respective Associations in the establishment of standards.

It will be recalled that under the authority which was given him to employ in this work the assistance of such other experts as he might deem necessary, the Secretary of Agriculture had commissioned representatives of the Committee from the Association last named. That Association at its meeting in July, 1906, reduced the number of its Committee on Standards to five, and appointed, as two of the number, members of the Committee of the Association of Official Agricultural Chemists. By this action, the policy of co-operation between the two Committees was approved.

The Secretary of Agriculture having authorized the Committee to hold a meeting in Louisville, December, 1906, and commissioned the additional members of the Committee on Standards from the Association of State and National Food and Dairy Departments as experts to act with your Committee, a meeting was held December 6 to 15, 1906, chiefly for the purpose of considering the various questions that have arisen relative to what are to be regarded as adulterations in whisky. Hearings were given to the representatives of both straight whisky and "blended" whisky interests and to representatives of allied industries, and distilleries and blending establishments producing the various types of this commodity and its mixtures with the other spirits were visited for the purpose of carefully studying the present conditions of manufacture.

The Joint Committee was organized by the election of the following officers: William Frear, Chairman; Richard Fischer, Vice Chairman, and E. H. Jenkins, Secretary.

It is impracticable to present in detail the arguments *pro* and *con* presented to the Joint Committee. The questions bearing upon the chemical limits of composition and physical properties were but briefly discussed. The chief matters of consideration related to the definitions for whisky, new whisky, and blended whisky, since these matters have a determining relation to the present practice of selling, as whisky, neutral spirits mixed with whisky. It appeared from the

facts adduced in hearings that, while the practice is probably not very widespread, some firms are placing upon the market mixtures of straight whiskies that differ from one another in age and other qualities. The facts stated, showed that ordinary straight whisky aged in oak casks and held in a bonded warehouse for four years, costs the manufacturer a much larger sum per gallon than do neutral spirit which is simply alcohol diluted with water to proof. Aside from the additional cost entailed upon the dealer in straight whiskies by the expense of loss during storage in the bonded warehouse, it was stated that the greatest care was necessary to purchase high-grade, perfectly sound grains for the whisky mash, whereas, owing to the chemical treatments forming a part of the process of preparing neutral spirits, it was often possible to use for the latter low-grade or even "no-grade" corn. Those who spoke for the "blenders" urged that there should be recognized no distinction between whisky and neutral spirit, or at least that neutral spirit should be declared to be a "like substance" with whisky. In view of the definition for "a blend" which had been incorporated into the Food and Drugs Act of June 30, 1906, in support of this plea it was represented that for many decades the manufacturers of whisky had been refining their product by passing it through wood charcoal, as well as by carefully limiting the initial distillation processes so that the finished product might contain a less proportion of fusel oil and other secondary fermentation products. The whisky thus refined, it was urged, was a like substance with the neutral spirits now prepared by special methods of distillation, filtration through charcoal, treatment with refining chemicals, etc. Several speakers even went so far as to state that whisky is by its derivation a synonym for *aqua vitae,* and is therefore a generic name for all spirits. In support of the likeness between whisky and neutral spirits, it was urged that the two substances are composed chiefly of alcohol and water, that the secondary products present in considerable quantities in whisky, but removed as far as practicable from neutral spirit, make up too small a fraction of the entire materials to be made the determining factors in establishing the likeness or unlikeness between whisky and neutral spirit. It was further urged that the manufacturer of straight whiskies endeavors to remove these secondary products through the aging process and that neutral spirit from whisky differed chiefly because the removal had been more fully accomplished.

