BREWERY HISTORY


*Brewery History* (2015) **162**, 66-75

# SAMUEL PEPYS AND THE DECLINE OF BREWING IN THE LATE SEVENTEENTH CENTURY

RICHARD W UNGER

Samuel Pepys (1633-1703) was a government official and member of Parliament. Born in London and with a University of Cambridge education, he started as a personal secretary to a prominent relative and after the Restoration in 1660 moved to a position with the Navy Board. He owed his position to patronage and to family connections but once in his post he set standards for looking after records and maintaining surveillance of transactions, defending the budget of his department in Parliament and putting in place, not always successfully, methods to decrease corruption. The Royal Navy benefited in the short but even more in the long run for his establishing practices that would become governmental norms. His work brought him in contact with prominent politicians and aristocrats and eventually embroiled him in politics. Loyal to the Stuart monarchs Charles II and James II, his career came to an end after 1688. In 1660 he started keeping a diary which he continued until 1669.[1] He was ahead of his time as a literary figure as well as a bureaucrat. He wrote not an ordinary diary but one exhaustive in its examination of his actions, his thoughts and the lives of people around him. The diary chronicles not only his efforts to advance his career and his relations with family and friends but also his personal habits. The detail, consistency and devotion to recording events establishes him both as a trendsetter in English literature and undoubtedly as an outstanding source of gossip. Among the many private matters Pepys wrote about his alcohol consumption, something that was of considerable concern to him during the years of the diary. He described, incidentally, what he drank and where he drank. The diary then offers a window into consumption habits of at least one upward mobile, ambitious young bureaucrat in the 1660s and so gives indications of the fate of beer and brewing in the late seventeenth century.

Little more than a month into keeping his diary in an entry for 3 February, 1660, Pepys reports that he got up and then went to Harpers's, a pub almost across the street from where he lived, for his 'morning draft'. Almost certainly he had beer for breakfast. In that he was not alone. Beer was a common drink for the first thing in the morning. It was highly valued for people of all ages. When Jan Steen, the Dutch artist and some time brewer in 1660, the year Pepys began his diary, painted a woman giving a child some beer he was merely reporting a common practice of the day, one fully acceptable and normal.[2] The beer for breakfast was a very light small beer, inexpensive, taxed at a very low rate or not taxed at all. The beer for lunch or dinner or into the evening was stronger, thicker, heavier with more body and more alcohol and in a range of varieties defined by colour, strength, price, ingredients, origin and brewing methods. The beer for medicinal purposes, a value of the beer and one recognized for centuries, was very strong, dark, thick pouring like molasses and very expensive. Beer was a source of energy and of vitamins. It was a product universally available and universally consumed in the seventeenth century. By the time of Pepys' death patterns of drinking, both his and the European public at large, were changing. The diary gives indications of what would be a disaster for many brewers and opportunities for a few. In England the dramatic shifts would come in the eighteenth century but in the description of a decade of conviviality the diarist indicated where consumer tastes and consumer conceptions of beer were headed. The circumstances

that made beer the drink of choice in 1600 disappeared in Pepys' lifetime so that by 1750 beer had a different and more restricted role in the lives of those who lived in part of England and in other parts of northern Europe.

Pepys had some beer for breakfast at the start of the diary and he mentions drinking beer some 21 other times. Two of those were on visits to educational institutions: Eton and Madgalene College, Cambridge. In some instances he drank what he called small beer, in some instances he mixed wine with beer, that thought to be good for his health. On at least 69 occasions he mentions drinking ale and also mentions giving ale to others as a gift or receiving gifts of bottles of ale. He mentioned different types of ale; China, Northdown, mulled, wormwood, butter, Cock, horseradish and Alderman Byde's, but never offered details about what distinguished them. His mentions of his drinking beer and ale are not very frequent given the more than 3,500 days covered by his diary. It is also clear that the frequency of drinking either beer or ale is heavily weighted toward the early years of the diary. His habits reflected a change in common northern European drinking practices. Pepys' life coincided with a decline in beer consumption. The government of the province of Holland relied heavily on the income from a tax on beer at the start of the seventeenth century. The take from that tax went down a slippery slope and all but disappearing by the end of the Dutch Republic in 1795. The Netherlands were not alone in seeing a long term fall in beer production after about 1650. Beer was the popular drink of the sixteenth century. Certainly urban and probably rural northern Europe in the Renaissance saw the highest levels of beer consumption per person in history. By the eighteenth century for much of the continent and even in England the importance of the drink was down. At least in England and especially in London the decline was not so sharp and people there through the eighteenth century still downed considerable quantities of beer.

