

Department of Government Chemist

Notes on Jamaican Rum

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NOTES ON JAMAICA RUM

By W. L. BARNETT, M.A., B.Sc., F.R.I.C.

Government Chemist

The object of these notes is to supply information concerning the legislation in Jamaica on rum, and also to throw some light on the composition of rum in view of queries received about standards.

2. The Excise Duty Law, No. 73 of 1941, contains the following definitions:—

“Rum” means spirits distilled solely from sugar cane juice, sugar cane molasses, or the refuse of the sugar cane, at a strength not exceeding 150 per centum proof spirit.

“Spirits” means distilled spirits of every kind distilled in the Island.

“Proof Spirit” means such spirits as at the temperature of 51 degrees Fahrenheit weighs 12/13th of the weight of an equal measure of distilled water.

“Obscuration” means the difference, caused by matter in solution, between the actual strength of spirits and the apparent strength as indicated by the hydrometer.

“Alcohol” means distilled spirits of every kind distilled at a strength exceeding 150 per centum proof spirit.

3. Sub-section (3) of section 118 of the Excise Duty Law reads:—“In ascertaining the strength of any spirit, any obscuration shall be determined and allowed for.”

4. Under section 29 of the Excise Duty Law:—

(1) Nothing shall be added to any spirits in a distillery save colouring matter or water.

(2) No rum shall be coloured with any colouring matter save cane sugar caramel.

5. Under the Spirit Licence Law, Cap. 189, the minimum strength of rum for retail is 15 Under Proof at a temperature of 80 degrees Fahrenheit.

6. Under the Food and Drugs Law, Cap. 72, the minimum strength of gin, brandy and whisky is 30 Under Proof at a temperature of 80 degrees Fahrenheit.

7. The Rum (Ether Control) Law, Cap. 181, as amended by Article 2 of a proclamation made under section 5 of the Jamaica (Constitution) Order in Council, 1944 and dated the 17th day of November, 1944, empowers the Governor in Executive Council from time to time to fix the maximum ether content of rum manufactured in the Island. By definition under this Law, “Ether Content” means the number of grams of total esters, calculated as ethyl acetate, in every hundred litres of absolute ethyl alcohol contained in rum at a temperature of 60 degrees by Fahrenheit's thermometer. By a Proclamation issued under this Law on the 28th February, 1945, the maximum ether content was fixed at 11.00

The subject of limiting the ether content of rum was to prevent the manufacture and export of very high ether rum to countries, chiefly Germany, where it was mixed with potato spirit, or other cheap spirits, diluted and bottled for the African market, where it was sold as Jamaica Rum. Prior to this limitation, rums having an ether content between 4,000 and 6,000 were made specially for the German trade.

9. There are three types of rum made in Jamaica. These are classified as High Ether, Flavoured Rum and Common Clean Rum. High ether rum is made by a special process which was devised by the late Mr. H. H. Cousins about 1906 when he was Island Chemist. This process is only used at present in one distillery and High Ether Rum is not dealt with in this article. Generally speaking Common Clean Rum is made by a fairly rapid fermentation of a wash made from a mixture of molasses with dunder and skimmings from a previous distillation. Flavoured rum is made by distilling a slowly fermented wash composed of a mixture of molasses with dunder, skimmings, acid and flavour. By "acid" is meant the sour liquor which results from the fermentation of cane juice with dunder and skimmings in the presence of cane trash. "Flavour" is somewhat the same as "acid", but in addition contains dunder which has undergone acidic fermentation from a previous crop. There is no clear line of demarcation between the two types and a distiller can produce rum having any desired qualities by paying attention to the preparation of the wash, and the fermentation thereof.

10. Rum is distilled in pot stills and leaves the distillery in puncheons at a strength of 36° to 40° Over Proof. It gets on the export market in two ways. Either it is shipped in bulk in puncheons under Estate marks at a strength of 36° O.P., or as blended rum in bottles. In the latter case, the trade is in the hands of merchants who buy from estates, and blend and colour the rum, and also reduce it to correct strength for their overseas market. Such rums are bottled, labelled, and packed by the merchants, and sold under their own trade marks.