The fact that whisky and neutral spirit differed in color was not to be regarded as a criterion of likeness or unlikeness in view of the fact that the color of straight whisky is due to materials dissolved out of the charred oak cask during storage, new whisky being colorless. The distinctive flavors of whisky and neutral spirit were by some ascribed almost entirely to the dissolved oak extract, and were therefore claimed not to afford a basis for a declaration of unlikeness, and finally it was alleged that the mixing of neutral spirit with whisky was for the purpose of diminishing, "softening, smoothing," the raw, rough flavor of newly distilled straight whisky, or even of such whisky when aged two or three years. It was furthermore stated that the practice of making so-called whisky from neutral spirit alone by the addition of sugar-color and artificially prepared esters, beading oils, etc., had almost entirely been dropped, although sherry and prune juice (alcoholic extract from prunes) were still employed to deepen the tints of mixtures of neutral spirit and straight whisky.

In reply to the question whether neutral spirit was to be regarded as a like substance with whisky and equally so with brandy and rum, practically every speaker on behalf of the rectifying interests answered "Yes."

In several cases the further question was asked whether whisky, rum and brandy were "like substances," and again an affirmative reply was given.

On the other hand, in addition to the argument of cost, above mentioned, those who did not favor the recognition of neutral spirit as a like substance with whisky urged that neutral spirit was sold at wholesale as "neutral spirit," and not under the name of whisky; furthermore, that when these spirits were held

for a time in charred oak casks so as to take up from the wood some of the coloring extractives, the colored products were sold to the retail trade under the name of "domestics" and not as whisky; that the use of neutral spirits, either colored or uncolored, without the addition of whisky or of artificial materials imparting similar flavors and odors was little known, the persons using such beverages being in most localities regarded as abnormal. A number of arguments were made regarding the physiological effects of the several products, but the evidence was too vague to justify a closely drawn conclusion.

Prior to the conclusion of the hearings, representatives of the National Wholesale Liquor Dealers' Association urged that the Joint Committee investigate carefully the manufacture of rye whiskies as practiced in Pennsylvania and Maryland, before the formulation of any conclusion concerning whisky standards. The Committee decided that this request should be brought to the attention of the Secretary of Agriculture, and that, meanwhile, final action upon the whisky standards should be postponed.

In addition to the subject of whisky standards, a number of other schedules and individual standards received consideration at this meeting. Representatives of the National Ice Cream Manufacturers' Association urged that the fat standards be lowered to 8 per cent, and that eggs, condensed milk, gelatin, and vegetable gums be recognized as normal ice cream constituents. After consideration of the various statements, it was voted that we advise the Secretary of Agriculture, in respect to demands for changes in the standards for ice cream, that the facts in possession of the Commission do not warrant it in recommending a change at this time in the existing standards.

Hearings were given to representatives of certain meat packing interests on the subject of meat extracts and peptones. The attention of the Commission was called to the fact that a large fraction of the so-called meat extracts prepared in this country is made from bones almost free from meat and that these extracts differ from the ordinary meat extracts, as they contain much less of the meat bases.

The subject of standards for condensed milk was discussed on behalf of Pacific Coast condenseries, who urged that the minimum of milk solids should be made 26 per cent instead of 28. Representatives of Borden's Condensed Milk Company urged, on the other hand, that the present standards should remain unchanged. The Joint Committee voted that, in view of the studies now being made of the milk products of the Pacific Coast region, the suggested changes in condensed milk standards be left open for future consideration, pending further investigation, and that the Secretary of Agriculture be requested not to enforce the present standards with respect to total solids in cases where the minimum of solids is below 28 per cent.

The subject of so-called "refiners' molasses" was brought to the attention of the Committee, and upon invitation a visit was made to the molasses refinery of Torbit & Castleman, where the use of sodium sulfite and zinc-dust in the bleaching process was exemplified. Messrs. D. D. Colcock, of New Orleans, and W. W. Taussig, of New York City, appeared on behalf of the Louisiana Sugar Exchange to urge that the use of sulfites especially be recognized as proper in refining molasses.

The question of standards for gelatin was discussed by Mr. W. T. Chollar, representing the Commonwealth Glue Co., of Boston; Dr. E. Gudeman and Dr. Schweitzer, both of Chicago, representing Hirsh, Stein & Company.