The roots of the success of beer in the Renaissance dated back to the thirteenth century and the introduction of hops. Most beer through previous centuries had been made with various additives that enhanced taste and durability. Food preservation was one of the major problems of pre-canning and pre-refrigeration and pre-pasteurization societies. Losses were high because there were few tools to fend off the bacteria that thrived in foods. The vegetable content of beer made an ideal medium for the growth of all kinds of potentially destructive organisms. Brewers had used hops for some time as an additive for beer but it was some time around 1200 that beer makers in the North Sea ports of Germany found an effective balance of hops and other ingredients to get a drink that was acceptable to consumers and which would last and not just for a week or two. Under the right circumstances hopped beer might still be drinkable after six months. The new type of beer had a more bitter taste, not as sweet as its predecessors so there must have been some consumer resistance. Misgivings were overcome even if slowly.

Having a beer that would last changed the nature of brewing. Brewers could make beer when the weather or raw material prices were right and then store it until there was a market for the product. They could sell it in places further away, shipping it to distant cities. Beer became a commodity of trade because it could survive a trip. Brewers in Bremen and then Hamburg for the North Sea and Wismar and Gdansk for the Baltic and Scandinavia shipped drink to nearby and distant ports. Hopped beer reached the Low Countries first and soon after England.[3] Once introduced by shippers from north German ports beer became popular and so local brewers tried their hand at making beer with hops. The practice spread from a base in North Germany to the Low Countries and the eastern Baltic and then to Scandinavia and England and, by the sixteenth century, into Bavaria and Bohemia and even as far south as Spain.[4]

In England, despite support for the new drink, there was resistance to beer. That opposition came from ale brewers who produced a drink without hops. They made extravagant claims about the dangers of beer. Drinking it was life-threatening, hops was a 'wicked and pernicious weed', men would be thrown out of work and it was a foreign drink anyway. For much of the fifteenth century it was Dutch immigrants who made beer and native English men and women who made ale. Despite efforts to throw up legal barriers beer brewers slowly drove ale out of taverns and then urban homes. Ale remained a drink for large noble houses, the countryside and for the old and sick. Beer had its supporters who disliked the taste of 'loathsome' ale and promoted the use of hops. Beer consumption and even more production of beer rose in England and throughout northern Europe in the sixteenth century, spurred on by the higher quality and durability of hopped beer.[5] Towns in

north Germany and the Low Countries had per capita consumption rates of more than half a litre to over a litre a day. Production in those towns reflected the thirst of the inhabitants and, for towns like Hamburg and Gouda with sizeable export markets, the thirst of people beyond their walls. London was no exception. Some of the 26 large breweries located along the Thames took advantage of demand in the Low Countries where their beer landed free of duty. If there were 200,000 people in the city in 1600 and output was over 100,000,000 litres then production per person was some 530 litres per year. That was too high even for the drinkers in the beer-soaked Renaissance so a considerable share, perhaps as much as a third of beer brewed, was for sale outside the city.[6]

Levels of beer drinking in the sixteenth and early seventeenth century were record breaking. It was not because people did not want to drink water. They did and often. Houses had wells and, thanks to breweries which needed considerable quantities of fresh sweet water, towns got systems of piped water through their streets. Lübeck might have been early but was by no means alone in having a water delivery system.[7] Brewers were important figures, wealthy and politically powerful in northern European towns. They owned large houses, attached to their breweries. They could be patrons of the arts lavishly decorating their houses. England followed Germany and the Low Countries in the pattern even if slowly and London was the country's great centre of brewing. In 1650 beer was widely produced. It was a standard, normal drink for folks of all ages and stations. In England beer drinking even got dragged into the great debate of the early years of Pepys life, that is religion. By the end of the Commonwealth and the Restoration of Stuart rule in 1660 when Pepys started his diary there were signs not only of a decline in drinking of Catholic Ale but also of Protestant beer, if beer was in fact ever anti-Papist.[8]

As the seventeenth century wore on beer fell out of favour in the Netherlands and then in England. Dutch brewers complained bitterly about how they were heavily taxed on both inputs and production as well as having to sustain the costs of delivery. English brewers were not above complaining about their treatment as well. What had been the people's drink gradually disappeared from tables. Part of the problem was that the cost of the most important raw material, grain, was going up and one short term solution for brewers was to reduce quality, making beer thinner while keeping prices the same. Long term, that did not work. In London brewers' strategy was the opposite. They tended to produce stronger beer and there brewers fared better at least after about 1720.