11. Rum made in Jamaica nowadays differs in many respects from the full-bodied and high-flavoured rums which were made prior to 1914. Consequently any data in literature before that time cannot be applied to present-day products. The rum made in a small distillery from sugar cane which was always of the same variety, would possess a characteristic flavour associated with that particular distillery. Instead of having a large number of small distilleries and sugar cane estates, we have, to-day, a relatively small number of large central distilleries. The small pot stills have been replaced by large stills having a much greater output. In addition, the old species of sugar cane, which were liable to Mosaic Disease, have been replaced by new varieties which are resistant. The yeasts which produce the fermentation are also different from those formerly employed, being wild yeasts indigenous to the particular kind of sugar cane. The public taste appears to demand a rum having good body but without the persistent aroma of the earlier makes, although attention to a sufficiency of flavour is still of importance. The body is given by the higher alcohols, whilst

the aldehydes and furfural, influence both the body and flavour. The flavour of rum is chiefly due to its content of compound esters which were formerly, although erroneously, known as "ethers." The one which predominates is ethyl acetate (acetic ether) but it contributes little to the distinctive flavour, which is due to compound esters of higher aliphatic acids. Ethyl butyrate gives pineapple; amyl esters give pear; whilst other esters contribute various fruity aromas.

12. In the year 1893 the total area under sugar cane cultivation was 31,555 acres. About 88% of this belonged to sugar estates which operated their own sugar mills and distilleries. There were 148 distilleries of small size of which 26 were in the parish of Trelawny, 25 in St. James, and 23 in Westmoreland. These three parishes produced flavoured rums having good body and pleasing aroma, which fetched better prices than the common clean rums from other parishes.

13. By the end of the next decade the whole acreage under sugar cane cultivation had gradually decreased until in 1901 it was 25,257 acres. Along with this there was a reduction in the number of sugar factories owing to amalgamation of estates, and the shutting down of unwanted plant, so that in the year 1901-1902 there were 110 distilleries in operation. Trelawny, Westmoreland and St. James continued to turn out flavoured rums which were distinguishable by their characteristic aromas. Expert tasters could name the district and frequently the actual estate from which the rum came by their sense of taste and smell.

14. The Government Laboratory was erected at Hope in 1902, and was equipped to carry out work on sugar and rum. Mr. Charles Allan was appointed Fermentation Chemist and he visited a number of estates in 1903 and 1904 and made a study of the manufacture of Common Clean Rum and also the methods of making Flavoured Rum. A large number of rum samples were collected and analysed. It was then ascertained that the superior flavour of the higher priced rums was due to their higher content of compound esters as compared with Common Clean rums. The average results were as follows:—

FLAVOURED RUMS

Parish	Parts per 100,000 of Abs. Alcohol	
	Ethers as Ethyl Acetate	Acidity as Acetic Acid
Trelawny	954	21
St. James	660	57
Westmoreland	401	20

COMMON CLEAN RUMS

Parish	Parts per 100,000 of Abs. Alcohol	
	Ethers as Ethyl Acetate	Acidity as Acetic Acid
St. Andrew	250	59
St. Catherine	209	41
Clarendon	286	21
St. Elizabeth	204	9

The flavoured rums having an ether content of about 400 and an acidity of about 20 were known to the trade as "Plummers" and "Wedgeburns" and were highly esteemed. Tea rums were those having about 600 ethers and were at one time used for mixing with hot tea, a small amount being added to a cupful.

15. During the 1914-1918 War, there was a boom in sugar and the establishment of centrals was begun with consequent abandonment of some of the smaller factories. By 1922 the number of rum distilleries operating was 48 and by 1937 there were only 29 distilleries.

16. The Second World War witnessed a repetition of what happened in the previous one, and larger centrals were built with a further abandonment of the smaller distilleries. This policy was continued after the War so that in 1948 there were 25 distilleries of which one made alcohol only. The remaining 24 distilleries produced nearly three million gallons of rum. In Westmoreland, since 1939, there has been one large distillery only, which has a greater output than the combined yield of the 23 distilleries which operated in that parish 57 years ago. The Appendix shows that the yield of rum has increased whilst the number of distilleries has decreased.

17. For comparison of the analytical data of spirits, it is customary to give the alcoholic strength in terms of proof spirit. The secondary constituents are given in grams per 100 litres of absolute alcohol at 60° Fahrenheit. The secondary constituents are: Volatile Acidity calculated as Acetic Acid; Aldehydes calculated as Acetaldehyde; Ethers (i.e. Esters) calculated as Ethyl Acetate; Higher Alcohols calculated as Amyl Alcohol (the method of determination being specified). Furfural is the other constituent determined.