The following actions were taken by the committee: It was voted that it is not advisable to change the present limit of water-content in maize-meal, that it is not advisable at present to change the definition of containers for food products, that it is desirable to make further studies of the ash content of ginger, and that the Commission advise the Secretary of Agriculture that the presence of added zinc in molasses constitutes an adulteration. It was also voted that, in

view of the early date at which the Food and Drugs Act of June 30, 1906, goes into effect, the Commission recommends to the Secretary of Agriculture that he advise food manufacturers and dealers not to use in food products any preservatives other than common salt, sugar, wood smoke, vinegar, alcohol, spices, and, pending further inquiry, saltpeter.

The Chairman was authorized to assign to different members of the Commission for study and report the physiological effects of the several important chemical preservatives.

At the conclusion of the meeting of the Joint Committee, the Committee on Standards of your Association met separately to consider the subject of standards for cattle foods, and adopted tentative standards for buckwheat products and oil-seed cakes.

The meeting then adjourned to assemble at the call of the chair.

Congress in its session of December, 1906, and subsequent months, having failed to retain in the Agricultural Appropriation Act the clause authorizing the Secretary of Agriculture to "fix standards of purity for foods and to determine what are regarded as adulterations therein," the Secretary decided not to authorize another meeting of the Commission during the remainder of the fiscal year to which the act of 1906 applied.

In view, however, of the directions of your Association and those of the Association of State and National Food and Dairy Departments, it was decided to call a joint meeting of the two Committees to assemble at Jamestown in July last, prior to and during the sessions of the latter Association, to consider whether or not joint action was desirable, and if so, to continue the work originated by the two Associations for the purpose of securing, so far as practicable, uniform action by the various food controls in the formulation of food standards.

The Joint Committee met at the place named on Monday, July 15, 1907, and voted that it is desirable to continue the work of formulating standards by the joint action of the two Associations. The Joint Committee re-elected the officers elected at the earlier meeting.

The schedule of fruit juices was then taken up for consideration, using as a basis the schedule of tentative standards issued by the Food Standards Committee, November 16, 1906. After a slight amendment, the schedule was adopted as shown in the list of standards appended to this report.

The tentative schedule for spirituous liquors revised by the Committee in June, 1906, and published by the Bureau of Chemistry on November 16th of that year, was finally adopted after slight amendment.

The subject of meat extracts was then taken up for consideration upon the basis of the tentative schedule published in November, 1906. After extensive amendment based upon subsequent hearings and correspondence, the schedule was finally adopted.

The subject of preservatives, which had been under consideration by the committee at repeated sessions for more than six years, was again discussed. Reports upon the existing literature concerning the physiological effects of the several preservatives were then presented by the members of the Committee to whom they had been severally referred under the authorization given at the Louisville meeting; namely, sulfurous acid, and sulphites, by Mr. Barnard; beta-naphthol, abrastol, and saccharin, by Mr. Fischer; boric acid and borates, by Mr. Fulmer; fluorids, by Mr. Jenkins; formaldehyde, by Mr. Scovell; benzoic and salicylic acids and their compounds, by Mr. Weber; saltpeter, by the Chairman. During the consideration of this subject, hearings were given to Messrs. Colcock and Blouin, representing the Louisiana sugar manufacturing interests. These gentlemen presented to the Committee an account of the physiological experiments made under the direction of the Louisiana State Board of Health upon the subject of

sulfites in molasses. Dr. Bigelow, Chief of the Division of Foods of the Bureau of Chemistry, in response to interrogations by the Committee, kindly discussed certain details of the physiological experiments upon the effects of preservatives conducted by the Bureau of Chemistry. As a result of the deliberations of the Committee, certain definitions for preservatives were adopted, together with a declaration concerning their use, all of which are hereto appended.

