The development of the London distilling industry before 1820

Brian Strong

Introduction

Distilling techniques are known to have been used as early as the second century BC to distil seawater and in the Mesopotamian bitumen industry; while in the Middle Ages the Arab countries distilled oil and perfumes. The distillation of alcohol, using wine as the raw material, was first discovered in Italy during the Middle Ages, while grain was first used as the raw material in the late 14th or early 15th century. Distilling with grain developed fully in the Low Countries, where it was mixed with *geneva* (juniper) to produce gin. In the 16th century, distilling moved from monastic and domestic production to become an industrial process.[1]

Distilling had developed in England by the 17th century, producing aqua vitae, a distillate of wine. The distilling of gin began at the end of that century, encouraged by the arrival of William of Orange in 1688. An Act of 1690 allowed anyone to set up a distillery on giving 10 days' notice to the Board of Excise. The industry developed rapidly in the first half of the 18th century, leading to the so-called 'Gin Craze'. This article summarises that development and, more particularly, its development in and around London.

Distilling

The *Concise Oxford Dictionary* defines the verb '*to distil*' as to:

> "*trickle down; come or give forth in drops, exude; turn to vapour by heat, condense by cold, and re-collect (liquid, esp. to remove dissolved impurities or to separate mixed liquids boiling at different temperatures); extract essence of (plant, etc ...); drive (volatile constituent) off or out by heat; make (whisky, essence) by distilling raw materials.*"

The first stage of distillation was the same as in brewing: the raw material (in England, normally grain meal, which was milled or, in the case of malt, crushed) was mixed with hot water in a mash tun, in which the water extracted the sugar (saccharine) elements from the meal. The *wort* (i.e. the liquid) was drained off, rapidly cooled and passed to fermenting tanks where it was exposed to yeast and the sugar content began to be converted to alcohol. It then passed to a pot still (*alembic*), which was heated from underneath. The resulting *wash* consisted of water and alcohol in equal parts. Water and alcohol boil at different temperatures, which allows them to be separated. At 180°F (82°C), the alcohol vapourised, was driven off and passed through a *worm* - a spiral tube in which it was cooled and condensed, enabling the alcoholic spirit ('*spirituous liquor*' as it was then called) to be collected, producing the first distillation or *low wines.* This was too weak and was distilled again to drive off excess water, often more than once, to produce the *spirituous liquor*, or *malt liquor.* Appropriate ingredients, notably juniper, were added to the final distillation, known as *rectification.*

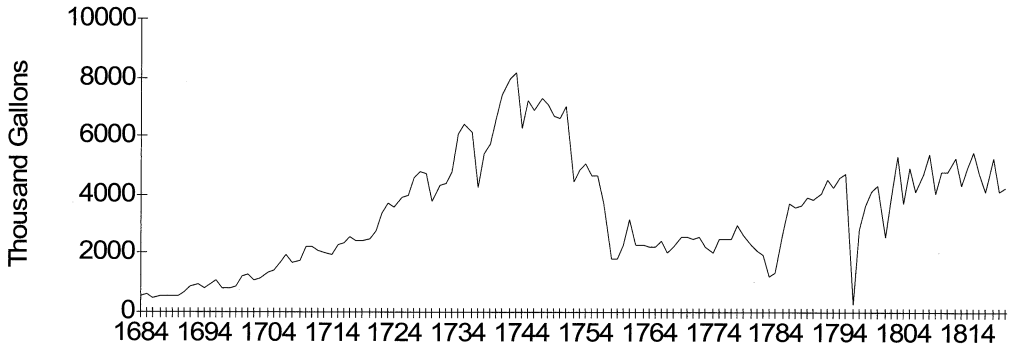
Development of the Distilling Industry in England

Gin production was encouraged by the government in the early 18th century, as it used up part of the growing surplus of grain which the farmers were producing, at a time when government policy particularly supported the landed interest. The bounty on exports and low duties on spirit (compared with beer) were seen as helping the landed interest pay the land tax, which accounted for more than a third of total government revenue in 1700-1709. The distilling industry was also able to use poor or damaged barley, which was not suitable for food production. By the end of the century, the land tax accounted for only about 15% of the greatly increased national revenue, compared with 40% in the first decade of the century. Meanwhile excise duties had risen from one third to nearly half of annual revenue.[2]

The only continuous figures of production for the period are the Board of Excise *Accounts of the Quantities of British Spirits Charged with Duty for Consumption 1684-1869*. In view of the complaints of the distillers about illicit production, it seems likely that the figures for spirits understate the true production, particularly outside London. Figure 1 shows the changes in production shown by these accounts.

Fig.1 Spirits Charged with Duty

1684-1820



The widespread development of gin drinking led to reactions from social reformers and others (not to mention the beer industry) and attempts to control its sale. The development of this '*gin craze*' is well documented in numerous books and articles, though essentially from the social viewpoint rather than that of industrial history, and is not repeated here. Acts of Parliament sought to reduce consumption in 1729, 1736 and, finally, after another public campaign (in which Hogarth's celebrated pair of prints, *Gin Lane* and *Beer Street*, featured), the position was stabilised by an Act of 1751, which imposed a duty on the primary distiller who produced the spirit. Distillers were forbidden to retail and licences were limited to innkeepers, victuallers and vendors. The production charged with duty for consumption fell from a peak of 8.2 million gallons in 1743 and 7 million gallons in 1751 to between 4.5 and 5 million gallons in the years immediately after 1751, and 2 to 3 million gallons in the 1760s and 1770s, before beginning to rise again.

