beer is brewed under the authority or pursuant to the directions of His Majesty's Government, or any Government Department."

10. *As to Contracts.*—It is provided that "Where the Food Controller is of opinion that the price payable under any contract subsisting at the date of this Order for the sale of beer of a gravity not exceeding an original gravity of 1042° is such that the beer cannot at the prices permitted by this Order be sold or supplied by retail in a public bar at a reasonable profit, he may, if he thinks fit, cancel such contract, or may modify the terms thereof in such manner as shall appear to him to be just."

W. H. BIRD.

The Government Laboratory. Report of the Principal Chemist, November 22nd, 1917.

THE Report of the Principal Chemist for the year ended March 31st, 1917, has just been issued. The information given below purports to be a comparison with the Report for the previous year:—

<i>Beer.</i>	1916.	1917.
TOTAL NUMBER OF SAMPLES EXAMINED IN CONNECTION WITH BEER DUTY	44,551	38,744
SAMPLES OF MATERIALS USED, OR PROPOSED TO BE USED, IN BREWING:—		
Malt, corn, brewing sugars, and exhausted grains	219	198
Yeast foods and miscellaneous substances	97	42
SAMPLES OF FINISHED BEER FROM BREWERS' PREMISES EXAMINED FOR SACCHARIN, SAPONIN, ETC.*	350	147
SAMPLES OF WORTS OR BEER IN THE UNFINISHED CONDITION	11,198	10,561
<i>The number of vessels found to be under-declared, with respect to original gravity, were:—†</i>		
Under-declared 1° but less than 5°	2,392	3,057
" 5° " 10°	539	17
" more than 10°	—	2

* Except for occasional traces of arsenic, nothing of a deleterious or illegal character was found to be present in either year.

† The percentage of under-declarations works out at 33·1 for the year 1916—1917, as compared with 33·3 for the year 1915—1916.

Beer—continued.

	1916.	1917.
SAMPLES OF BEER SUBMITTED AS HAVING BECOME SOUR AND UNSALEABLE*	649	876
SAMPLES OF BEER TAKEN FROM LICENSED PREMISES	4,964	4,466
<i>Cases in which beer was found to have been diluted†</i>	152	101
Samples of the beer as it left the breweries were examined for the sake of comparison where dilution was suspected	264	218
SAMPLES OF NON-ALCOHOLIC BEERS, HERB BEERS, AND BEER SUBSTITUTES‡.....	191	361
<i>Cases in which either the o.g. or proof spirit exceeded the limits allowed.....</i>	—	16
<i>Cases in which the proportion of proof spirit did not exceed 2 per cent.</i>	144	—
<i>Cases in which the proportion of proof spirit was between 2 and 3 per cent.....</i>	31	9
<i>Cases in which the proportion of proof spirit was between 3 and 4 per cent.....</i>	7	5
<i>Cases in which the proportion of proof spirit was from 4 to 7 per cent.</i>	5	—

* These were examined as to fitness for consumption, and, in most cases, the beer was destroyed, with the sanction of the Commissioners of Customs and Excise, and the duty remitted or refunded. Formerly, repayments of duty were made only in special cases, and where the beer had never left the brewery premises. Now, under the Finance Act, 1915 [5 and 6 Geo. V, Chap. 62, Sec. 4 (1)], repayment or remission of duty can be claimed by brewers on all beer which has been returned to them by their customers as unfit for consumption. The section reads as follows:—

“4.—(1) If it is proved to the satisfaction of the Commissioners of Customs and Excise that any beer which has been removed from the entered premises of a brewer for consumption has accidentally become spoilt or otherwise unfit for use, and, in the case of beer delivered to another person, has been returned to the brewer as so spoilt or unfit for use, the Commissioners shall, subject to such regulations as they may prescribe, remit or repay the duty charged or paid in respect of the beer.”

† Some of the samples were found to be diluted with water to the extent of 10 to 15 gallons per standard barrel of beer during the year 1916—1917; 10 to 14 gallons was the highest figure in the previous year.

‡ The Finance Act, 1914 (Session 2) (5 Geo. V, Chap. 7, Sec. 8) exempts from beer duty beers which are not brewed on licensed premises if the original gravity and proof spirit do not exceed 1016° and 2 per cent. respectively.

Beer—continued.

