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# Rum

## HISTORICAL

When most people think of rum, two scenes are immediately captured in their minds—palm-fringed West Indian beaches and swash-buckling pirates of the seventeenth century. Although these certainly represent situations where rum created an impact, it is likely that cane juice and molasses (the source of rum) have been used for fermentation for many centuries.

The first recorded reference to their use occurs in a series of sacred Indian texts—The Vedas—which were written about 2000 BC. These documents refer to two liquors obtained from sugar cane—'gandi' (from molasses) and 'sidhu' (from cane juice). These products, although somewhat crude, would probably nowadays be classified as rum.<sup>1</sup>

In later history, sugar cane was known to be cultivated in China during the 2nd century AD, and it is likely that a raw spirit was also produced. In the 3rd century, cane became more widely grown, and could be found in Madeira, Spain, Cyprus and Sicily. Oddly enough, it was not until the end of the 15th century that the crop was farmed in the West Indies.<sup>2</sup>

Although the climate of the West Indies was ideal for sugar cane cultivation, a great deal of time elapsed before the production of fermented spirits became standardized. Barbados and Santo Domingo were the pioneers of modern rum production, when the West Indies became colonized in the 17th century.

In 1650 a French priest, Father du Tertre, visited the islands and gave what was probably the first description of a cane spirit. At this time the product was apparently called 'tafia'.<sup>1</sup> Another clergyman, Father Labat, also referred<sup>1</sup> to spirit production in his book *Nouveau Voyage aux Isles de l'Amérique* (1722)—'Fermentation was spontaneous and scum cakes were added to molasses during fermentation which yielded so acid a wash that the fermentation house was called the "vinaigrierie". (This term is contested by Kervegant,<sup>3</sup> who states that wine spirits in France were manufactured by an association of 'vinaigriers'.) Father Labat reported that pot-stills were used for the distillation process and that the products were redistilled several times before the spirit was sold. This suggests that some quality improvement was obtained by this method, either by creating a lighter flavoured product or by removing specific fractions responsible for unpleasant odours. Either way it is apparent that quality was important, even in the early 18th century.

By this time the spirit was commonly known as 'rum' and Barbados, Jamaica, the Virgin Islands and Santo Domingo had established a thriving export trade, particularly to England. Rum became very popular, as is seen by an entry in *The History of Barbados* (1708)—'The famous spirit known as rum, which by persons is preferred to brandy. It is said to be very wholesome and has therefore lately supplied the place of brandy in punch. It is much better than malt spirit and the sad liquor sold by our distillers'.<sup>2</sup>

According to Burke in his *History of the American Colonies* (1767), Jamaican rum had built up a striking reputation by 1753. This situation continued and in 1876 at the Philadelphia International exhibition, Jamaican rum was 'unexcelled by that of any other country'.<sup>1</sup>

At this time rum imports into the UK totalled some 5M

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gallons a year, at a trade price of 12s. per gallon. Inevitably, associations with the slave trade were built up and over a short period, many ship owners found great fortunes in illicit smuggling of both rum and slaves.

## Derivation of 'Rum'

The precise origin of the word 'rum' still remains a matter of great controversy. Several theories exist<sup>5</sup>—

- It may be derived from *saccharum*, the Latin word for sugar.<sup>4, 5</sup>
- 'Rumbustion' is an ancient word meaning 'an uproar' or 'a strong liquor'. Rumbustion was mentioned in the *History of Barbados* and rum could well be a corruption of this term.
- Other references suggest 'rumbullion'. This is a Devonshire word which was taken to the West Indies by British settlers.
- Finally, rum could be derived from the Spanish 'ron', since it seems likely that the Spanish were distilling in the West Indies before the British settlers arrived.

Any one of these derivations could be correct. In fact, the origin of 'rum' is clouded in even more mystery than that infamous spirit 'gin'.<sup>6</sup>

## Literature

Rum has been associated with many famous literary characters. Admiral Vernon, who was nicknamed 'old Grog', because he wore a coat made from grogam, ruled that the half-pint of rum issued daily to all seamen should be diluted with water. Hence, a mixture of rum and water became known as 'grog'. This term is now more widely used for any mixture of spirit and water.