The 1751 Act not only appears to have resolved fears about excess drinking (which recurred only in the mid nineteenth century), but it also laid the foundation for the control of the trade for the whole of the period to 1820 and beyond, and affected the structure of the industry. By the middle of the eighteenth century, the English industry had developed a two-part structure, with a comparatively small number of *primary distillers*, or '*Malt Distillers'* producing the '*spiritous liquor*', and a much larger number of *secondary distillers*, or *Rectifiers*, who bought the spirit and rectified it into gin. The imposition of the duty on the Low Wash and Spirit made it easy for the Board of Excise to control production and payment of the duty. Indeed, the Duties on Spirits Act 1825 made it illegal to produce the primary alcohol and rectify it on the same premises.

Despite contemporary concern - and the interest of social historians - gin never replaced beer as the

popular drink. Chartres and Hey show that, even when recalculated in terms of units of alcohol, to allow for the different strengths, spirits reached a peak of 21.9% of the market in 1745, compared with 45.3% for strong beer, and 27.4% for weak beer.[3]

Development of the Distilling Industry in London

There is very little information on the early history of the distilling industry in London prior to the beginning of gin distillation. Thirsk quotes contemporary records that in 1621:

> "*The distillers in London, Westminster and the suburbs ... numbered 200 households, and, with their apprentices, servants, porters, carriers and salesmen, they counted 5000 people employed in the business.*"[4]

The reference to 'households' suggests the industry had not progressed far beyond domestic production at this stage.

The Centre for Metropolitan History dataset of the 1693/4 *4s. in the £ Aid* lists 69 distillers in the City of London and their locations. Most of them were located in wards around the fringes of the City, or along the river frontage, with concentrations in three main areas: 28 in the north-west of the City (Farringdon Without 16, Cripplegate Without 5, and adjacent wards); 15 in the east (Bishopsgate Without 6 and Portsoken 9); and 18 along the river (Queenhithe 10 and Billingsgate 8). No other data are available for this period, but it seems likely that the distillers outside the City would have been located in the areas just outside the walls to the north and east, in Southwark and along the river. No evidence has been found to suggest development along the lower Lea at this period.

Michael Berlin's *Short History* of the Distillers Company includes a summary of the fines raised by searches in early May and mid-June 1715 and their location by area - which shows the areas in which non-members of the Company were seeking to operate (or, of course, members failing to achieve the necessary standards).[5] Within its 31-mile radius of search, total fines were £32.15s.8d., of which £6.5s.0d. were taken in West Smithfield and £4.12s.0d in East Smithfield (both just outside the walls). 'London' accounted for a further £4.12s.0d. The City and its immediate environs therefore accounted for about half the total. The remaining parts of the 'metropolitan area' were West £7.11s.4d., South East £3.8s.4d., South West £3.2s.0d. and East £2.8s.4d.

It is hard to find information on distillers in the first part of the 18th century. The 1736 *Impartial Inquiry ...* claimed that 300 Distillers were then members of the Worshipful Company of Distillers; and that about 1200 others not free of the Company "*pretend to be Distillers*".[6] Of these, 28 distillers had utensils valued at £5000, which seem likely to have been the malt distillers.

More information is available about the London distilling industry in the late 18th and early 19th centuries. The *Corn Distillery Stated ...* of 1783, in setting out the case for the distillers and why distilling was to the benefit of the landed interest, summarised the history of the trade in the preceding years.[7] It claimed that there had been "*thirty capital offices for the making of Corn Spirit*" (i.e. Primary or Malt Distillers) in London in 1750, as well as two at Bristol, one at Worcester, one at York, one at Yarmouth, two at Lynn and some others, making some 40 in all. In 1756, distilling from grain had been prohibited because of a grain shortage; it was prohibited again for 3 years 1757-1760. After that, only "*12 houses were opened for making Corn Spirit, under this heavy Duty and many other restrictions. All the rest were shut up*". These are the only details of the numbers of distilleries and no names are given. However it may well be that the 1783 document exaggerated the impact of the temporary prohibition on distilling with corn.

The *Excise return of duties paid on spirit 1750-1782* purports to distinguish "*the Produce of London from that of the Country*". Over the period as a whole, £4.6 million of duty related to '*London*' and £7.1 million to '*the Country*'. Moreover, the balance was changing throughout the period. In 1750, it was fairly even. By 1782, '*the Country*' accounted for almost twice as much as *'London'*. However, '*London*' and '*Country*' were not defined. They almost certainly related to the areas of the Board of Excise organisation, in which '*London*' accounted essentially for the City and an area close to it. In the later Excise returns, '*London*' excluded the distilleries of the Lea, Southwark, Battersea etc. It therefore seems likely that the apparent trend to '*the Country*' related substantially to growth in the metropolitan area outside the City, as well as any growth in the provinces.

The earliest comprehensive listing of London distillers is *Mortimer's Universal Director* of 1763, which lists 74 Distillers. This, together with the Excise figures for 1750 to 1782, which show output consistently higher than in the period before the prohibition of corn distilling 1756-9, appears to suggest that the argument in *The Corn Distillery Stated ...* was overstated. Of the 74 distillers, five were noted as *Malt Distillers*: Bell and Baker of Battersea; John Cook near Bow Bridge; John and Peter Le Fefre of Bromley, Middlesex; Edward Russell of Bankside; and John Smart of Limehouse. The first three were included among the large Primary or Malt Distillers later in the century, as were Bisson and Son of West Ham, who were listed by Mortimer's but not identified as Malt Distillers. The other two were Edward Russell, last recorded in 1777; and Smart last recorded in 1774. Most of the other distillers listed were almost certainly small rectifiers.