Beer may have been declining in popularity in Pepys day but he still drank some beer or ale now and again. He often wrote when talking about ale that he had a cup. He mentions on one occasion having ale from a wooden cup and on another of drinking from a brown bowl tipped with silver.[9] Bowls were the norm for drinking ale or beer into the seventeenth century but a new option appeared as glassmakers perfected the production of a reliable vessel. The *pasglas*, as it was called in Germany and the Low Countries, had equidistant lines on it so each person in turn who passed the glass to the next would drink the same amount. There was a problem. With a glass not only could drinkers see how much they had had but also what was in the beer. Filtering was virtually unknown so all kinds of vegetable matter remained in the beer when it was served. Better brewers did use isinglass, the dried swimming bladders of sturgeon, to get various solid particles to settle out. That left a lump at the bottom of the barrel but if the cask was moved, say to be taken from the brewery to a pub, then the collected material would mix in the beer again. Publicans should have let the beer sit for a while, to rest. Sometimes they did. The simple change to using glasses made beer a less enticing drink. That was true of both beer and ale. Pepys did once mention having cakes and ale as a child. Shakespeare used the phrase in 1623 in *Twelfth Night*. 'Dost thou thinke because thou art vertuous, there shall be no more Cakes and Ale?'[10] The phrase had the meaning of a good time, of having fun, a meaning which it has kept. Pepys also mentions having wiggs and ale, wigg being a west country word for a bun. On the other hand cake is accompanied by wine on at least three occasions in his diary. So though the idea of cakes and ale being a good thing may have remained drinking ale appears, for Pepys as for others of the time, to have been something on the wane.[11]

Pepys did visit many inns, taverns and bars. He specified some of them as alehouses. That was probably to distinguish them as places specializing in malt drinks, the others possibly serving beer though more likely concentrating on other drinks. There was a hierarchy

of drinking establishments with different grades for different clientele. Inns typically offered overnight accommodation and were visited by the more respectable. Alehouses would have been at the other end of the social spectrum. They were, as a result, thought to be potential sources of social disorder and so a potential threat to good order.[12] Pepys stopped in one or another establishment to pass the time, to eat, to sit and talk to a friend. He did take women with him on some visits though not generally to alehouses but to more refined eating and drinking sites. He did find female companionship in alehouses, sometimes stymied in fulfilling his sexual ambitions by the lack of furnishings or privacy or both. Stopping at a pub or alehouse was very much a part of London and for that matter seventeenth century social life. Establishments offered the chance to discuss politics or religion or to simply enjoy the conviviality of a group. Apparently according to one French visitor the conviviality included drinking the health of compatriots, a recently developed practice. No matter who was doing the drinking a little alcohol was thought to be a good thing. Drink offered a benign state of stimulation which could enhance personal powers. It was said of drink that, 'It Puts Good Reason into Brains'.[13] There was an understanding that beyond a certain point there was a transformation and much for the worse. During the Commonwealth drinking was frowned on and strictly regulated by the Puritan-dominated government. After 1660 and the Stuart Restoration the law became lax and similar to that in other parts of Europe. Even in the very Calvinist Dutch Republic drinking was thought to be not only acceptable but to be condoned. On the day of the coronation of Charles II, 23 April, 1661, Pepys went to a party where 'we drank the King's health, and nothing else, till one of the gentlemen fell down stark drunk, and there lay'. Charles II was himself a good example to his subjects when it came to enjoying a party. Beer did not benefit from greater alcohol consumption as much as its long standing rival: wine.

The drink common in inns and in bars was, by the 1660s in London, wine. Fermented grape juice was more expensive, by any measure, than beer. In the early fourteenth century England imported something on the order of 31,000,000 litres of wine annually from Bordeaux. That indicates consumption of less than four litres per person per year, about as much beer as the average English child would have had in two or three weeks.[14] The level was nothing like figures from fourteenth century northern France where men drank around two litres a day.[15] After the Great Death in 1350 English drinkers shifted even more emphatically to beer. One reason given for the change was falling temperatures which made it impossible to produce wine in England but that was not true, as Pepys himself reports. On 17 July, 1667, he visited a friend who brought out, 'a bottle or two of his own last year's wine growing at Walthamstow, than which the whole company said they never drank better foreign wine in their lives'.[16] The norm was to drink wine young before it had a chance to go off. Often it was watered down and frequently adulterated or rather flavoured to cover up any vintners' failed efforts. Though wine could be produced in England, even in Walthamstow which is now part of north London, the overwhelming majority of that drink came from overseas. Pepys twice mentions Rhenish whites, an import commodity since before the Conquest in 1066. France was a more likely source than Germany for what Londoners drank although Spanish wines had gained favour. Pepys mentions 'Navarre wine' as a novelty.[17] Dry or 'sec', corrupted to sack, sherry appeared on import manifests and increasingly so. Sack was a popular drink with Pepys and his aristocratic contacts. For him it was too early for the wave of interest in heavy sweet wine from northern Portugal. The 1703 treaty the English ambassador John Methuen negotiated with Portugal started a flow of port into London.[18] A well-publicized plague of gout among well-to-do wine drinkers would follow by mid century. For Pepys drinking wine and having a collection of bottles was a sign of his rising status and financial position as it was for English people in general in the late seventeenth and eighteenth centuries. Hosts proudly gave him a tour of their wine cellars and after he buried his papers, including the diary, to protect them from the approaching Great Fire on 4 September, 1666, in a separate pit Pepys buried his bottles of wine, along with his Parmesan cheese.[19] The price difference between beer and wine narrowed in the seventeenth and eighteenth centuries which made wine even more enticing. The development of the humble corkscrew around 1600 and its ever wider use after that made it easier to store and keep wine drinkable. Though he had wine at home Pepys, like many of his friends and contemporaries preferred to drink in taverns. Whether consumed in pubs or at home or at parties wine was associated with debauchery. Jan Steen was consistent in painting scenes of decline and dissolution with wine as the engine for the fall of