As a matter of interest, I may report to you that after the conclusion of the joint sessions of the Committees of the two Associations, the Committee representing the Association of State and National Food and Dairy Departments recommended to that Association a formal adoption of the standards just approved by the Joint Committee, together with those earlier proclaimed by the Secretary of Agriculture upon its recommendation. The Association acted affirmatively upon the recommendation submitted by the Committee. That Association also, upon the recommendation of its Committee on Resolutions, adopted a resolution urging the Secretary of Agriculture for the sake of uniformity to utilize the services of the Joint Committee so far as practicable for his guidance in matters pertaining to the subjects of definitions and standards.

Respectfully submitted on behalf of the Committee,

WM. FREAR,
Chairman.

I. ANIMAL PRODUCTS.

A. MEATS AND THE PRINCIPAL MEAT PRODUCTS.

C. MEAT EXTRACTS, MEAT PEPTONES, GELATIN, ETC.

1. *Meat extract* is the product obtained by extracting fresh meat with boiling water and concentrating the liquid portion by evaporation after the removal of fat, and contains not less than seventy-five (75) per cent of total solids, of which not over twenty-seven (27) per cent is ash, and not over twelve (12) per cent is sodium chlorid (calculated from the total chlorin present), not over six-tenths (0.6) per cent is fat, and not less than eight (8) per cent is nitrogen. The nitrogenous compounds contain not less than forty (40) per cent of meat bases and not less than ten (10) per cent of kreatin and kreatinin.

3. *Bone extract* is the product obtained by extracting clean, fresh, trimmed

2. *Fluid meat extract* is identical with meat extract except that it is concentrated to a lower degree, and contains not more than seventy-five (75) and not less than fifty (50) per cent of total solids.

bones of animals in good health at the time of slaughter with boiling water and concentrating the liquid portion by evaporation, after removal of fat, and contains not less than seventy-five (75) per cent of total solids.

4. *Fluid bone extract* is identical with bone extract except that it is concentrated to a lower degree, and contains not more than seventy-five (75) and not less than fifty (50) per cent of total solids.

5. *Meat juice* is the fluid portion of muscle fiber, obtained by pressure or otherwise, and may be concentrated by evaporation at a temperature below the coagulating point of the soluble proteids. The solids contain not more than fifteen (15) per cent of ash, not more than two and five-tenths (2.5) per cent of sodium chlorid (calculated from the total chlorin present), not more than four (4) nor less than two (2) per cent of phosphoric acid (P_2O_5), and not less than twelve (12) per cent of nitrogen. The nitrogenous bodies contain not less than thirty-five (35) per cent of coagulable proteids and not more than forty (40) per cent of meat bases.

6. *Peptones* are products prepared by the digestion of proteid material by means of enzymes or otherwise, and contain not less than ninety (90) per cent of proteoses and peptones.

7. *Gelatin (edible gelatin)* is the purified, dried, inodorous product of the hydrolysis, by treatment with boiling water, of certain tissues, as skin, ligaments, and bones, from sound animals, and contains not more than two (2) per cent of ash and not less than (15) per cent of nitrogen.

F. Beverages.

a. Fruit juices—fresh, sweet, and fermented.

1. *Fresh Fruit Juices.*

1. *Fresh fruit juices* are the clean unfermented liquid products obtained by the first pressing of fresh, ripe fruits, and correspond in name to the fruits from which they are obtained.

2. *Apple juice, apple must, sweet cider,* is the fresh fruit juice obtained from apples, the fruit of *Pyrus malus,* has a specific gravity (20° C.) not less than 1.0415 nor greater than 1.0690; and contains in one hundred (100) cubic centimeters (20° C.) not less than six (6) grams, and not more than twenty (20) grams of total sugars, in terms of reducing sugars, not less than twenty-four (24) centigrams nor more than sixty (60) centigrams of apple ash, which contains not less than fifty (50) per cent of potassium carbonate.