Another somewhat macabre tale concerns Admiral Nelson.<sup>7</sup> After his death at the Battle of Trafalgar, there were no embalming facilities to enable his body to be transported back to England. Knowing that a body could be stored in strong spirit, the crew members used a large container filled with rum and placed Nelson's body in it. On the journey home, there was a shortage in the rum rations, and one or two sailors helped themselves to a tot from the container, which also contained droplets of Nelson's blood. Rum later became known as 'Nelson's Blood', a name that is occasionally used to the present day.

Nautical tales abound with references to rum. In particular, sea-shanties and old naval choruses refer to its wonderful qualities. John Masefield wrote—

Oh, some are for the lily, and some are for the rose,  
But I am for the sugar-cane that in Jamaica grows,  
For it's that that makes the bonny drink to warm my  
copper-nose,  
Says the old, bold mate of *Henry Morgan*.

Rum was held in high esteem by many authors. Maurice Healy, in *Stay with me Flagons*, wrote—

As a tot, Rum is terrific . . . A tot goes down your throat like an incendiary bomb; there's a moment's confusion below, as the charge explodes; then there spreads through the system a strong desire to gather all your enemies and give them ten thousand pounds apiece.<sup>7</sup>

During the prohibition period in the USA, rum gained a place in history with the establishment of 'Rum Row'. This was a twelve-mile wide limit of territorial waters, within which bootlegging craft ran, contrary to the regulations of the coastguard police.

## MANUFACTURE

Although rum had been known for centuries, it was not until the 17th century that it was defined—

Rum is a spirit distilled from sugar growing in the West Indies.

The definition was accepted by the Royal Society of Potable Spirits.

Many types of rum were produced, whether distillation was by a continuous patent type of still, or by a continuous type of flavour congeners. The continuous stills, on the other hand, produce much of the market for 'white' rum. Consequently many countries have their own rather than one species.

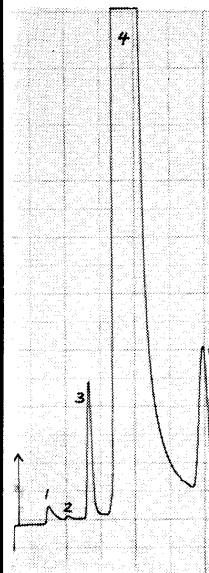
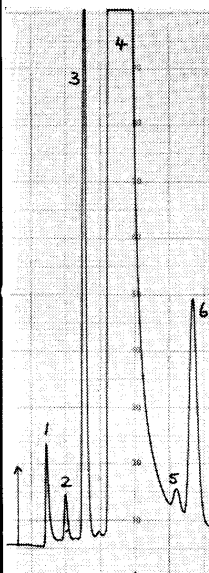


Fig. 1. Gas-liquid chromatograms of Scotch whisky. Peak 1—ethyl acetate/diethyl ether; 2—ethyl propanol; 3—ethyl acetate/diethyl ether; 4—ethyl propanol; 5—ethyl acetate/diethyl ether; 6—ethyl propanol; 7—ethyl acetate/diethyl ether. Conditions of analysis: 80 °C isothermal; 30 m

## MANUFACTURE

Although rum had been produced since the early 18th century, it was not until 1909 that the spirit became legally defined—

Rum is a spirit distilled direct from sugar cane products, in sugar growing countries.

The definition was proposed by Sir Algernon Aspinall, and accepted by the Royal Commission on Whisky and other Potable Spirits.

Many types of rum are now produced<sup>8</sup>, depending on whether distillation is carried out in a pot still, or a continuous patent type still. Pot stills distill over large amounts of flavour congeners and give rise to heavy flavoured rums; continuous stills, on the other hand, partially rectify the wash and produce much lighter flavoured products. Recently the market for 'white' rums has expanded rapidly and consequently many countries now produce various types of rum, rather than one specific product.

The process of manufacture has been well documented<sup>1,4,9</sup> and need not be described here.