18. About forty-five years ago a proposal to establish a standard for genuine Jamaica Rum was put forward and a minimum of 200 parts of Ethers (calculated as Ethyl Acetate per 100,000 parts of absolute alcohol) was suggested. It was however recognised that certain estates made rum of excellent quality which had less than 200 ethers for the local trade. It was sought to prohibit the exportation of any rum having less than 200 ethers. No standard was fixed by legislation.

19. A tentative suggestion has been put forward that a minimum aggregate of Volatile Acid plus Ethers of 130 grams per 100 litres of absolute alcohol should be adopted as a standard for Jamaica rum since many rums known to come from Jamaica are much lower in secondary constituents than formerly. In this connection it should be made clear that a large proportion of the rum exported in puncheons from Jamaica has less than a total sum of 130 for ethers plus Volatile Acidity.

20. About thirty years ago the Ethers in Jamaica rum were nearly always more than the Higher Alcohols as determined by the Allen-Marquardt process. This is not the case to-day as the Higher Alcohols are about the same or greater than the Ethers. This is illustrated in Table No. 1 which gives the secondary constituents for rums of 36° O.P. made between 1947 and 1949. These rums were only slightly coloured and had low obscurations. They were estate rums

packed in puncheons for export, and were not blends. Such rums after arrival at the country of destination would be subjected to reduction in strength, blending, colouring and bottling, and by the time they reached the consumer may have been so altered as to be unrecognisable by those acquainted with Jamaica rum in its natural country of origin.

TABLE I
ESTATE RUMS—PUNCHEONS
Years 1947-1949
Strength about 36 O.P.

Grams per 100 litres of Abs. Alcohol				
Volatile Acidity	Ethers	Aldehydes	Furfural	Higher Alcohols
15	64	22	7	396
27	189	9	9	345
18	83	29	10	310
14	45	22	6	249
23	98	23	4	281
38	209	30	6	209
27	124	24	3	202
32	133	24	3	261
38	278	19	3	234
21	284	20	5	194
18	226	20	6	206
17	154	20	8	171
18	171	20	5	178
16	52	25	4	215
17	105	55	7	221
10	51	35	5	260
7	43	14	4	176
8	58	33	5	206
22	77	20	6	336
37	75	21	10	392
8	90	25	22	471
8	136	13	7	151
10	60	9	3	135
5	49	12	7	146
5	66	15	7	123
9	36	8	4	253

Higher alcohols determined by Allen-Marquardt method.

21. In the case of rums exported in bottles the aggregate of volatile acid and ethers is usually over 130. The rums used for blending have been matured in wood for several years before use. Some of the blends are highly coloured and have a high obscuration. Table II gives the analysis of export bottled rums of 30° U.P. Strength. Table III gives the analysis of export bottled rums of 15° U.P.

TABLE II
BOTTLED RUMS FOR EXPORT
Years 1947-1949
Strength 30° U.P.

Grams per 100 litres of Abs. Alcohol				
Volatile Acidity	Ethers	Aldehydes	Furfural	Higher Alcohols
80	146	121	11	441
40	103	70	8	320
65	116	93	10	557
64	122	79	11	370
64	124	105	12	415
24	113	57	16	640
7	75	53	1	444
2	38	58	2	385
11	221	109	16	444
5	59	83	7	308
5	18	34	2	341
31	96	25	5	157
22	70	31	3	133
33	73	50	3	167
4	97	25	1	148
20	24	7	2	85
49	132	22	7	141
44	106	22	5	166
16	114	24	2	261
26	132	24	5	115
17	94	29	4	111
64	55	106	6	544
73	116	83	11	432

The Higher Alcohols were determined by the Allen-Marquardt method.

TABLE III
EXPORT BOTTLED RUM—15 U.P.
Grams per 100 litres of Abs. Alcohol

Obscuration	Volatile Acid	Ethers	Aldehydes	Furfural	Higher Alcohols*
3.8	59	217	65	7	746
5.1	61	188	54	6	615
5.5	73	153	52	9	555
3.5	64	167	48	8	783
6.6	63	163	56	10	985
5.5	47	110	48	7	985
3.7	47	147	47	10	925
3.2	60	192	52	7	634
4.2	61	162	49	7	763
4.2	69	197	57	7	676

*NOTE: In Table III, the Higher Alcohols were determined by the colorimetric method. (See "Alcohol" by C. Simmonds, MacMillan & Co., London, pp. 414-415). These results are higher than those obtained by the A.C.A.C. method.