The directories were checked to identify when firms first and last appeared in directories. Many appear to have been comparatively short-lived (subject to the reservation above about the difficulties arising from changing names of partners and sales of businesses). For example, only 12 of the 74 firms could be traced back earlier than 1752 while only 21 survived 20 years of more after 1763. The average length of life was 26 years.

Mortimer's Universal Director lists the locations of the 74 distillers. Thirty five were in the City and its immediate surroundings; 12 in the West End; 11 in the East End (including West Ham); and 16 on the South Bank, from Battersea to Southwark. During the following decades, there tended to be a move away from the City towards the fringes, with the longest-lived distilleries being located in East London and south of the river.

The Corn Distillery Stated ... says that, by 1788,

> *"the Distillery has so far recovered itself, that it paid duty upon Corn Spirit of £501,000 for Spirit made in and about London; and £39,000 for Spirit made in distant parts of England"*

and went on to complain about inefficient Excise control and unfair competition from the provinces.

Figure 2. Worm safe or Hydrometer apparatus (from George Dodd: Days at the Factories, 1843)

Malt Distillers

In 1788 the House of Commons called for accounts from eight firms, who were presumably those known to pay the Excise Duty, i.e. the Primary or Malt Distillers.[8] Five of them were among the major Malt Distillers in the remainder of the period to 1820: Cook, Hatch, Liptrap, Metcalfe and Roberts. Of the others, Cuthbert Johnson survived only to 1799; Mark Bell & Co became part of Bell, Gosse and Benwell. R T Blunt & Co do not appear in the records for 1790 to 1820 but may have been a survival

of Blunt, Guy and Hudson (last identified in 1774). The Order for the production of the Accounts did not list locations but other sources show all those identified were in London; and there was a heavy concentration in east and south London: 4 in Bromley (Middlesex) and Whitechapel; and 2 in Vauxhall and Battersea, with one in Brentford.

There is a rich vein of material, much of which relates to individual firms, from 1790 to 1820. This makes clear who were the Primary or Malt Distillers, who paid the Excise Duty, throughout the period. While two of the surviving Board of Excise Accounts give the production of individual firms throughout the period, two of the largest distilleries on the Lea - Hatch/Currie (Four Mills) and Metcalfe (Three Mills) - are lumped together. However, Excise figures for 1802/3 and 1815 survive; while copies of Excise figures for 1791/2, 1795 and 1820 survive in other publications.[9]

The Excise Accounts also enable life cycle events of firms, or changes in their ownership, to be identified. For example, John Cooke & Co of Bow became Wilbie & Co in 1797 and Sayer & Co in 1802; their distillery at Bow ceased operation after 1804. Hatch (Four Mills, Bromley, Middlesex) became Currie in 1815; similar changes at Battersea saw the arrival of Hodgson & Co in 1792; Goss & Co became Benwell & Co in 1799; R Bush became Leader & Co (in some records, Loader) in 1802 and only Leader was in production from 1816.

Although not all individual company outputs can be identified, the Excise Accounts enable calculations to be made of London's share of national output as a whole and of the different parts of London. One return lists the output of wash only 1790-1820; and another shows both wash and spirits 1802-1821:

Fig. 3 Spirits Charged with Duty

1802-1821

Source: Board of Excise Return of the Distillers Names In England, Residences , Quantity of Wash Distilled and Spirits produced by Each 1802-1821

London was responsible for 84% of national output of wash in 1790. With rare exceptions, London's production was consistently 70-80% of national output. In 1832/3, London still accounted for over 72% of the duty paid.

Within the London share, East London (Bromley, Bow and Whitechapel) accounted for between 41 and 47% of national output of wash at the beginning of the period. In 1805 it fell to 24% of spirit output with the disappearance of one of the Bow distilleries but recovered to 38-42% in 1816-20. In 1832/3, East London still accounted for 25% of the duty paid.[10]

The Account of 1802/3 is the only one to give the distilling capacity of each of the Malt Distillers. The capacity of the London distillers was 130,000 gallons, compared with 50,000 in the provincial distilleries, or 70% of national capacity. Bow and Bromley alone accounted for 44,000 gallons (almost as much as the provincial distilleries), or 24% of national capacity. East London accounted for 52,500 gallons, larger than the whole of the provinces, and 29% of national capacity.

This Account makes it possible to compare capacity with output in 1802-3. The London distilleries actually made over 80% of the output, with only 70% of the capacity; while East London produced

some 40% of the output, compared with 29% of capacity. Metcalfe (i.e. Three Mills), in particular, produced 11% of the output with only 6% of the capacity. However, as figures are available only for the one year, it is hard to reach substantive conclusions on whether this represented a greater efficiency.

Rectifiers

It seems almost certain that most of the firms listed in *Mortimer's* in 1763 were small rectifiers. The 1802/3 Excise Account lists 125 rectifiers in England, of which 61 were in London and a further 8 in the wider Metropolitan area. Again, many appear to have been comparatively short-lived: only one was traced earlier than 1791; 5 were not found before 1802/3; 13 could not be traced in any directories and only 21 of the newcomers appear to have survived to 1820.