	1916.	1917.
SAMPLES OF BEER EXPORTED ON DRAWBACK.....	18,809	20,178
<i>Shipments in respect of which either the gravity or the measurement of the beer had been over-declared by the exporters*</i>	351	314
SAMPLES OF IMPORTED BEER†	4,202	489
SAMPLES OF BEER AND BREWING MATERIALS EXAMINED FOR ARSENIC	1,797	1,258
Samples of malt and sugar tested	256	249
<i>Arsenic found in excess of limits‡</i>	Nil	Nil
Samples of beer and wort tested.....	1,418	974
<i>Arsenic found in excess of limits</i>	4	1
Miscellaneous samples tested	123	35
<i>Arsenic found in excess of limits</i>	2	1

Spirits.§

SAMPLES OF WASH, YEAST PRESSINGS, ETC.	3,029	2,679
<i>Cases in which the declared gravity of the wash was found to be under-stated</i>	15	38

* In these cases the drawback claimed was reduced as a result of the analysis.

The number of these samples shows a considerable increase over previous years on account of the large quantities of beer exported for the use of the troops. The number of cases of over-declaration is not large compared with the total exportations, but it is much greater than in former years. It is contended that the increase is partly due to the difficulties which have confronted brewers and exporters both in regard to labour and in obtaining a supply of bottles of uniform capacity.

† Owing to the restrictions caused by the War, the importation of beer has practically ceased.

‡ That is, the equivalent of one-hundredth of a grain of arsenious oxide per lb. in the case of solids, or per gallon in the case of liquids. These limits were recommended by the Royal Commission on Arsenical Poisoning.

§ The earlier stages of the manufacture of spirits and beer are practically the same, and the methods adopted for checking the distillers' entries during the preparation of the fermented liquor, or "wash," from which the spirits are distilled are very similar to those employed in the case of beer.

The duty is, however, usually charged on the spirit actually produced, and the main object of the preliminary checks on the distillers' operations is to ensure that the proper quantity of spirits has been brought to charge, having regard to the quantity of materials used, the degree of fermentation which ensues, and the quantity of "wash" distilled.

As a rule, the alcoholic strength of spirits is determined by the Officers of

Spirits — continued.

	1916.	1917.
SAMPLES OF FUSEL OIL*	18	17
<i>Cases in which the permitted proportion of proof</i>		
<i>spirit was found to be exceeded</i>	1	1
"GROG"†	17	5
ILLICITLY-DISTILLED SPIRITS (SUSPECTED CASES)	4	4
<i>Cases in which proof of illicit distillation was</i>		
<i>obtained</i> ‡	3	—
SAMPLES OF LIQUEUR CHOCOLATES§	24	4

Customs and Excise by means of Sikes' hydrometer. When, however, the spirits have been treated with sugar, colouring or flavouring matters, as in the preparation of gin and other beverages, the true alcoholic strength is said to be "obscured," and is determined by distillation. This method is also applied to medicinal spirits, essences, and other similar preparations, as well as brandy, rum, and other imported spirits, and spirit mixtures containing dissolved sugar and other solid matter.

Alcohol of high strength is allowed duty free for scientific and manufacturing purposes, and for domestic uses such as burning in spirit lamps. In most cases the alcohol for these purposes is required to be "denatured," or mixed with nauseous or tell-tale ingredients to prevent its consumption as a beverage, or its use either in medicines or in preparations capable of being taken internally. "Mineralised methylated spirits," which are allowed to be sold retail, are spirits of wine to which has been added wood naphtha in the proportion of not less than one-ninth of their bulk, and to which, in addition, has been added three-eighths per cent. of mineral naphtha. "Industrial methylated spirits" are spirits of wine denatured with half the quantity of wood spirits without mineral naphtha. Industrial methylated spirit can only be used in arts and manufactures under regulations approved by the Commissioners of Customs and Excise. Other denaturants are allowed in connection with particular manufactures.

The denaturants in all cases must be submitted for approval to the Government Chemist, and samples are taken frequently during the manufacturing processes in which the spirit is employed, as well as samples of the finished article, in order to ascertain whether the conditions imposed are being complied with. Beverages and medicinal preparations in which the presence of methylated spirit is suspected are also examined with a view to the detection of any illegal use of the denatured spirit. (*Report of Government Chemist: 1915-1916.*)

* Fusel oil, separated during the distillation of spirits in patent stills, is allowed to be delivered duty-free provided it contains not more than 15 per cent. of proof spirit.

† The term "Grogging" is applied to the extraction of spirit from the wood of a spirit cask, an operation which is illegal. Evidence of such extraction was obtained in several cases in both years.