## ANALYSIS AND COMPOSITION

Assessment of the quality of distilled spirits still largely depends upon trained tasters, and it is a recognised fact that the human olfactory sense is many times more sensitive than any available chemical or instrumental detection system. However instrumental techniques have now made their mark, and enable full analyses of flavour volatiles to be made within a few hours. Despite this, the correlation of analysis with flavour quality remains an extremely difficult task, since odour threshold values,<sup>10,11</sup> coupled with synergistic effects, create an immensely complex system.

Suomalainen and Nykänen<sup>12</sup> have summarized the principal methods for the determination of the aroma compounds in alcoholic beverages. Methods cited include tlc, glc and colorimetric determinations.

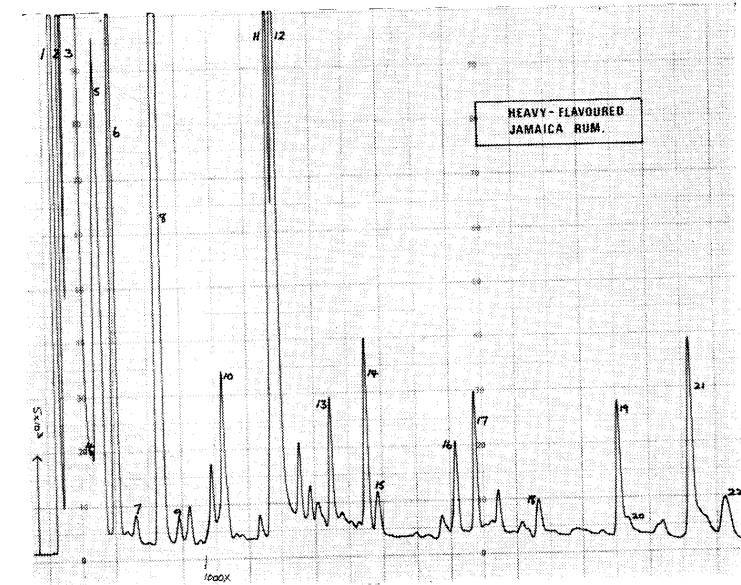
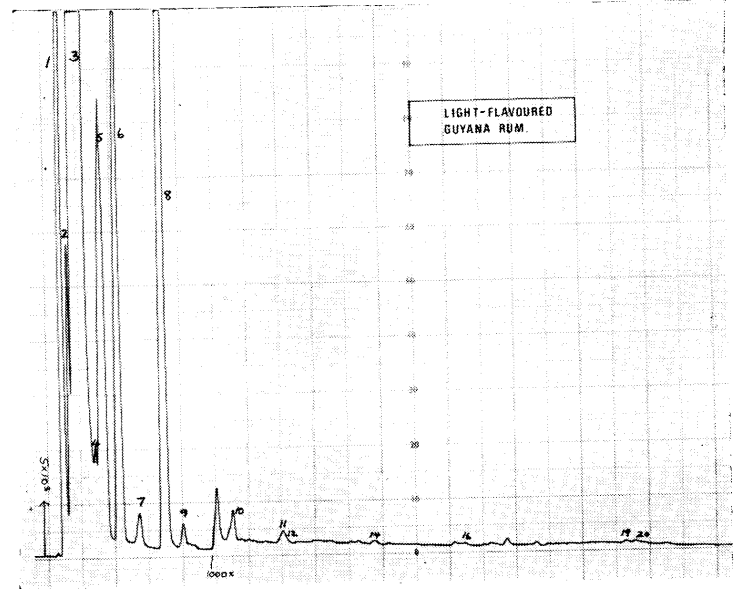
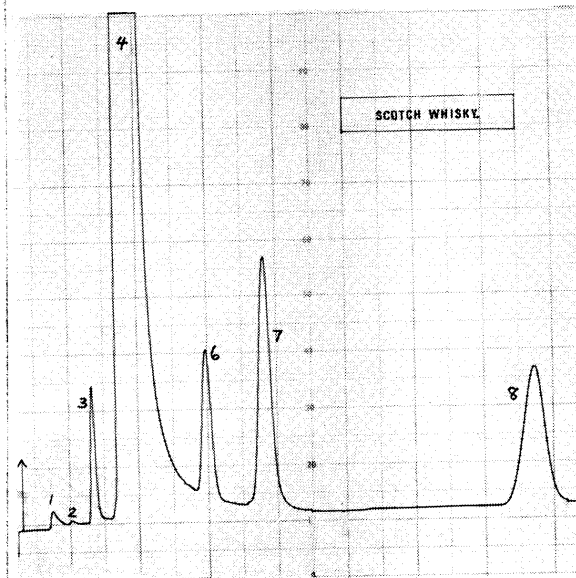
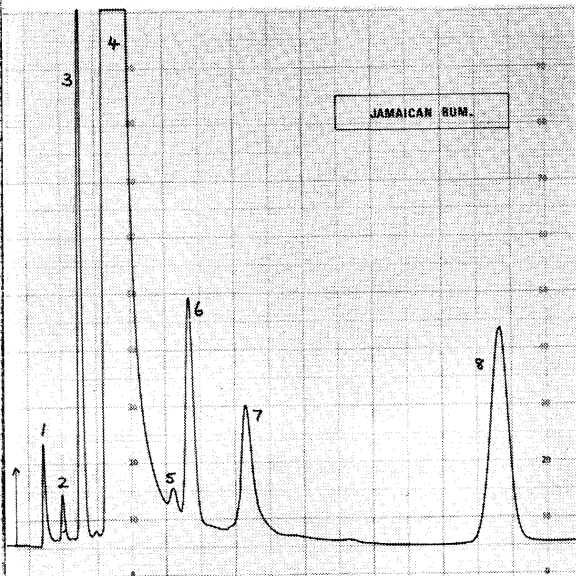