The 1802/3 list did not specify locations. Of those which have been traced, 17 were in or close to the City; 8 in the West End and Holborn; 9 in Clerkenwell; 2 in East London, 2 in Westminster and 6 in Southwark Five small firms also appeared in the list of distillers charged with duty - though only producing small amounts. It therefore seems likely they were producing their own spirit, rather than purchasing it from a larger malt distiller. This included J^{no} Bockett, who claimed to be the only firm distilling from molasses in 1808.

Johnstone's Commercial Directory of 1817 listed 40 distillers and only 19 "*distillers and rectifiers*"; 4 firms appeared in both lists. It seems most unlikely that this reflects the true balance between the larger malt distillers and the rectifiers. Twenty five of the 40 had not appeared in the lists of 1763 or 1802/3. Five could not be found in directories before 1817 and 3 were found no later. Of the additional distillers in the 1817 list, 8 were located in or close to the City; 4 in the West End and Holborn; 3 in East London; 3 in Southwark; 2 in Deptford; 4 on the Thames upstream of Whitehall and 1 in Clerkenwell.

Morewood listed 49 rectifiers in London in 1820, with their outputs. Ten were not identified in previous lists - not even in 1817. The largest rectifier was Hodges & Co of Millbank, which produced 532,000 gallons in 1820. Only 5 others (Booths, Gordons, Seagers, Smith & Goldie and Burnet & Co) produced more than 200,000 gallons; and only 6 others produced more than 100,000 gallons. Outside London, only 2 firms distilled over 100,000 gallons; and only one other exceeded 20,000 gallons.

The locations of the rectifiers from all the lists who survived to 1820 or beyond were 18 in and close to the City; 6 each in the West End/Holborn and Southwark; 4 in Clerkenwell; 3 in East London; 1 in Deptford and 7 on both banks of the river upstream of Whitehall.

Thus, by the end of the period, the industry had developed in two parts: the large malt distillers, who produced the basic spirit; and the smaller rectifiers who produced gin (or, in some cases, other alcoholic beverages, e.g. English brandy). The malt distillers tended to be longer-lived than many of the rectifiers; and to operate from substantial premises in East London and along the banks of the Thames. The rectifiers tended in the earlier period to be congregated within the City or close to it, but as the century progressed they, too, tended to move further out, particularly to Southwark and other premises along the river.

Operational Aspects of Distilling

Location

The main factors governing the location of industry in the eighteenth century were access to materials, markets, transport and the supply of labour and power. In the case of the Malt Distillers, all these factors pointed to a waterside location. The author of the *British Library Add.MSs.39.683* (the *'Cooke Memorandum')* says:

> *"The situation of the House and disposition of the Utensil's is of no small importance, there should be free and open air on all sides, good water and if possible water carriage ..."*

Materials

The main materials required by the Malt Distiller were ground grain (or crushed malt), water, yeast and fuel. Spirit was normally distilled from grain (known collectively as '*corn*'): barley, malted barley, or wheat; or a mixture of malt and barley, or of all three. It could also be distilled from sugar or molasses. Some malt distillers bought their meal already ground, but many ground their own grain. Westerfield found that distillers "*usually bought through factors on the Corn Exchange and other markets and in such large bulks that their purchases had a considerable effect on the prices prevailing there.*"[11]

Water was of the greatest importance. In his *Compleat Body of Distilling* (1731), George Smith of Kendal emphasised that:

> *"It is absolutely necessary, and what you must first of all be appriz'd of, that there be sufficiency of water where your Pump is to be sunk, both to keep your Worm-tub continually cool, to make up all your goods to the proper strength, and to serve all other occasions whatever: it matters not whether your water be soft or hard if you have but plenty of it."*

As Smith explained, the water was needed both as an ingredient in the process and for cooling, as well as for cleaning, fire precautions etc. Water could be obtained from local supplies, e.g. from rivers; water suppliers such as the New River and Chelsea companies; or by sinking their own wells. Quality does not appear to have been a problem. The distillation process would have removed any problems with brackish or even saline water. Mathias commented that porter brewing was "*greatly suited to the soft water of the London area - that of the Thames, the New River or wells*"[12]. No evidence has been found to suggest this was any less true of distilling.

Yeast was needed to enable the sugar content of the grain to be converted to alcohol. In the 18th century, the distilling process did not produce live yeast; but it was a by-product of brewing and was therefore purchased from the brewers. In the nineteenth century, changes in the process enabled distillers to produce and sell their own yeast.

Fuel was needed to heat the utensils in the brewing and distilling processes and was purchased by the brewers and distillers in large quantities. George Smith commented that the fire under the still:

> *"if possible must be of coals, because their heat is most constant and durable, and wood fires are subject to both extremes, of too much or too little heat; which are prejudicial and sometimes hazardous."*

Nef commented that some brewers purchased as many as 500 tons a year. While distillers may have been lesser customers, Nef still mentions distillers as one of the main customers of the coal suppliers.[13] In 1763, Cooke's distillery used nearly 500 chaldron (a total of about 500 tons), at a cost of £750. In 1729-33, Buck and Baker held stocks of '*coales*' valued between £44 and £63.

London's grain supply routes were essentially water-based: from the coastal counties of eastern England, transported up the Thames Estuary; down-river from the Oxford area; and down the Lea, with its improved navigation in the late eighteenth century, particularly from the malt towns of Hertfordshire. The coal supply depended on coastal shipping from the north-east of England, again sailing up the Thames to London. The needs for both grain and coal therefore depended on water transport and pointed to a waterside location. Some malt distillers went further and owned their own lighterage. Yeast was obtained from the brewers in smaller quantities and over shorter distances and may have travelled by road. Water supplies were essentially local (i.e. wells, river extraction or piped supply), not requiring transport.

