

THE IRISH WHISKEY STILL, BY SIR DAVID WILKIE, R.A.  
Dated 1840. National Galleries of Scotland.

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## II.—THE DISTILLATION OF SPIRITS IN THE EIGHTEENTH AND EARLY NINETEENTH CENTURIES.

BY JOHN PHILIPSON.

*The Compleat Distiller*, W. Y-Worth. London 1705.

*A Compleat Body of Distilling*, George Smith. Lintot 1738.

*Dictionnaire Universel de Commerce*, Jacques Savary des Bruslons.  
Geneva 1742.

*The Universal Dictionary of trade and commerce*, trans. Malachy  
Postlethwayt. London 1751.

*Report of the Select Committee to enquire into the Effect likely to  
be produced by a further Continuance of the Prohibition of  
Distillation from Grain*. London 1810.

*The Art of Distillation*, trans. John Sheridan. London 1830.

*Seventh Report of the Commissioners of Inquiry into the Excise  
Establishment*. British Spirits: Part I. London 1834.

I am glad to acknowledge the great help given me by Mr. Ian Glendenning. I am also grateful for assistance given me by Mr. Tough of the Tamdhu-Glenlivet Distillery, and by the librarians of H.M. Customs & Excise, of the Literary and Philosophical Society, Newcastle upon Tyne, of King's College, Newcastle, and of Durham University.

The present paper is confined to a description of the methods used in distilling spirits during the eighteenth and early nineteenth centuries.

The making of spirits may be divided into four stages: *mashing*, the preparation of the wort, an infusion in which starchy vegetable matter is turning or has been turned into sugar; the *cooling* of this wort; *fermentation*, a stage in which the sugar in the cooled solution is converted into alcohol; finally the separation of the spirit so formed by means of *distillation*. When malt whisky is to be made these

stages are preceded by *malting* unless grain is bought ready malted.

Worth assumes that either malt will be used, or corn, whether barley, rye, oats or wheat. Smith lists a wide range of materials, but malt is at the head of the list. A Select Committee reporting in 1810 was concerned with the issue of whether the prohibition (in 1808) of distillation from grain should be further continued. There is accordingly much evidence bearing on the raw materials used in distillation. There is no doubt from the evidence given that barley was, or if not prohibited would have been, the principal material used for the purpose. It was apparently used in the proportion of six to eight of malted and un-malted grain, but the proportion was reversed if the grain was inferior.

Sheridan states that the grain spirits manufactured in Scotland are made either from malted barley, or bear, called also *bigg*, a similar grain, or from a mixture of such malt with barley or bear raw or un-malted. Mr. George Pape, giving evidence to the Commissioners of Excise in 1833, asked from what was illicit spirit made in Ireland, replied, "From malted grain, barley chiefly." But Mr. John Leatham, writing from Londonderry in 1834, stated:

The greater part of the illicit spirit sold in Donegal, Derry and Tyrone is made principally from oats. Sixteen stones of ground oats, and four stones of malt, constitute the usual mashing of the illicit distiller.

In Scotland, and particularly in the Highlands, the preference was markedly for a whisky made from malt alone, but outside the Highlands considerations of cost made the use of a mixture of malted and un-malted grain common. Such a mixture seems to have been preferred in Ireland. "No people in the civilized world, except the Scotch," stated some Irish distillers in 1831, "have found it advantageous to use malted grain only." In effect, the materials for distilling spirits were, in the Highlands malted barley only, in Ireland and elsewhere a mixture of raw and malted grain, with many

authorities agreeing that barley was the most suitable grain whether raw or malted, and that malted grain gave a better yield than un-malted.

Barley was best threshed in September. The malting season ran for eight months from October each year. Distillation was carried out from October to the end of June. The best months were considered to be from January to April.

To malt barley, the grain was soaked in water for two or three days, and was then spread on a stone-flagged floor and allowed to germinate. From time to time it was turned over with wooden spades to ensure an even action. When the plume which would form the stalk of the plant was about to appear, the grain was removed to a kiln where it was dried, preferably over a peat fire. It was spread on a wire floor through which peat smoke continuously rose. Of Irish whiskey Mr. George Pape spoke in Dublin in 1833:

It gets that peculiar flavour by which it is known in consequence of peat being used in the drying of the malt, which gives it what is called a poteen flavour.

The malt was finally bruised by means of rollers and was ready for use.

Worth describes the process of mashing as follows:

First, you are to heat your water a little above Blood-warm, . . . and then the Malt being in a Mash-tub, add so much Liquor to it as is just sufficient to wet it, and this is called Mashing; then row or stir it up very well . . . for half an hour together . . . ; then add in what quantity of Liquor you think fit: . . . then strow it all over with a little fresh malt, and let it stand an hour and a quarter, or thereabouts; then let it off into its receivers.

The next stage is cooling, described by Worth:

Now every Wort that comes is pump'd out of the under Back into the Cooler; there to cool; and then from the Cooler into the Wash-backs, there to remain.

Sheridan is more precise—"when cooled to 55°, they are to be let down into the fermenting back."