3. *Grape juice, grape must,* is the fresh fruit juice obtained from grapes (*Vitis* species), has a specific gravity (20° C.) not less than 1.0400 and not exceeding 1.1240; and contains in one hundred (100) cubic centimeters (20° C.) not less than seven (7) grams nor more than twenty-eight (28) grams of total sugars, in terms of reducing sugars, not less than twenty (20) centigrams and not more than fifty-five (55) centigrams of grape ash, and not less than fifteen (15) milligrams nor more than seventy (70) milligrams of phosphoric acid (P_2O_5).

4. *Lemon juice* is the fresh fruit juice obtained from lemon, the fruit of *Citrus limonum* Risso, has a specific gravity (20° C.) not less than 1.030 and not greater than 1.040; and contains not less than ten (10) per cent of solids, and not less than seven (7) per cent of citric acid.

5. *Pear juice, pear must, sweet perry,* is the fresh fruit juice obtained from pears, the fruit of *Pyrus communis* or *P. sinensis.*

2. *Sterilized Fruit Juices.*

1. *Sterilized fruit juices* are the products obtained by heating fresh fruit juices sufficiently to kill all the organisms present, and correspond in name to the fruits from which they are obtained.

3. *Concentrated Fruit Juices.*

1. *Concentrated fruit juices* are clean, sound fruit juices from which a considerable portion of the water has been evaporated, and correspond in name to the fruits from which they are obtained.

4. *Sweet Fruit Juices, Sweetened Fruit Juices, Fruit Sirups.*

1. *Sweet fruit juices, sweetened fruit juices, fruit sirups,* are the products obtained by adding sugar (sucrose) to fresh fruit juices, and correspond in name to the fruits from which they are obtained.

2. *Sterilized fruit sirups* are the products obtained by the addition of sugar (sucrose) to fresh fruit juices and heating them sufficiently to kill all the organisms present, and correspond in name to the fruits from which they are obtained.

5. *Fermented Fruit Juices.*

9. *Cider, hard cider,* is the product made by the normal alcoholic fermentation of apple juice, and the usual cellar treatment, and contains not more than seven (7) per cent by volume of alcohol, and, in one hundred (100) cubic centimeters of the cider, not less than two (2) grams nor more than twelve (12) grams of solids, not more than eight (8) grams of sugars, in terms of reducing sugars, and not less than twenty (20) centigrams nor more than forty (40) centigrams of cider ash.

10. *Sparkling cider, champagne cider,* is cider in which the after part of the fermentation is completed in closed containers, with or without the addition of cider or sugar liquor, and contains, in one hundred (100) cubic centimeters, not less than twenty (20) centigrams of cider ash.

d. SPIRITUOUS LIQUORS.

1. *Distilled spirit* is the distillate obtained from a fermented mash of cereals, molasses, sugars, fruits or other starch- or sugar-bearing substances and contains all the condensed products of the fermentation, volatile at the usual temperature of distillation.

2. *Rectified spirit* is distilled spirit which at the time of or subsequent to distillation is subjected to a rectifying process by means of which a part of the volatile products of the distillation is separated from the ethyl alcohol therein.

3. *Alcohol, cologne spirit, neutral spirit, velvet spirit,* or *silent spirit* is distilled spirit from which all, or nearly all, its constituents are separated except ethyl alcohol and water, and contains not less than ninety-four and nine-tenths (94.9) per cent (189.8 proof) by volume of ethyl alcohol.

4. *New whisky* is the distilled spirit from the properly fermented mash of malted cereals or cereals the starch of which has been hydrolyzed by malt, is of an alcoholic strength corresponding to the excise laws of the various countries in which it is made, and contains not less than one hundred and twenty-five (125) nor more than three hundred and fifty (350) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than ninety (90) nor more than two hundred and twenty-five (225) grams of fusel oil (higher alcohols as amylic), not more than twenty (20) grams of aldehydes, not less than fifteen (15) nor more than one hundred (100) grams of ethers (as acetic ether), not less than two (2) nor more than twenty-five (25) grams of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent ethyl alcohol by volume).