The main requirements for power were to grind the grain and for pumping water or liquids within the distillery. Until the advent of the steam engine in the last two decades of the 18th century, the only available sources of power were wind, water and human or animal muscle. Some distillers who ground

their own grain used horse-powered mills, but many had their own watermills, particularly the tide mills of the river Lea. For example, Peter Lefevre bought the Three Mills site in 1728 to establish a new distillery. Brewers and distillers were among the first enterprises to use Boulton and Watt's newly developed steam engine. Cooke's were one of the first to buy a steam engine for pumping. Over the next few years, steam engines were also acquired by Liptrap in March 1786; Bell, Gosse & Benwell in September 1786; Tate of Battersea in 1794 and David Roberts & Co in 1795. In 1808, Thomas Smith, distiller of Brentford, told a House of Commons Committee that his firm's steam engine was only used for grinding grain.

Distilling was a highly technical process involving careful calculation and control of quantities, temperatures, specific gravity of the alcohol and carrying out chemical tests etc., which required a skilled master or employee. A qualified miller was also needed, if the distillery ground its own grain; and, in the later period, someone qualified to look after the steam engine. Other labour was largely unskilled and not largely different from agricultural work and would have been recruited from people living locally.

The main customers for the large Malt Distillers were the rectifiers, who were mostly located in and around London and operated on a smaller scale. While many were close to water transport, others were on the 'suburban' fringes of the City, where the roads were of sufficient quality to enable the spirit and other materials to be delivered.

Safety may have been a further factor in deciding on location. Smith emphasised the risks of fire and the danger of using lighted candles. Forbes pointed out the great fire risks involved in distilleries (and, of course in mills), which led the Dutch to '*exile*' the distilleries to Schiedam, well away from population. Similar considerations may well have affected the location of the large Malt Distilleries along the lower Lea, on the south bank of the Thames and on both banks upstream of the populated area.

The main factors therefore pointed to a waterside location for the large Malt Distillers: to enable bulk supplies of corn and coal to be delivered reliably and efficiently; to obtain the large supplies of water needed and, until the advent of the steam engine, to provide efficient water power. East London was already a main centre of industry. The Lea Valley offered all these advantages and was therefore a natural area for the distilling industry to develop.

Technology

Distilling techniques changed very little for hundreds of years, until the introduction of the Coffey Still, invented by Aeneas Coffey in 1830, which enabled the Malt Distillers to produce spirit continuously instead of in batches. Prior to that, the main development was a change in the scale of production. This required larger utensils, made of copper rather than the glass or ceramics used in earlier periods. As a result, the industry changed to a heavily capitalised one, in specially established premises and requiring substantial stocks of materials. Earle places distilling among the seven largest industries even by the early eighteenth century.[14]

The Board of Excise played a key role in the operation of the distillery (and the brewery). By 1808, the cost of producing a gallon of spirit was 10s.7d., of which 7s. 3d. represented the Excise Duty.[15] No distillery could be established, or start production, without approval from the Board, which controlled the materials used and closely supervised the process and the output, in order to protect the Revenue. One of the problems for the distiller was to measure the alcohol level in the spirit, which was an essential part of the relationship with the Excise. Assumptions were made about the quantity of spirit which could be produced from a given quantity of wash, and therefore of low wines; and the Duty was calculated on that basis. As Dodd commented later in the 18th century, the distiller was

> "*obliged by law to bring the wort to a specific gravity somewhere between 1.050 and 1.090, water being 1.000.... an assumption is made that a given quantity of spirit will result ... The duty is paid on the actual quantity of proof-spirit in the spirit-receiver; but should this prove, on an average of a twelve-month, to be less than the quantity estimate by the gauge of the worts or wash, the distiller has to pay up the deficiency: if, on the contrary, there is an excess, the Excise retains the benefit of that excess.*"[16]

At the time, before the invention of the hydrometer, the only way to measure the alcohol level was by a gunpowder test, under which proof spirit was that mixture of alcohol and water, which when mixed with gunpowder, burned with a steady flame, and did not either explode, which was overproof, or extinguish, which was underproof.[17]

Costs and Profits

There are very few surviving accounts of 18th century distilleries. Barnett found that 70% of distillers in the 18th century had capital exceeding £3000, which he used as a yardstick to define '*large*' businesses.[18] Campbell (1747) quoted the costs of setting up as a Master Distiller as £500-5000.[19]While this covered a wide range, it does not seem wide enough. Two examples have been found of the capital costs. The setting up costs of Buck and Baker at Shadwell Dock in 1718-19 were at the lower end of Campbell's estimate, at £358.2s.0d., excluding the leases of the two houses of William Buck and Solomon Baker in which the distillery was established, later valued at £190 each.[20] The most expensive utensils were a Great Still £50, a Worm £30 and £23.2s.0d. for a still, worm and ironwork already owned by Baker. All the other items cost under £10. Approximately half the cost, £178.6s.6d., was for the services of tradesmen, including carpenter £34.9s.0d., bricklair (sic) £25.12s.0d., cooper £23.14s.6d., painter £19. 16s.0d., backmaker £16, glaisier (sic) £14.15s.0d. and smith £11.13s.0d. The setting-up costs also included £8 for "drawing leases and Articles of Partnership" and 14s. for stamps and insurance policies. At the other end of the scale, the joint stock of the partnership which set up the Three Mills Distillery in 1734 was £31,000.[21] The total insured value of the buildings alone was over £21,000 by the end of the century, when the insured value of the utensils in only one of the distil houses as £14,000.