humans. When his mid eighteenth century English follower William Hogarth, as part of his series on the *Rake's Progress*, wanted to paint an orgy wine was flowing freely.[20]

Wine posed one of the greatest threats to beer and but it was by no means alone. Europeans knew how to distil by the twelfth century, probably learning the technique from Arabic speakers. In the Middle Ages the products of distillation were used as medicines. By the sixteenth century enterprising merchants had found that it was cheaper to ship wine if it were 'heated', that is distilled. The processing decreased volume while increasing alcohol content. The resulting heated wine, *brandewijn* made its way to Britain from southwestern France, the name Anglicized to brandy. There were other commercial advantages. Brandy could be shipped in casks with little chance of deterioration or damage and using poor quality, low-priced wine did not greatly affect the quality of the brandy produced.[21] Pepys like others had a dram of brandy now and again but not often. He mentions drinking brandy four times in the diary, the first time being six years after he started recording when he was spending more of his time with wealthier and more powerful company.[22] The drink was expensive so usually reserved for memorable occasions and for the well-to-do.

The long term challenge to beer came from tropical drinks and they had already begun to make inroads when Pepys was writing his diary. Their appeal was not so much that they had no alcohol, though he must have been happy that there were alternatives to wine and beer and ale during the lengthy period of his abstinence. More than once he decided to stop drinking liquor, the goal to improve his career prospects. For him that meant abandoning wine and spirits but not beer. Somehow malt beverages were in a different category.[23] Pepys was also comfortable returning to his old drinking habits when he thought he had been too long without wine. In his day the only tropical drink that saw considerable increases in consumption was coffee. Its origins were Middle Eastern, grown and drunk in Arabia for centuries. It was a popular drink in the Ottoman Empire. Stories that it was the siege of Vienna in 1683 and the rapid departure of Turkish troops after their defeat leaving behind coffee that victorious Austrian and Polish soldiers tried and liked, may be true but that was not how coffee was introduced into western Europe. The drink, as with almost all others, first appeared in apothecaries as a drug for dealing with maladies. How to produce a liquid from beans that was worth downing was not widely known so those with expert knowledge opened coffeehouses, the first in England dating from 1650.[24] It was too expensive to make at home anyway so people went to coffeehouses to try it. Novelty drew customers and then regulars. The coffeehouse became an alternative to the tavern. It became a place of conviviality, conversation and also a place to do business. Merchants favoured coffeehouses and some in London became well-known. The extreme case was Edward Lloyd's, opened in 1688, which brought together men prepared to insure ships. In fifteenth century Italy shipowners went to wine bars along the quays of the port to pay men to cover their risks of loss at sea. In eighteenth century England shipowners went to a coffeehouse.

London had scores of coffeehouses by the end of the seventeenth century and rising demand in Europe led to exploring possible alternative sources for beans. In an era of ecological imperialism with botanical gardens in major European capitals and governments committed to promoting trade it was only logical that new fields for coffee beans would be found.[25] In the Far East Java became a major producer and in South America, over the long term, Brazil would gain fame as a source for coffee. It was not until the middle of the eighteenth century that coffee was widely accepted in European homes. Increased production in the tropics and expansion of the international trade in coffee and tea led to declining prices. In the second half of the eighteenth century coffee prices fell by 19% compared to the first half of the century in German markets. In England the price fall was more muted but probably still enough to have a positive effect on the market. Beer prices at the same time rose in Germany by some 5%.

Prices for tea fell 5% on average in Germany in the same period but in England the fall was considerably greater, as much as 50%.[26] Tea was expensive and not widely drunk in Pepys' day. He remarked on the first time he had any, calling it a China drink. Tea would a staple of the English East India Company in the eighteenth century, bringing leaves from India and China back to Europe and also to North America. Over the long term tea would be the choice of English drinkers but that process took some time. It would be well into

the eighteenth century before it was as great a threat to beer as even coffee was.