Fig. 1. Gas-liquid chromatograms of (a) Jamaica rum and (b) Scotch whisky. Peak identities: 1—acetaldehyde; 2—ethyl formate; 3—ethyl acetate/diethyl acetal; 4—ethanol; 5—*sec*-butanol; 6—*n*-propanol; 7—*isobutanol*; 8—*isoamyl* and *act*-*amyl* alcohols. Conditions of analysis—30% PEG 1540; Chromosorb W HMDS; 80 °C isothermal; 30 ml/min nitrogen; 200X; 5 µl injection.

Fig. 2. Gas-liquid chromatograms of (a) light-flavoured Guyana rum and (b) heavy-flavoured Jamaica rum. Peak identities: 1—solvent; 2—ethyl acetate; 3—ethanol; 4—*sec*-butanol; 5—propanol; 6—*isobutanol*; 7—*isoamyl* acetate; 8—*amyl* alcohol; 9—ethyl caproate; 10—hexanol; 11—ethyl caprylate; 12—*isoamyl* caproate/furfural; 13—ethyl pelargonate/octanol; 14—ethyl caprate; 15—*isoamyl* caprylate; 16—ethyl laurate; 17—β-phenylethanol; 18—ethyl myristate; 19—ethyl palmitate; 20—ethyl palmitoleate; 21—hexadecyl alcohol; 22—ethyl linoleate.

The detailed study of rum flavour has not been as extensive as for whisky and brandy/cognac. The composition of all these distilled spirits, varies during maturation in cask, and also initially depends in the metabolism of yeasts during fermentation.<sup>13</sup>

Several investigations during the early 1970s dealt mainly with the fusel oil fraction of rum, measured by colorimetric and chromatographic methods. Fusel oils have always attracted a great deal of attention since they are relatively easy to measure and are also of low volatility. However, since these compounds exhibit high odour thresholds,<sup>10,11</sup> their contribution to the overall aroma is less than for many other congeners, *eg.* ethyl esters of fatty acids.

The *relative* composition of fusel oil does not vary a great deal throughout the range of fermented beverages. A notable exception however is rum,<sup>14</sup> which normally contains a larger proportion of *sec*-butanol (Fig. 1). The average fusel oil content of rum is about 0.6 g/l.<sup>13</sup>

Maarse and de Brauw<sup>15</sup> published the first detailed study of Jamaican rum flavour using pentane/ether for extraction, and glc/ms for characterisation of component structure. Over 100 compounds were identified, the majority being esters and acetals.