22. It will be evident that, in the case where Jamaica Rum is blended and bottled in Jamaica, and exported, that there is a fairly close uniformity for the products of the same merchants. So long as the consumer receives a bottle of rum in the condition in which it left Jamaica, then he can be sure of getting genuine Jamaica rum. A check would be available to analysts abroad if certificates of analysis were available for each consignment shipped.

23. There can be no standards which will give indications of country of origin in the case of rums bottled abroad from bulk consignments in puncheons. It has been shown that the composition of estate rums varies considerably. After arrival in the country to which it is exported, it will, probably, be left for some time in a bonded warehouse before it is put through the processes of reduction in strength, blending and bottling. It may have to be coloured and clarified or filtered. It would not be possible to identify it with a specific country of origin. Such rum is well defined in the Regulations made by the Federal Alcohol Control Administration, Washington, U.S.A., relating to standards of identity for distilled spirits, made on 15th March, 1935. The appropriate section is as follows:—

"Class 5 Rum."

"(a) Rum is any alcoholic distillate from the fermented juice of sugar cane, sugar cane syrup, sugar cane molasses, or other sugar cane by-products distilled at less than 190° proof (whether such proof is further reduced prior to bottling to not less than 80° proof) in such manner that the distillate possesses the taste, aroma, and characteristics generally attributed to a rum; and includes mixtures solely of such distillates."

"(b) New England Rum is rum as above-defined, except that it is produced in the United States, is distilled at less than 160° proof, and is a straight rum, and not a mixture of rums."

"(c) Puerto Rico, Cuba, Demerara, Barbados, St. Croix, St. Thomas, Virgin Islands, Jamaica, Martinique, Trinidad, Haiti, and San Domingo Rum are not distinctive types of rum. Such names however, are not generic, but retain their geographic significance. They may not be applied to rum produced in any other place than the particular region indicated in the name, and may not be used as a designation of a product, unless such product is rum as defined in sub-section (a)."

NOTE:—U. S. Proof is twice the alcohol per cent by volume at 60° Fahrenheit.

190° Proof (U.S.) = 66.5 O.P. Imperial

80° Proof (U.S.) = 30.0 U.P. Imperial

Government Chemist's Department,

Hope,

JAMAICA, B.W.I.

APPENDIX

NUMBER OF DISTILLERIES AND OUTPUT OF RUM FROM PARISHES IN DIFFERENT YEARS

Parish	1893		1901		1912		1922		1936		1948	
	Dist.	Gallons	Dist.	Gallons	Dist.	Gallons	Dist.	Gallons	Dist.	Gallons	Dist.	Gallons
St. Andrew	1	10,500	1	7,392	..	Nil	..	Nil	..	Nil	..	Nil
St. Thomas	10	102,648	4	56,868	2	41,496	4	109,526	2	65,750	2	295,953
St. Mary	4	35,280	..	Nil	..	Nil	..	Nil	1	31,240	1	Alcohol only
St. Ann	8	76,839	3	57,372	2	32,844	3	6,270	2	39,369	2	52,327
Trelawny	26	245,574	24	215,948	18	129,234	9	204,242	4	85,330	3	165,678
St. James	25	154,308	20	90,216	8	57,540	7	86,886	4	64,982	4	168,558
Hanover	16	105,672	15	99,540	7	60,312	2	63,570	1	15,225	1	31,447
Westmoreland	23	363,972	21	356,496	15	304,164	8	285,588	7	225,264	1	449,264
St. Elizabeth	6	48,720	4	35,028	2	43,848	3	54,618	2	71,148	2	186,794
Clarendon	17	253,008	13	288,120	9	168,420	7	258,937	3	174,488	4	801,032
St. Catherine	12	219,744	5	75,684	3	33,600	5	303,042	3	183,869	5	813,293
Manchester	1	5,040	..	Nil	..	Nil	..	Nil
Totals	148	1,616,265	110	1,280,664	67	876,498	48	1,372,679	29	956,665	25	2,964,346

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