Returning to Worth for a description of fermentation :

Which being done, and well rowed up, mix therewith some new Barm, . . . which being exposed to the heat will in a short space begin to Ferment; . . . this you must leave until Fermented, and the mixture descends, which for the most part will be on the third or fourth day; and then is it ready for Distillation.

At this stage states Sheridan the solution is called wash. The yeast has acted upon the sugar and decomposed it partly into alcohol. Worth gives the period for fermentation as three, four or five days; others recommend up to nine days, the vats being freely exposed to air at first for a few days, but afterwards covered.

Distillation consists in raising the temperature of the wash to a point at which the spirits being volatile are vaporized and rising from the solution are restored by a condensing system to a liquid form, so separating them from the coarser fluids which require a higher temperature to vaporize them. This process is summarized by Worth :

They being resolved into a Vapour, are elevated to the Helm, where they are in part condensed by the cold, which is fully accomplished as they run out of the Beck into the Worm, through the Refrigerating Tub, and so become clear and lucid.

Worth gives a practical account of the first distillation :

Put your . . . Pump into the Back in which it (the wash) is, directing your Spout to that Still which you design to charge; . . . and when filled so high as the upper nails, let down your Head on the Still; but put not the Beck or Nose as yet into the Worm; . . . the Still being charged, proceed to the making of your Fire, . . . until it begins to boyl, as a Pot going over; then you must set the Pipe of the Head into the Worm, and as it begins to drop and run a small stream into the Can, then immediately must you throw damping under the Still, which is, the Ashes that fall under your Grate and kept wet for that end, for if you should not do so, it would boyl over into the Worm,

and so stop and foul the same; . . . your Still being in a good Temper, you must begin to lute all fast with a paste made of Whiting and Rie-flower: you must exactly lute round the Neck of your Still, . . . so must you also paste the Pipe and Worm, wherein it goes; that is to say, exactly to close the Joint: you must also observe so to govern your Fire, that you bring your Still to work so, as that the Stream may run the bigness of a large Goose or Turkey Quill; . . . it must be continued till all the strength is off . . . : thus are you to proceed in your first Extraction.

For sealing the joints Smith recommends a "paste of the bigness of a Turkey Egg, made half of Spanish Wheat, and the other half of Rye-meal, Bean-meal, or Wheat-flower well mixed together and made into a paste with water". He refers to the liquid running 'like a small twine thread', and as 'a moderate Box-cord, or as thro' a large turkey-quill'.

The product of this first extraction was known as 'low wines' and was not generally regarded as sufficiently selective. It was normally therefore submitted to a further distillation after being allowed to 'lie for ten to fourteen days to enrich themselves'. Worth advocates putting two or three cans of water and a handful of salt into the Still before charging it with low wines.

The first runs from the spirit-still are called 'fore-shots'. These were tested by adding water to them in a sampling glass when the mixture might be seen to turn cloudy. The run of spirits was tested till the mixture of water and spirits remained quite clear, whereupon the flow was switched to the receiver.

As the strength of the solution was exhausted the spirit produced weakened. Mixed with water it turned cloudy once more. Distillation was then discontinued and the latest runnings called 'feints' were returned with the fore-shots to the still with the next charge of low wines. This stage is best described by George Smith:

You must carefully observe in drawing off this water, that the faints, or after-runings, come not off and run into your Cann

along with your other goods. To avoid this inconvenience, you must often be viewing them in a glass or vial, especially towards the latter end of your distillation, for then your goods, which before looked clear and limpid as rock-water, will now put on, or turn to an azure or bluish colour . . . whenever you perceive the colour to alter, shift your Cann, and place another under the end of your worm for the reception of the said faints; which must be kept separate from your proof goods.

The test that has been described is clearly the method being used by the Irishman in the painting by David Wilkie which may be seen in the National Gallery of Scotland (plate I).

Another test known as 'the bead' is described in Postlethwayt's *Universal Dictionary of Commerce* of 1751 :

Take a long phial, half-filled with the common proof spirit of the malt-distillers, and give it a smart stroke with its bottom against the palm of the hand, and there will appear, on the surface of the liquor, a chaplet or crown of bubbles, which will disappear in a clear strong manner; that is, it will first remain awhile, and then go off by degrees, without breaking the bubbles or rising into larger; and when the bubbles go off in this manner, the spirit is vulgarly said to be proof.

Compare this description with the original which Postlethwayt purports to be translating and it will be evident that he is describing an operation he has himself observed: "telle qu'en la versant dans un verre, il se forme une petite mousse blanche, qui en diminuant fasse le cercle, que les Marchands d'Eau-de-vie appellent le Chapelet; n'y ayant que l'Eau-de-vie bien deflegmée, et où il ne reste point trop d'humidité, à qui le chapelet se forme entièrement." Postlethwayt dismissed 'the bead' as a fallacious method of judging, but states that all distillers, merchants and excise officers relied upon it.