Nykänen *et al.*<sup>16</sup> studied the fatty acids of whisky, cognac, brandy and rum. Rum was found to contain the largest amount of volatile acids, being in the order of 600 mg/l. Between 75% and 90% of this figure was due to acetic acid. Rum was also found to contain more butyric and propionic acids than whisky or cognac, propionic acid predominating. The principal higher fatty acids present were myristic, palmitic and palmitoleic.

Liebich *et al.*<sup>17</sup> published a detailed study of Jamaican rum flavour in 1970. Using glc/ms they were able to characterise about 200 compounds, consisting of esters, acids, alcohols, phenols, lactones, hydrocarbons, acetals and pyrazine derivatives. Concentrations of these components varied in the range 0.01 to 800 ppm. They concluded that the assessment of the contribution of various functional groups was extremely difficult, but that some phenols, and the 3,8,8-trimethylhydronaphthalene isomers may play an important role.

During a recent evaluation by the author of flavour extraction techniques for alcoholic beverages, a comparison of rum types was made, and the results are shown in Fig. 2. The samples were extracted with dichloromethane and analysed on 15% Carbowax 20M columns, temperature programmed from 70°C to 230°C at 3°C/min. The chromatograms exemplify the typical composition of heavy and light flavoured rums. Although both samples contain similar amounts of fusel oil components, the light flavoured rum contains only trace quantities of fatty acid esters, and higher boiling compounds.

## TYPES OF RUM

Although many countries now manufacture rum, the centre of production lies around the West Indies. The character of these products covers a wide spectrum, but some generalizations can be made.

### Guyana (Demerara)

Normally dark in colour (due to the addition of caramel), and nearly as pungent as traditional Jamaican rums. The aromas are fresh and fruity and sometimes like burnt caramel. Some products are flavoured with fruit, *eg.* plums or raisins, or occasionally with spices. (At one time, raw meat was added to the casks to remove impurities and impart a 'characteristic' flavour to the product.<sup>8</sup>) More recently, the production of 'white' rums has increased in an attempt to secure part of this fast-growing market.

### Barbados

Light rum with a flavour somewhat similar to that of Irish whiskey. Overall the products are similar to those from Guyana, but not quite so dark or heavy in character.

### Trinidad

Rums light in colour and body, almost neutral in character. These spirits are normally manufactured in Patent stills.

### Jamaica

A large range of rums are now produced, the majority being distilled in pot-stills. In the main, Jamaican rums are richly flavoured and pungent.

### Cuba

Light rums, white in colour, many of which are treated by passage through charcoal in order to decrease the level of flavour congeners present. Some products are then flavoured with sugar, wine, fruit or bay-leaves.

### Puerto Rico

White rums, very light in flavour.

### Other Types

Other producers in the West Indies include the Virgin Islands and Martinique. Outside this area, rums are also produced in Mexico, South America and the USA.

'Continental flavoured' rum is a product specific to the German market<sup>2</sup>. The rum is initially manufactured in Jamaica and possesses a very strong flavour, often described as 'pineapple-like'. The Germans blend this with their own neutral spirit to produce 'Rum Verschnitt' which is extremely popular.

### Punches

Rum has always played an important role in supplying warmth and comfort on a cold winter's day, but now that white rums are gaining popularity, the formulations for punches and mixes are changing rapidly. The following two examples are widely enjoyed—

#### Planter's Punch

- 3 parts of white rum
- 1 part of lime juice
- 1 teaspoon of sugar for each serving
- Orange juice

Shake the rum, lime juice and sugar with some cracked ice and pour onto more cracked ice in a glass. Add orange juice to taste, stir well and garnish with freshly sliced pineapple.

#### Hot Rum Punch

- $\frac{1}{2}$  pt of dark rum
- 1 level tablespoon of sugar
- 1 oz of butter
- Boiling water
- $\frac{1}{2}$  level teaspoon of ground cloves, cinnamon & nutmeg.

Dissolve the sugar and butter in a little boiling water. Mix in the other ingredients, adding  $\frac{1}{2}$  pt of boiling water. Serve hot.

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