There is equally little surviving information about operating costs. The Accounts of Buck and Baker are essentially balance sheets rather than revenue and expenditure accounts. However, they do include information showing how the business expanded, with a "new Still, Worm, Tub & Back, new Weights and Household Goods" in 1722, costing £54 and a new Still Head in 1727, costing £104. New warehouses, stables and ground were added in 1727, valued at £130. The value of the 'Dead Stock', i.e. the capital invested in utensils etc, grew steadily from £330 in 1719 to £580 in 1737. There were large quantities of spirits (including French brandy and Rum) and imported wines and sherries. For example, in 1737, the total value was nearly £7000 (almost half the gross assets). In the 1720s, there were also quantities of tobacco, all of which suggests the company were importing and selling wines, spirits and tobacco as well as distilling. Each Annual Account showed the value of the stocks and credits, less the partnership's debts to others, producing a net "*Real Stock*". Both the gross and the net stocks showed a steady growth: gross from £954 in 1719 to £16,993 in 1737 and net from £560 to £14,678. However, the partners were faced continuously with bad debts: "*doubtfull*" debts grew from £31.6s.0d. in 1719 to £436.5s.0d. in 1736 (and then fell to £264.7s.0d. in 1737) and "*desperate*" debts from £41.12s.7d. to £1,162.0s.0d.

The *Cooke Memorandum* includes a chapter entitled "*Of Expenses*", which lists the operating costs in 1763. Of a total of £5,000, wages took up £1,247.17s.0d. and repairs £1,000. Purchase of yeast accounted for £950,000 and coals £750,000. Horse keeping cost £500 and the remaining operating costs were covered by interest, taxes and petty expences. Repairs were broken down into detail, with the carpenter the backmaker and millwright and the bricklayer each accounting for £150. Coals amounted to 500 chaldron. The distillery had 12 cart horses, 2 mill horses, 2 grain cart horses and 2 saddle horses. The costs included 1 load of hay and 1 of straw per week and half a bushell of oats per day. There were 2 windmills and a tide mill. Their staff comprised 1 foreman at 15s. per week, 6 grinders at 13s. each, 1 sack mender at 10s. - a total of £206 per annum.

Again, there is little available information about the profits of the distillers. In 1747, Campbell thought they were very high. He commented:

> "*The several Classes of Distillers, notwithstanding the high Duty, have a Secret of making large Profits: How they can pretend to pay the Revenue, and sell sound Spirits for so small a Price as they do, I own is a Mistery past finding out by my shallow Apprehension; but the Fact is true, that they all get Estates, and yet the poor Man may get drunk for Two-pence.*"

Nicholson's *Distilling Record Book 1804-1810* at the Hackney Archive, which may refer to Three

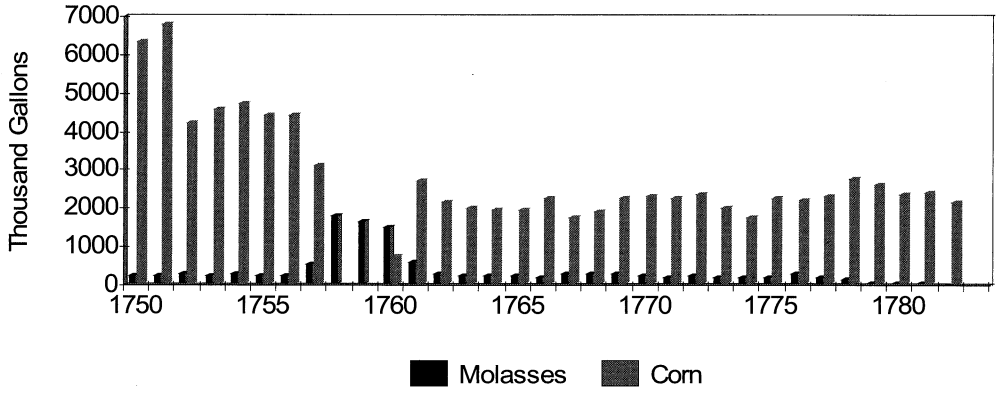
Mills, showed profits of £340 in December 1807 from production costing £16,836; £698.9s.9d. in January 1808 (£16,074) and £575.1s. (£13,585) in February, which seems a very low margin. Sales included grains and wash (for animal feed) of £356, £341 and £294 respectively.