The same was even more true of chocolate. Another of the plants imported from the Americas which transformed European agriculture and eating habits, cocoa proved difficult for refiners to handle. The drink in the late seventeenth century was probably more bitter than later versions though Pepys seemed to like it on the very rare occasions he had it, in one case to settle his stomach after a night of heavy drinking.[27] Chocolate proved to be more a drink for women or rather for ladies. That did not make it any less a threat to beer since, while men were probably greater consumers per capita of chocolate, beer was a democratic drink, consumption shared by virtually all demographics. The biggest factor in any shift to tropical drinks was price. All of them remained expensive and so exclusive. They were only just gaining some wider circulation in Pepys' lifetime. Shipping efficiencies along with scale economies in production and distribution fostered the price declines for tropical drinks in the second half of the eighteenth century and that had a significant negative effect on beer consumption. That took time but in the years around 1700 there was already a much greater challenge to beer.

Dutch distillers in the late sixteenth century perfected the production of a distilled drink, flavoured with juniper. It was a clear liquid made more or less like beer except that after fermentation it was distilled so the product had considerably less body and a higher alcohol concentration than beer. It also had considerably less nutritional value. The juniper berry, in a corrupted Low German form gave it the name jenever which came across to England as *Geneva*. There the name was shortened to the word that threatened the livelihood of every brewer in northwest Europe: gin.

Apparently Dutch gin was originally made in a pot still. Using a column still produced dry gin. The distinction in the Netherlands is between Oude and Jonge Jenever, though the matter is slightly more involved than the simple explanation suggests. Dry gin enjoyed a rapid rise in popularity in London in the early years of the eighteenth century. It was very much like the drink that had for some time been taking a larger share of the Dutch market for alcohol-laced beverages. The Dutch had started to export Geneva gin as early as 1604 and by the 1670s there was a lively trade in the easily transportable drink. Whether it was imports from across the North Sea or the light taxes on gin or changing tastes, English gin consumption rose dramatically in the 1720s. The government charged excise tax on no less than 4,500,000 liters of distilled spirits in 1696 but that figure was dwarfed by the 32,000,000 subject to tax in 1751. At a population not much above 6,000,000 that meant consumption per capita in the mid eighteenth century was better than five litres per person per year but children did not drink gin and rural folk did not drink gin so if half of that 32,000,000 litres was downed by the close to 500,000 London adults then the number for them was about two-thirds of a litre a week. And that was just the gin that the government knew about. At the height of the 'gin craze' in 1736 London alone had 7,044 gin shops. That was one house in every six in the city.[28] For Dutch brewers, shifting to making gin was an easy transition. Investment in a still and some rearrangements of the brewery and they were distillers. Delft, which had been a brewing centre since the fifteenth century, became a gin centre. London soon had its share of small scale stills to satisfy the massive increase in gin consumption post 1720.

Gin had the advantages of being highly durable and inexpensive to transport. The alcohol came in a more compact package. The navy had long had problems with supplying crews with their beer ration. When voyages were short and in nearby waters and ships were back in port before supplies were exhausted. Supplies of low-alcohol content beer were adequate. As navy vessels spent more time on patrol or on blockading duty for weeks if not months or they made voyages to Asia and the Americas, beer was running out. Sailors were reduced to drinking the water on board which had been sitting in casks for some time, picking up all kinds of unsavoury and unhealthy features. By 1734 Royal Navy regulations on victualing allowed for the replacement of beer with wine, brandy or rum for voyages to the tropics. The navy soon had contractors to supply rum in the West Indies. The next step was to use rum for crews for all naval vessels all the time. Contracts for the supply of beer in ports around England, common in the seventeenth century, disappeared.[29] Beer was vital to the proper functioning of the Royal Navy as Pepys made clear on a visit to the fleet of more than 100 sail at anchor at Gravesend on 18 September, 1665, during the Second Dutch War. The fleet lacked provisions. The only item he noted specifically was beer. That was in the

second third of the seventeenth century. In the course of the eighteenth all European navies went over to some form of distilled spirits to replace beer as part of the daily ration of sailors. It helped morale and the new drinks were reliable. The choice by navies was reflected in earlier choices made by civilian consumers.

Pepys died in 1703 so he did not have to face the gin craze. The government was taken by surprise as were many Londoners. It took some years with increase upon increase in the taxes on gin and greater regulation before sales stabilized, though at a much higher level than at the start of the century. Governments worried about loss of tax income if people turned to gin in place of more heavily taxed other drinks. They also worried about public morals. William Hogarth was not alone in abhorring the effects of gin on the English population. His well-known print of 'Gin Lane' was part of a diptych, the other print being of 'Beer Street'. The former was a scene of decadence, decay, immorality and the general collapse of society. The latter was a scene of good health, prosperity, happiness and progress.[30] Other artists had included beer among drinks with alcohol that posed a threat to good health though perhaps more for individuals than for society as a whole. In Dutch art of the seventeenth century beer appeared only rarely in stll-lifes, that is compared with the frequency of wine appearing on tables. Beer might well be associated with tobacco, another suspect vice, and often as part of symbolic warnings of the shortness of life and that it should not be let to slip away. When beer appeared explicitly and on its own in an image the atmosphere conveyed was generally more tranquil, an invitation to contemplate life. Artists saved their worst condemnation in the seventeenth century for wine. In Hogarth's hands when gin drinking had become common and a threat to public order wine lost its place as an evil. On the other hand Hogarth had nothing but good things to paint about beer.