‡ Legal proceedings were taken in three cases in the year 1915-1916.

§ That is, in order to determine whether a spirit licence was required for their sale.

Spirits—continued.

	1916.	1917.
SAMPLES OF BRITISH COMPOUNDED SPIRITS EXPORTED*	2,146	2,392
Tested also for sugar on which drawback was also claimed	1,512	1,628
<i>Cases in which the strength of the spirit or the quantity of sugar was over-stated</i>	625	860
SAMPLES OF BRITISH SPIRITUOUS PREPARATIONS EXPORTED†	19,337	19,832
<i>Cases in which the declared spirit strength of the preparation was over-stated</i>	763	460
Liniments, hair-washes, etc., tested for the presence of methylated spirits	3,081	3,835
<i>Cases in which the illicit use of methylated spirit was detected</i>	—	1
SAMPLES OF IMPORTED SPIRITS AND SPIRITUOUS PREPARATIONS‡	34,343	24,601
SAMPLES OF DUTY FREE SPIRITS, INCLUDING METHYLATED SPIRIT AND OTHER MANUFACTURING SPIRITS—		
Samples of wood naphtha and of mineral naphtha, intended for use in the preparation of methylated spirit, tested and approved ...	1,353	1,032
Samples of tinctures, essences, perfumes, and medicinal preparations, taken from manufacturers and retailers, tested§	30	26

* That is, gin, British brandy, sloe gin, cherry brandy, and other liqueurs, which are tested for their spirit strength and character, in order to check the exporters' claims for drawback.

† That is, medicinal spirits, tinctures, perfumes, hairwashes, dentifrices, liniments, extracts, infusions, etc. These are tested for their character and spirit strength, in order to check the exporters' claims for drawback on the spirit, used in their manufacture.

‡ Spirit, or some derivative of spirit, such as sulphuric ether, on which an import duty is payable, is present in a large number of imported articles including perfumes, essences, medicinal spirits, drugs, soaps, inks, paints, varnishes, and blacking.

§ With the object of preventing the illegal use of methylated spirit in making same.

Spirits—continued.

	1916.	1917.
DUTY FREE SPIRITS—continued.		
Samples of recovered spirit, still residues, articles manufactured with industrial spirit, and preparations containing such spirit* ...	268	453
Samples of pure and specially denatured alcohol, etc.	111	267

Wines.

SAMPLES OF IMPORTED WINE EXAMINED IN CONNECTION WITH THE ASSESSMENT OF DUTY† ...	92,075	97,567
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Sugar, Glucose, Saccharin.

SAMPLES OF SUGAR AND ARTICLES CONTAINING SUGAR EXAMINED FOR THE ASSESSMENT OF DUTY OR DRAWBACK‡	24,682	26,970
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* For the purpose of controlling the use of methylated spirit in connection with manufacturing operations.

† Foreign wine imported into this country is charged with duty according to its alcoholic strength, wines containing not more than 30 degrees of proof spirit being assessed at 1s. 3d. per gallon, and those containing between 30 and 42 degrees of proof spirit at 3s. per gallon, while those containing more than 42 degrees of proof spirit are charged an additional 3d. per gallon for every degree or part of a degree of proof spirit above 42 degrees. Sparkling wine in bottle is charged an additional duty of 2s. 6d. per gallon, and still wine in bottle an additional duty of 1s. per gallon (62 & 63 Vic., Cap. 9, Sec. 2).

‡ The great bulk of the revenue from sugar is derived from refined sugar. The raw sugar taken into the British refineries which manufacture in bond is not assessed for duty, but duty is charged when the refined sugar, molasses, invert sugar, and syrup are removed from the refinery warehouse. In the case of sugar, the duty is assessed by means of the polarising saccharimeter, an instrument which gives a direct reading of the percentage of sugar; whilst invert sugar, molasses, and syrup are assessed for duty by chemical means.

The samples examined on importation include, besides sugar, articles made with sugar, and also those containing glucose, molasses, saccharin, and other sweetening agents. Glucose is largely used for brewing purposes and in confectionery molasses enters into the composition of food for cattle, and is employed in the manufacture of spirit; saccharin is an intensely sweet coal-tar product which is

Sugar, Glucose, Saccharin—continued.