Problems of Grain Supply and the Use of Sugar and Molasses

In the second half of the eighteenth century, the grain supply changed radically, with more bad harvests (though production was rising); the need to supply a population which was again growing; and the interruption of imported supplies by wars with France and difficulties with America. Supplies of grain were short in 1757, 1767-8, 1773-4, 1782-4,1788, and 1796-8. During these periods, restrictions were placed on the distilling of wheat and barley, and sometimes the use of these, and even of molasses, was prohibited.[22] The only option for those wishing to continue to distil was to use sugar or molasses. The Excise returns record continuous distilling from molasses as well as corn between 1750 and 1782, but it was normally only a small proportion of total production. During the prohibition of corn distilling 1757-1760, however, molasses took over, rising from 250-300,000 gallons of spirit a year in the previous years to 1.5-1.8 million gallons a year; while distilling from corn fell from a level of about 4.5 million gallons a year to nil in 1759. Corn distilling then rapidly recovered its position once it was again permitted; while distilling from molasses fell back to rather below its previous level and declined rapidly after 1778. The position is shown clearly in the Board of Excise Returns (Figure 4):

Fig. 4 Spirit from Molasses and Corn

1750-1782

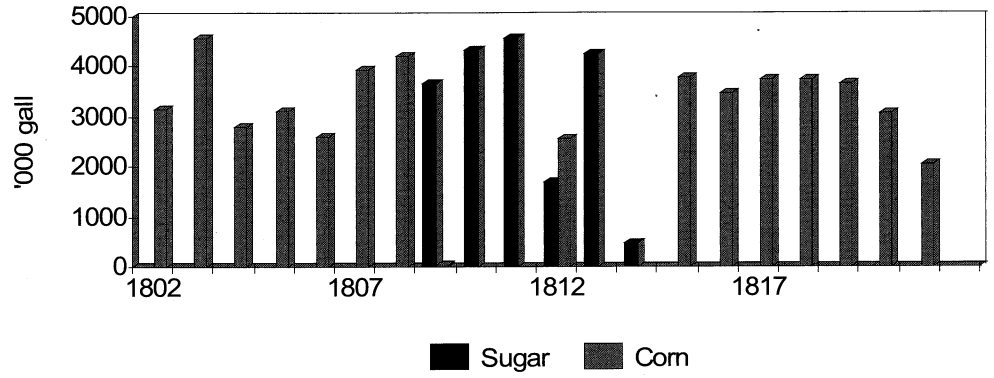


Source: Public Record Office T1 579/49 and 50

A similar picture emerges in Figure 5 from the Excise records for 1801 to 1821, when only very small quantities of Molasses and Sugar were used when corn distilling was permitted. Distillers clearly preferred to use grain when they were allowed to do so.

Fig. 5 Spirits from Corn and Sugar

1801-1821



Source: Board of Excise Return of the Distillers Names in England, Residences Quantity of Wash Distilled and Spirits Produced by Each 1802-1821

During this later period, the arguments of the distillers to be permitted to continue to use corn became bound up with the arguments of the West Indian interests that *only* sugar and molasses should be used in distilling. Their case was considered by Committees of the House of Commons in 1806-7 and 1808-1809, which found that the West Indian sugar trade was indeed distressed, because the market was glutted and prices were uneconomic. The Committee concluded that the use of sugar and molasses in distilling should be permitted (on which its terms of reference had asked it to make recommendations); but made it clear that they would not contemplate the prohibition of corn distilling.[23]

The Committee of 1808-9 was asked to go further and consider:

> *"how far, and under what Circumstances, it may be practicable and expedient to confine the Distilleries of the United Kingdom to the use of Sugar and Molasses only."*

While sympathetic to the sugar interests, and therefore favouring a temporary prohibition, this Committee agreed with its predecessor in opposing any permanent prohibition:

> *"Your Committee are persuaded that the permanent adoption of this measure would be attended with great evils to the agriculture of the country; they feel it incumbent on them to state, that nothing in the evidence before them could induce a recommendation to that effect; they conceive that its frequent repetition would be still more hurtful; and nothing but the strong case so clearly made out by the West Indian interest, coupled with the loss of our trade with the Countries from which we derived a great proportion of our foreign supply, could prevail upon them to advise even this temporary interference (guarded as it is by the proposed limitation) with an established system of agriculture."*[24]

The "*proposed limitation*" was a power to end the suspension by Order-in-Council.

The Minutes of Evidence throw a good deal of light on the arguments of the distillers, who resisted being restricted to the use of sugar and molasses. At one stage, it was argued that spirit distilled from sugar or molasses was not as good, or as popular, as spirit distilled from corn. By 1808, the distillers had accepted that sugar and molasses both produced a satisfactory spirit: Thomas Smith of Brentford accepted that there was no material difference in the results. Indeed, J^{no} Bockett distilled only with molasses to make a form of brandy rather than gin; they understood they were the only distillers in the country to do so.

There was also little difference in costs. Indeed, it was accepted that "*the immediate cost of the manufacture would be something less from Sugar than from Corn*"; Joseph Benwell calculated that manufacture from sugar was 2d. per gallon cheaper. The distillers' main reason for opposing the change was that part of their investment would no longer be required. Sugar and molasses melted when heated in water and did not require milling. The distillers therefore argued that:

> *"the extended premises necessary for the manufacture of the Corn Spirit ... would be in a great manner useless, if Spirit from Sugar was manufactured, and which premises and utensils would receive considerable injury from disuse, and which of course would form a charge upon the manufacture of the Sugar Spirit."*

In the short term, this was no doubt a valid argument. In the longer run, however, this argument taken alone would appear to suggest it would have been economic to reinvest in sugar or molasses distillation, with smaller premises and reduced capital investment. In the event, once the grain supply stabilised, distillers reverted to grain distilling.