English brewers or rather London brewers survived the gin onslaught. They did that by brewing a new dark strong beer starting in 1722 called porter. The popular tale is that customers in taverns would order a mixture of three different beers then on the market. An East London brewer decided to ship premixed beer, calling it entire or entire butt. Pub owners liked it because they needed to have only one cask. The new drink quickly gained popularity in a pub frequented by porters and hence the name. There had been beer porters for centuries, and beer made for them for just as long. Unlike those earlier porters' beers the new London product is was not a thin light drink. It was the opposite. To make the London porter brewers used less but drier and darker malt that was scorched a little. They also used more hops.[31] The price of porter was 25% less than ordinary ale, it kept longer and even got stronger if kept because the alcohol content rose over time. It was easy to adulterate. The dark colour helped to mask impurities and greater hop content masked variations in taste. It was also relatively stable and so could be handled more roughly than its predecessors. Since it was stable at higher heat, brewers of porter could produce it until mid June and start again at the beginning of September, adding almost a month to the brewing season at a time of the year when the potential for sales was high.

The typical pattern in the eighteenth century was for a decline everywhere in beer consumption. In London that did not happen. The income from the tax on malt was stable in England as a whole. That overall stability reflected slipping sales per person since population in England rose by nearly 50% in the eighteenth century. The tax data also indicate weak demand in the countryside but a rise in beer drinking in London. Entrepreneurs saw the possibilities and established breweries such as Whitbread, Truman, Barclay Perkins and others which grew to be major industrial operations. Those brewers took advantage of the rapidly growing number of people in the city. There were more potential drinkers and near by so transportation to the final consumer added little to the delivered price. Urban dwellers in the eighteenth century even more than their medieval predecessors did not have space to brew at home so for their beer they had to turn to commercial manufacturers. Those potential consumers also had more money to spend. England had a high wage economy, probably the highest level of income for workers of anywhere in the world by the late eighteenth century.[32] Skilled labourers have always been a principal market for beer. London's skilled workers had more buying power than at any time since the fifteenth century and possibly ever in history so there was spare change for a pint of porter now and again.

The brewers could make the new kind of beer and make it more reliably since they had two new instruments, the thermometer and the saccharometer. Invented in the first half of the seventeenth century, the thermometer arrived in England in 1661 after refinement and improvement in

Italy. It showed among other things how long brewers should let grain germinate during malting and how long they should boil the product. Also it could indicate how much hops to use at different times and how much yeast should be added for good fermentation. The device could cut down on spoilage. By the 1780s, the thermometer was in common use among commercial and even home brewers. The saccharometer, in theory for measuring sugar content, was a hydrometer that could show the specific gravity of beer at any stage in the brewing process. There were hydrometers in classical times and various versions in England from the 1660s at least. That device helped brewers in adjusting their work to extract more fermentable material from each litre of malt. By the late 1750s tax authorities in Britain used hydrometers and brewers were not far behind in taking advantage of knowing alcohol concentrations and, though by measuring different brews, knowing how much beer they could get out of different types of fermentable malts.[33] By the 1790s brewers realized that they were engaged in chemistry.

There was a sharp rise in the scale of production among London brewers. Where a large brewery making the old style of beer might expect to produce from 2,500,000 to 5,000,000 litres in a year, a larger porter brewery by the late eighteenth century annually shipped over 30,000,000 litres and even up to 50,000,000 litres.[34] In 1748 the 12 largest London houses produced 62,678,000 litres of strong beer, 42% of the total for the capital, but in 1759-60 in 12 months they produced 86,000,000 litres and by 1786-87 over 160,000,000 litres, a figure dwarfing even levels of the Renaissance. One effect of the gigantic scale was that London porter brewers became industrialists of a different type from any seen before anywhere.[35] London's twelve big porter brewers produced a beer of consistent quality. After 1740 they aged the beer in vats rather than in casks to save on the cooperage. To increase efficiency and to supply the growing market, they built ever bigger vats. In 1770 containers were of about 250,000 litres and more. By 1790 one was some 18 metres in diameter, almost 8 metres high and rated at a capacity of 1,636,500 litres. The same builder produced one double that size in 1795. There were commercial as well as technical limits to the drive to build ever bigger vats. When one burst in 1814, it spilt over 1,000,000 litres through the brewery and out into the street. Eight people died in the flood. The limits of porter vats had been reached.[36] New techniques, a growing and prosperous population, canny investment and a quality product all combined to allow London brewing to weather the attacks from gin and wine and coffee and tea and chocolate and to keep beer at least as a significant part of the English diet even while drinking it was declining in the rest of Europe.