5. *Whisky (potable whisky)* is new whisky which has been stored in wood for not less than four (4) years and mixed only with pure water at the time of its preparation for consumption, and contains, unless otherwise prescribed by law, not less than forty-five (45) per cent of ethyl alcohol by volume, and the relative quantities of secondary products to ethyl alcohol corresponding to the varieties of whisky under six (6) to fifteen (15), inclusive.

6. *Rye whisky* is whisky in the manufacture of which rye is the principal cereal used, and contains not less than two hundred (200) nor more than five hundred (500) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than one hundred (100) nor more than two hundred and fifty (250) grams of fusel oil (higher alcohols as amylic), nor more than twenty-five (25) grams of aldehydes, not less than forty (40) nor more than one hundred and fifty (150) grams of ethers (as acetic ether), not less than thirty (30) nor more than eighty-five (85) grams of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent ethyl alcohol by volume).

7. *Bourbon whisky* is whisky in which Indian corn (maize) is the principal cereal used, and contains not less than two hundred (200) nor more than five

hundred (500) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than one hundred (100) nor more than two hundred and fifty (250) grams of fusel oil (higher alcohols as amylic) not more than twenty-five (25) grams of aldehydes, not less than forty (40) nor more than one hundred and fifty (150) grams of ethers (as acetic ether), not less than thirty (30) nor more than eighty-five (85) grams of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent ethyl alcohol by volume).

8. *Corn whisky* is whisky made from maize (Indian corn), the starch of which has been hydrolyzed by malting or by the action of barley malt, and contains the proportions of the various ingredients specified for bourbon whisky.

9. *Blended whisky* is a mixture of two or more whiskies, and contains the relative quantities of secondary products to ethyl alcohol of the varieties of whisky forming the blend.

10. *Rectified new whisky* is new whisky deprived of a part of its secondary volatile products, and contains not less than sixty (60) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than forty (40) grams of fusel oil (higher alcohols as amylic), not more than eight (8) grams of aldehydes, not less than five (5) grams of ethers (as acetic ether), not less than one (1) gram of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent of ethyl alcohol by volume).

11. *Rectified whisky* is rectified new whisky, stored in wood not less than three (3) years, except where otherwise prescribed by law, and contains not less than one hundred (100) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than fifty (50) grams of fusel oil (higher alcohols as amylic), not more than ten (10) grams of aldehydes, not less than twenty (20) grams of ethers (as acetic ether), not less than fifteen (15) grams of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent ethyl alcohol by volume).

12. *Scotch new whisky* is whisky made in Scotland solely from barley malt in the drying of which, over burning peat, a smoky or peaty flavor is imparted to the product, and contains not less than one hundred and twenty-five (125) nor more than three hundred and fifty (350) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than ninety (90) nor more than two hundred and twenty-five (225) grams of fusel oil (higher alcohols as amylic), not more than twenty (20) grams of aldehydes, not less than fifteen (15) nor more than one hundred (100) grams of ethers (as acetic ether), not less than two (2) nor more than twenty-five (25) grams of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent ethyl alcohol by volume).

13. *Scotch whisky* is Scotch new whisky which has been stored in wood for not less than four (4) years and mixed only with pure water at the time of its preparation for consumption, and contains not less than one hundred and fifty (150) nor more than four hundred and fifty (450) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than one hundred (100) nor more than two hundred and fifty (250) grams of fusel oil (higher alcohols as amylic), not more than twenty-five (25) grams of aldehyde, not less than twenty-five (25) nor more than one hundred and twenty-five (125) grams of ethers (as acetic ether), not less than ten (10) nor more than forty (40) grams of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent ethyl alcohol by volume).

14. *Irish new whisky* is whisky made in Ireland either from barley malt or malt and unmalted barley or other cereals, and contains not less than one hundred and twenty-five (125) nor more than three hundred and fifty (350) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than ninety (90) nor more than two hundred and twenty-five (225) grams of

fusel oil (higher alcohols as amylic), not more than twenty (20) grams of aldehydes, not less than fifteen (15) nor more than one hundred (100) grams of ethers (as acetic ether), not less than two (2) nor more than twenty-five (25) grams of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent ethyl alcohol by volume).