Three other arguments were used to support the case for corn distilling. The distillers emphasised the importance of being able to use or sell "*the refuse from Corn*", i.e. the "*grains*" and "*wash*" which were removed in the earlier stages of the process and were suitable for feeding pigs and cattle. Thomas Smith of Brentford calculated the value at 2d. to 3d. per gallon, which outweighed the lower cost of distilling from sugar. Secondly, the landed interest argued strongly for continued permission to use corn, particularly barley, which was essential to the agriculture of some parts of the country and not easily diverted to food. Thirdly, the cost comparison was distorted by the differential effect of Excise Duty. Corn distillers paid duty both on malt and on the low wines or spirits, whereas distilling with sugar or molasses avoided the Malt Duty. The effect on the Revenue was one of the arguments taken into account in these inquiries. While it could have been resolved by adjustment of the respective duties, the government were reluctant to do so.

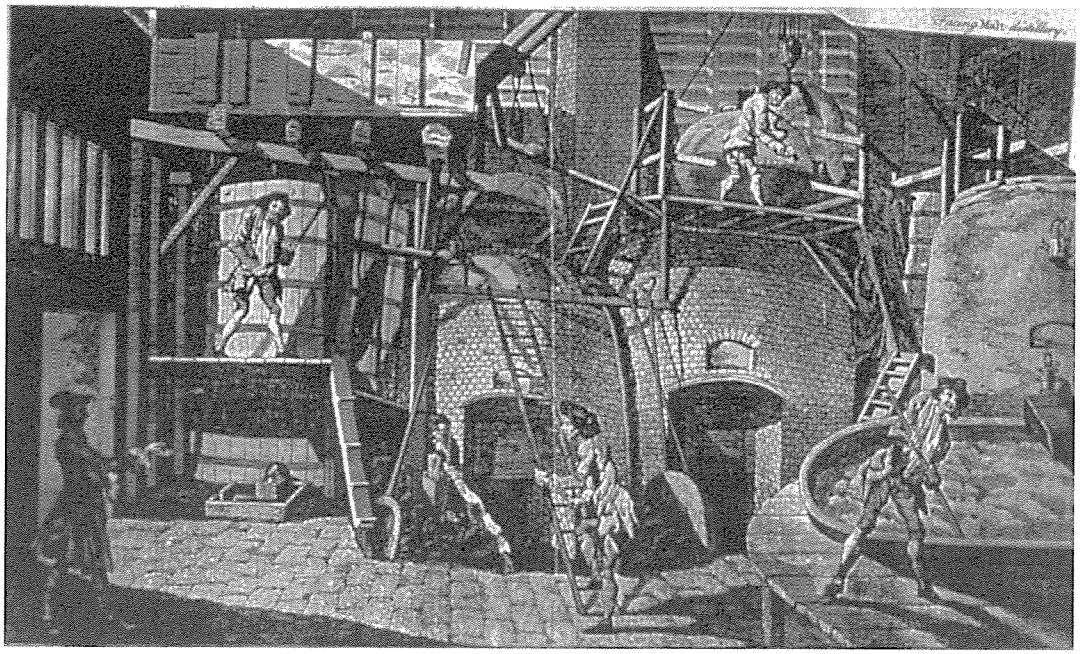


Figure 6: Early Malt Distillery (Hackney Archives)

The business of the large Malt Distillers was not limited to producing spirit to sell to the Rectifiers. In modern economic terms, the business of many of them was vertically integrated. Many of them ground their own grain - earlier by water or horse power; later by introducing steam engines. Some also owned their own barges or lighters. Some rectifiers also produced their own spirit, e.g. J^{no} Bocket. Some brewed beer as well as distilling spirit; for example, the *Cooke Memorandum* refers to brewing "*ale and small beer*" in September 1766. Finally, they either sold their waste products to feed pigs and cattle, or had their own pig and cattle farms.

The Three Mills Distillery in mid-century was running five businesses: it ground its own grain in its two water mills and a windmill; it had two distillation houses on site; its own rectifying house, which was producing English brandy, not gin; a brewery and its own piggery. It had contracts with the Admiralty Board of Victualling Commissioners, selling them spirits, pork and grain for ships' biscuits.

The importance of the use of distillery waste to feed pigs and cattle which was examined in *The Corn Distillery Stated* ... (1783), which claimed that, prior to the 1851 Act imposing duties on distilling,

more than 100,000 hogs had been fattened on distillery waste. Not only had 20-25,000 hogs per annum been sold to the Navy Victualling Office, but offal had been sold on the London market at 2d. per lb. and bacon at 2s. 6d. to 3s. per stone. Since 1756-9, when corn distilling was prohibited, prices had risen to 5d. per lb and 3s. 6d. to 4s. per stone respectively to the disadvantage of the poor. While the landed interest otherwise supported corn distilling, the farmers argued that the use of distillery waste produced poorer quality pork, which was less suitable for salting, and therefore for the purposes of the Navy. As it was cheaper than farm-reared pork, the Victualling Office nevertheless continued to buy it, which the farmers regarded as unfair competition.

The dispute resumed in the debate on the comparative merits of distilling with grain or sugar and molasses in 1808, when it was claimed that the immediate prohibition of grain distilling would stop the food supply for 4845 cattle, of which the greater proportion supplied London with milk; and in 1810, when William Dixon J[nr] argued that over 41,000 hogs were fed with distillers' waste, which would continue to be lost if corn distilling were not resumed. Both appear to have been scare stories, as grain distilling was prohibited temporarily and London does not appear to have run out of milk or food.

Note: This article is based on a Dissertation on *The Development of the Distilling Industry in London in the 'Long Eighteenth Century'* for the MA London Studies at Birkbeck College, University of London in 1998. Copies of the full dissertation are available at Birkbeck College, the London Metropolitan Archives and the Local History Collections at the London Borough of Newham and Tower Hamlets.

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