Samuel Pepys spent his last years as an outsider. The great issues of his youth were all decided. The political conflicts which pitted Catholics against Protestants were muted. The monarchy survived though in a more restricted form. The issues that divided royalists and commonwealthmen faded in significance. In fact Pepys' politics may have been irrelevant by the first years of the eighteenth century. His drinking habits were becoming irrelevant too. He stayed at home more, not going to pubs and inns and coffeehouses though that reflected his personal rising status as much as changing patterns in society at large.[37] He drank less wine and beer. His shift in his middle years away from beer toward wine was something he shared with many contemporaries and not just in England. His interest in tropical drinks - chocolate, tea and above all coffee - was also something that made him part of pan-European practice. He was only in on the early days of the new trend, dying before gin became a common drink in London. Pepys's drinking habits in his last years were relevant in one way, though. Beer was still a drink known and available in many places in the city. It was to see a sustained revival some thirty years after he died in 1703. That turn to beer was a shift to a drink heavier and thicker than the draught he had known when he went across the road and had beer for breakfast in the first weeks that he kept a diary.

What was true for Pepys was true for many others. That early morning draft of something made from malt might be gone. So too might be spending time in alehouses or drinking beer at home with meals. Still, even though beer or ale might be reduced as a part of the Englishman's diet and Pepys' as well, it found a way into the day's drink, and even late in the day. When settling in for the night on 17 March, 1666, he wrote in his diary, as he so often did 'so to bed'. On that night he went 'drinking butter-ale'.[38]

*Note: An earlier version of this paper was given with the title 'Beer for Breakfast, or bad times for brewing*

*in Pepys' day' as the Annual Pepys Lecture at the University of California Los Angeles on 7 March, 2013.*

## References


1. The definitive edition of the diary is Pepys, S., Latham, R. and Matthews, W. (1970) *The diary of Samuel Pepys*. 11 volumes. Berkeley: University of California Press.

2. Jan Steen, 'The Garden of an Inn', oil on canvas, Germalderie, Berlin.

3. The trade meant that the word 'beer', which had disappeared from the English vocabulary, came back into the language in the fifteenth century. Fell, C.E. (1975) 'Old English Beor', *Leeds Studies in English*, New Series VIII, pp.76-95.

4. Blanckenburg, C. v. (2001) *Die Hanse und ihr Bier : Brauwesen und Bierhandel im hansischen Verkehrsgebiet,* Quellen und Darstellungen zur hansischen Geschichte; N.F., Bd. 51. Cologne: Boehlau, pp.2-17, 282-283. Unger, R.W. (2004) *Beer in the Middle Ages and the Renaissance*. Philadelphia: University of Pennsylvania Press, pp.53-106. Unger, R.W. (1992) 'Technical Change in the Brewing Industry in Germany, the Low Countries, and England in the Late Middle Ages', *The Journal of European Economic History*. 21, pp.281-313.

5. Burton, K.D. (2013) 'The Citie Calls for Beere: the introduction of hops and the foundation of industrial brewing in early modern London', *Brewery History*. 150, pp.6-15.

6. Corran, H.S. (1975) *A History of Brewing*. Newton Abbot: David and Charles, pp.65-66.

7. Frontzek, W. and Hammel-Kiesow, R. (2005) *Das städtische Braugewerbe und seine Bauten vom Mittelalter bis zur frühen Neuzeit: Untersuchungen zur Entwicklung, Ausstattung und Topographie der Brauhäuser in der Hansestadt*. Lübeck ; Neumünster: Wachholtz, pp.33-39.

8. For example see Earnshaw, S. (2000) *The pub in literature: England's altered state*. Manchester; New York: Manchester University Press, pp.90-91.

9. That last instance was at Audley End House near Saffron Walden, so at a large country house and not in London. 27 February, 1660.

10. Act II, Scene 3.

11. He mentions having cakes and ale five times. 21 October, 1660. 26 December, 1661, 29 May, 1662, 27 March, 1663, 24 February, 1666..

12. Earnshaw, S. (2000) op. cit. p.5. In Pepys day the term alehouse was slowly being replaced by public house. Westhauser, K.E. (1994) 'Friendship and Family in Early Modern England: The Sociability of Adam Eyre and Samuel Pepys', *Journal of Social History*. 27, p.519.

13. Hailwood, M. (2013) '"It Puts Good Reason into Brains": popular understandings of the effects of alcohol in seventeenth-century England', *Brewery History*. 150, pp.39-53.