	1916.	1917.
SAMPLES OF GLUCOSE SOLUTION, TAKEN DURING THE COURSE OF MANUFACTURE, EXAMINED FOR THE ASSESSMENT OF EXCISE DUTY	321	259
SAMPLES OF GLUCOSE EXAMINED FOR THE ASSESSMENT OF DRAWBACK ON EXPORTATION	181	593
SAMPLES OF GLUCOSE USED IN SYRUPS MADE AT SUGAR REFINERIES EXAMINED	439	177
ARTICLES IN WHICH THERE IS ANY PROBABILITY OF THE OCCURRENCE OF SACCHARIN EXAMINED*	309	371
<i>Cases in which saccharin was found to be present...</i>	38	46
SACCHARIN PRODUCTS EXAMINED ON EXPORTATION FOR THE ASSESSMENT OF DRAWBACK	334	172

sometimes substituted for sugar in the manufacture of mineral waters and in the preparation of foods intended for diabetic patients.

The number and variety of preparations containing sugar are so great that it has been found necessary to adopt fixed rates of duty in the case of those which are imported frequently or in large quantities. It is then only necessary to submit samples in cases of doubt as to their description or rating for duty purposes. The articles so dealt with comprise biscuits, cakes, ketchup, chutney, confectionery, condensed milk, crystallized fruit, desiccated cocoanut, drugs, fruit pulp, infants' and invalids' foods, lozenges, invert sugar, jam, milk powder, pickles, and soy. There are, however, many articles for which it has not been found practicable to fix a special rate of duty, and which, therefore, have to be tested on each importation and assessed for duty according to the percentage of the dutiable ingredients present. Amongst these may be mentioned egg yolk, gelatine, gluc, honey, manna, ment extracts, parchment paper, printers' roller composition, and tanning extracts. Honey, although not liable to duty when genuine, is frequently adulterated with invert sugar.

Samples of sugar and products containing sugar manufactured in the United Kingdom for exportation are also examined for the purpose of estimating the amount of drawback to which the exporter is entitled. The goods are similar in character to the imports, and include such articles as aerated waters, biscuits, candied peel, confectionery, jam, marmalade, jellies, and syrups.

The percentage of sugar and other dutiable constituents in these articles varies greatly, and, in order to expedite business and to obviate the delay and inconvenience that would result from a separate analysis on the occasion of each shipment, the same procedure is adopted as in the case of imports, fixed rates of drawback being calculated on the analytical results of representative samples. (*Report of the Government Chemist: 1915—1916.*)

* Owing to the heavy duty on saccharin, which has approximately 500 times the sweetening power of sugar, the inducement to smuggle this article into the country is very great.

*Cider and Perry.**

	1916.	1917.
SAMPLES OF IMPORTED CIDER EXAMINED	123	16
SAMPLES OF CIDER PURCHASED BY THE CUSTOMS AND EXCISE OFFICERS	7	17
<i>Samples found to be factitious and assessed for duty on the basis of the spirit which they con- tained</i>	3	5
	W. H. BIRD.	

A Note on Hogarth's Print, "Beer Street."

IF Science and Art be sisters, a note upon Hogarth's print, "Beer Street," is not out of place in this Journal. All Hogarth's prints representing street scenes in London are purely topographical. However grotesque the figures portrayed, the houses and buildings are faithfully produced. The hand of Time, aided by the efforts of the house demolisher and municipal improvements for street widening, has left few recognisable. In many of his pictures a church spire stands as a chief clue for the diligent. In "Beer Street" fortune has been kind, and the picture is, within limits, the same to-day as when drawn.

The spire is St. Vedast, Foster Lane, within a quarter of a mile of Brewers' Hall, Addle Street.

Stand at the north-east corner of St. Paul's Churchyard, look across the western end of Cheapside, with the statue of Sir Robert Peel in the middle distance. The spire stands above the houses, a clue and a confirmation.

* Beverages of a non-alcoholic character are frequently sold as cider or under such names as "Sparkling Cider" and "Champagne Cider," the words "non-alcoholic" or "non-excisable" being occasionally added. Some of these beverages are mixtures of real cider with solutions of sugar, and contain less than 2 per cent. of proof spirit. But many non-alcoholic ciders, so-called, are entirely free from fermented apple juice, and are simply solutions of sugar which have been aerated, flavoured, and coloured. The use of any name for such beverages which suggests that they consist of fermented apple juice or cider is an infringement of the Merchandise Marks Act, and is also harmful to the interests of the makers of genuine cider. Samples which have been sold under the description of cider are therefore examined at the laboratory for the Board of Agriculture and Fisheries to ascertain whether the description is correct or not. (*Report of the Government Chemist, 1915-1916.*)