Let us turn now to the equipment of the distillery. Both Worth and Smith discuss with great particularity the best arrangements for grate, firebars, and ash-hole. It is absolutely necessary, states Smith, to have a sufficiency of water, either of spring or river water, both for cooling the worm



A. The Still

B. The Worm-tub

C. The Pump

D. Water-tub

E. A Press

FFF. Tubs to hold the goods

GGGG. Canss of different size

H. A Wood Funnel with a iron-nesel

I. A large tassel to put the Fains  
or after-runnings

K. Tin-pump

L. A Pewter Crane

M. A Pewter Valencia

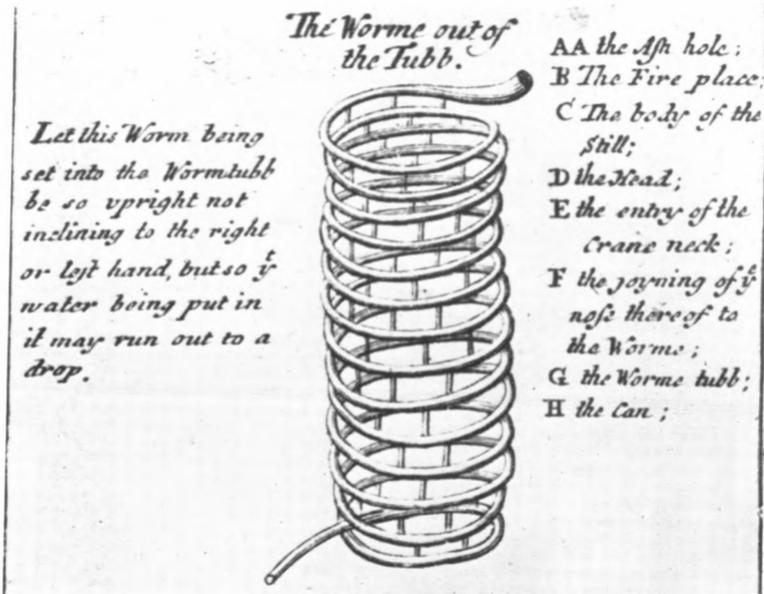
N. Hippocrateis bag or Flannel  
Slieve

O. Poker Fire-shovel Cole-rake

P. A Box of Buns

Q. The Worm within the Worm-tub  
markid with prick'd lines

R. A Piece of Wood to keep down  
the Head of the Still to  
prevent flying of



WORM. From *The Compleat Distiller*, 1705.

FIG. 1.



DISTILLERY. From *The Compleat Distiller*, 1705.

FIG. 2.

and for diluting the goods. He emphasizes the great weight of water there is in the worm-tub and the consequent need for firm support. The lower end of the worm should be at a height such as will permit of a can being placed under it. Similarly the upper end of the worm should be so placed that the nose of the still-head may go into it.

The worm was a spiral of copper tube and must be upright (plate III, fig. 1). The test for this was to pour a quart of water into the top of the worm and to check that the same quantity came out at the bottom. In the middle of the worm-tub Smith proposes there should be a wooden gutter of an inside measurement of about three inches to take the cool water to the bottom of the tub, so ensuring circulation. Nearby should be a pump with a gutter to carry water to the vertical gutter in the centre of the worm-tub (plate II).

Also required were cans, a funnel, and a vessel in which to store feints and after-runnings. According to Smith a pewter crane was also absolutely necessary. It appears to have been a siphon. He describes it as "made somewhat semi-lunar, or like a half-moon or angle, about six foot and a half from one end to another, and four inches round about on the outside, to draw goods out of any vessel where the pump cannot play". Another useful adjunct was Hippocrates' bag, also referred to as a flannel sleeve, which was used as a filter. Seemingly it assisted in clarifying fermented fluids to add alabaster powder before filtration. Smith also lists as necessary a poker, fire-shovel, coal-rake, a Cooper's Hand-saw, Edge, Gimleck, a striking Gimleck, a hammer, a pair of scratching irons, a pair of tarriers, a bung-borer, a box-foreset, and a box of bungs.

Better equipped establishments had two stills, a wash-still and a spirit-still for the first and second extractions.

The still consisted of the body of the still, the helm or head, and the beck or nose. The body of the still was of copper, white iron, or tin. "We approve best of those Helms," wrote Worth, "which have a large Pewter Crane

Neck, proceeding from the upper Center of the Head into the Worm." A coal-fire was the steadiest and therefore the best for distillation. Smith provides a wooden stay to be placed between the still head and the ceiling to prevent the head blowing off (plate II). A small still was thought to give the best spirits. Smith recommends a capacity of half a hogshead. The Irish illicit distillers used a capacity of about twenty gallons. About 1788, Messrs. John and William Sligo, rectifiers of Leith, gained a temporary advantage over the Excise by diminishing the height of their stills and increasing the diameter of the bottom. Consequently they greatly increased productivity in relation to taxable capacity.

This summary account may perhaps be ended with a sentence from the preface of the useful work of George Smith of Kendal: "I farther hope my pains will not prove unacceptable to such persons of distinction as keep a still in their families for their own private use."