15. *Irish whisky* is Irish new whisky which has been stored in wood for not less than four (4) years and mixed only with pure water at the time of its preparation for consumption, and contains not less than one hundred and fifty (150) nor more than four hundred and fifty (450) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than one hundred (100) nor more than two hundred and fifty (250) grams of fusel oil (higher alcohols as amylic), not more than twenty-five (25) grams of aldehyde, not less than twenty-five (25) nor more than one hundred and twenty-five (125) grams of ethers (as acetic ether), not less than ten (10) nor more than forty (40) grams of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent ethyl alcohol by volume).

16. *Arrack* is distilled spirit made from rice.

17. *New rum* is distilled spirit made from the fermented juice of the sugar cane, the massecuite made therefrom, molasses from the massecuite or any intermediate product save sugar, and contains not less than one hundred and twenty-five (125) nor more than three hundred and fifty (350) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than sixty (60) nor more than one hundred and fifty (150) grams of fusel oil (higher alcohols as amylic), not more than thirty (30) grams of aldehydes, not less than thirty (30) nor more than one hundred (100) grams of ethers (as acetic ether), not less than twenty (20) nor more than fifty (50) grams of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent ethyl alcohol by volume).

18. *Rum* is new rum stored not less than four (4) years in wood, and contains not less than one hundred and seventy-five (175) nor more than five hundred (500) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than eighty (80) nor more than two hundred (200) grams of fusel oil (higher alcohols as amylic), not more than forty (40) grams of aldehydes, not less than fifty (50) nor more than one hundred and fifty (150) grams of ethers (as acetic ether), not less than thirty-five (35) nor more than one hundred (100) grams of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent ethyl alcohol by volume).

19. *New brandy* is a distilled spirit made from sound, potable wine, and contains not less than one hundred and twenty-five (125) nor more than three hundred and fifty (350) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than seventy (70) nor more than one hundred and fifty grams of fusel oil (higher alcohols as amylic), not more than twenty (20) grams of aldehydes, not less than thirty (30) nor more than one hundred (100) grams of ethers (as acetic ether), not less than five (5) nor more than twenty (20) grams of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent ethyl alcohol by volume).

20. *Brandy* is new brandy stored in wood for not less than four (4) years, and contains not less than one hundred and fifty (150) nor more than five hundred (500) grams of the secondary products of distillation congeneric with ethyl alcohol, not less than eighty (80) nor more than two hundred (200) grams of fusel oil (higher alcohols as amylic), not more than thirty (30) grams of aldehydes, not less than thirty-five (35) nor more than one hundred and fifty

(150) grams of ethers (as acetic ether), not less than thirty (30) nor more than one hundred (100) grams of volatile acids (as acetic) to one hundred (100) liters of proof ethyl alcohol (50 per cent ethyl alcohol by volume).

21. *Cognac* is brandy prepared in the departments of the Charente, France, from pure, sound wine produced in those departments.

IV. PRESERVATIVES AND COLORING MATTERS.

a. PRESERVATIVES.

Standard preservatives are salt, sugar, vinegar, spices and their essential oils, wood smoke, edible oils and fats, and alcohol.

The use, in food products, of any other preservative or antiseptic, or of any substance which preserves or enhances the natural color of a food product, or of a coloring matter, should not be permitted:

1. If it is poisonous or injurious to health under the conditions of its use in foods.

Among such substances are fluorides, beta-naphtol, formaldehyde, salts of copper, salicylic acid and its salts, boric acid and its salts, sulphurous acid and its salts, benzoic acid and its salts.

2. If it has not been proved beyond reasonable doubt by scientific investigation to be harmless to health.

Among such substances are abrastol and saccharin.

3. If it conceals in any way inferiority of the product or counterfeits or enhances a natural color.