14. The per person level is based on an estimated population for England of 4,000,000.

15. Verdon, J. (2002) *Boire au Moyen Age*. Paris: Perrin, pp.190-191.

16. 17 July, 1667.

17. 10 February, 1669.

18. Francis, A.D. (1966) *The Methuens and Portugal, 1691-1708*. Cambridge: Cambridge University Press, pp.184-206, 217-218, 364.

19. He buried his with the wine of his then friend and fellow Navy Board officer, William Penn.

20. William Hogarth, 'The Orgy, scene three of eight entitled A Rake's Progress, representing a night at the Rose Tavern, Covent Garden, 1732-1733'. Sir John Soane's Museum, London.

21. Cullen, L.M. (1998) *The brandy trade under the Ancien Régime: regional specialisation in the Charente*. Cambridge, England; New York: Cambridge University Press, pp.4-23.

22. 20 January 1667, 23 October, 1667, 5 March, 1668, 25 March, 1669.

23. Earnshaw, S. (2000) op. cit. pp.99-101.

24. Pepys, S., Latham, R. and Matthews, W. (1970) op. cit. vol. X, p.70.

25. Not all efforts to move plants around the globe proved successful. Mutiny of sailors under the command of William Bligh aboard the *Bounty* in 1789 prevented the captain from getting bread-fruit to the West Indies. Bligh, W. (1792) *A voyage to the South Sea: undertaken by command of His Majesty, for the purpose of conveying the bread-fruit tree to the West Indies...* London: Published by permission of the Lords Commissioners of the Admiralty Printed for George Nicol, Bookseller to His Majesty, Pall-Mall.

26. Huntemann, H. (1971) *Das deutsche Braugewerbe vom Ausgang des Mittelalters bis zum Beginn der Industrialisierung*. Nuremberg: H. Carl, pp.132-133. Allen - Unger Global Commodity Prices Database, http://www.gcpdb.info/index.html. Also available at http://www.iisg.nl/hpw/data.php#europe.

27. 24 April, 1661.

28. Dobbelaar, P.J. (1930) *De branderijen in Holland tot het begin der negentiende eeuw*. Rotterdam: N. v. Nijgh & van Ditmar's uitgevers-mij., pp.26-27, 59, 65. King, F.A. (1947)

*Beer has a history*. London, New York: Hutchinson's Scientific and Technical Publications, p.97. Monckton, H A. (1969) *A history of the English public house*. London, Sydney etc.: Bodley Head, p.66.

29. Baugh, D.A. (1965) *British naval administration in the age of Walpole*. Princeton, NJ: Princeton University Press, pp.375-6, 398, 428-430.

30. William Hogarth, 'Beer Street and Gin Lane', engravings, 1751.

31. King, F.A. (1947) op. cit. p.91. Lynch, P. and Vaizey, J.L. (1961) *Guinness's brewery in the Irish economy, 1759-1876*. Cambridge: Cambridge University Press, pp.38-39. Mathias, P. (1959) *The brewing industry in England, 1700-1830*. Cambridge. Cambridge University Press, pp.14, 18. Monckton, H.A. (1966) *A history of English ale and beer.* London: Bodley Head, p.144.

32. Allen, R.C. (2003) 'Progress and poverty in early modern Europe', *Economic History Review*. 56, pp.403-443. Allen, R.C. (2009) *The British industrial revolution in global perspective*. Cambridge; New York: Cambridge University Press, pp.25-51.

33. Middleton, W.E.K. (1966) *A history of the thermometer and its use in meteorology*. Baltimore: Johns Hopkins Press, pp.27-57, 65-105. Mathias, P. (1959) op. cit. pp.67-72. Sumner, J. (2013) *Brewing science, technology and print, 1700-1880*. London: Pickering & Chatto, pp.38-41 51-57, 84-97, 104-106.

34. Mathias, P. (1959) op. cit. p.12; Monckton, H.A. (1969) op. cit. pp.69-70.

35. King, F.A. (1947) op. cit. p.91. Lynch, P. and Vaizey, J.L. (1961) op. cit. pp.38-39. Mathias, P. (1952) 'Agriculture and the Brewing and Distilling Industries in the Eighteenth Century', *Economic History Review*. 5, p.250 n.1. Mathias, P. (1959) op. cit. pp.xxviii, 6, 10, 14, 18, 23, 26. Monckton, H.A. (1966) op. cit. p.144.

36. Mathias, P. (1959) op. cit. pp.58-62.

37. Westhauser, K.E. (1994) op. cit. pp.529-530.

38. Pepys, S., Latham, R. and Matthews, W. (1970) op. cit. vol. VII, p.75 n2. Butter-ale drunk hot was Pepys' favourite remedy for a cold.