




RESEARCH ARTICLE

# Industrial brewing in early modern London

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## Abstract

Scholarship on brewing in early modern London is torn between two irreconcilable stories, one positing stunning growth before 1560 and the other insignificant change until after 1720. Careful attention to company and court records as well as state papers, however, reveals that by 1600 London brewing had boomed, likely making it Europe's largest brewing centre, led by individual houses operating on scales close to the largest of the mid-eighteenth century. Such breweries were accurately perceived to be large scale and highly profitable, clustered along the Thames in urban industrial zones.

## The rich brewers of early Stuart Westminster

In March of 1644, England's House of Lords heard damning stories regarding the career of the archbishop of Canterbury, William Laud. Prosecutors charged Laud with high treason for his alleged attempts to transform the English church and state into a tyrannical and popish regime. One small part of this explosive case concerned Laud's reaction to coal smoke emitted from two Westminster breweries. A brewer named Michael Arnold petitioned that his brewhouse, located along the river just south of parliament, emitted smoke clouds that travelled hundreds of yards across the Thames, annoying the archbishop and the attorney general while they were walking in the gardens of Lambeth Palace. Laud therefore, according to Arnold, sent the attorney general to harass him and demand a contribution of £20 per year to Laud's pet project, the renovation of St Paul's Cathedral. Arnold's fellow Westminster brewer Edward Bond told an even more sinister story. He claimed that Laud first railed that Bond deserved to be hanged for annoying the king's gardens with his smoke, and then extorted a contribution of £1,000 before sending Bond to the queen mother, Marie de Médicis, who attempted to convert him to Roman Catholicism. Laud, in the testimony of these brewers, was a covert papist with no respect for the rule of law or private property.

In his defence, Laud vigorously denied these implications but accepted that the brewers had in fact been in trouble for pollution. He admitted that smoke from Arnold's Westminster brewhouse bothered him in Lambeth Palace gardens, and it was undeniable that the privy council had taken measures against both Arnold and Bond. Laud denied that raising money to improve a church was a crime and pointed out that Bond's brewery could well support even such an enormous sum as £1,000,

‘because his brewing was worth twice as much to him’.<sup>1</sup> Both brewhouses, in fact, are presented by both prosecution and defence as very substantial businesses. Both agreed that they emitted smoke – from the coal burned to boil the water to brew the beer – on a scale allowing it to cross the Thames and still remain thick enough after that distance to cause annoyance. Both sides also agreed that the brewers were prosperous businessmen, with Bond claiming that the destruction of his house cost him £3,000. While the two sides offered irreconcilable accounts of Laud’s governance, religious agenda, personal style and relationship with his colleagues, they presented identical pictures of Westminster’s brewhouses during the 1630s. All agreed that brewers operated on a large scale and made very large amounts of money.

The idea that brewers in early modern cities and towns were prosperous and required a great deal of raw materials is hardly unknown, and yet many of the implications of this anecdote sit uneasily within our existing picture of urban industries during the sixteenth and seventeenth centuries. Existing work on metropolitan brewing in England between the sixteenth and the eighteenth centuries offers two narratives that are difficult to reconcile, and yet both remain accepted. One narrative, advanced by Judith Bennett and subsequent scholarship, describes a late medieval process of commercialization during which small brewers, especially women, were pushed out of the trade by men operating on a larger scale deploying more capital. A second, advanced by Peter Mathias, argued that mid-eighteenth-century brewing in London expanded in ways that have all the hallmarks of industrialization yet was not driven by any technical innovation.<sup>2</sup> These two studies, for all their considerable insights, offer contradictory chronologies of the brewing industry in early modern London: for Bennett it was ‘large scale’ and ‘centralized’ by about 1550, while for Mathias in 1720 breweries remained ‘very modest in size’.<sup>3</sup>

Recent work has explored early modern brewing from many new and valuable perspectives, including how brewers engaged with the early modern state; the industry’s technical practices; and the social and cultural histories of drinking.<sup>4</sup> Such

<sup>1</sup>Parliamentary Archives HL/PO/JO/10/1/52, Arnold’s petition, 24 Feb. 1641; The National Archives of Great Britain (TNA) SP 16/499/20, Bond’s testimony, c. 1644; *The Works of the Most Reverend Father in God, William Laud, D.D.* (7 vols., Oxford, 1847–60), vol. IV, 112–16; W.M. Cavert, ‘The environmental policy of Charles I: coal smoke and the English monarchy, 1624–1640’, *Journal of British Studies*, 53 (2014), 310–33.

<sup>2</sup>J.M. Bennett, *Ale, Beer, and Brewsters in England: Women’s Work in a Changing World, 1300–1600* (Oxford, 1999); P. Mathias, *The Brewing Industry in England 1700–1830* (Cambridge, 1959). In general see R. W. Unger, *Beer in the Middle Ages and the Renaissance* (Philadelphia, 2004).

<sup>3</sup>Bennett, *Ale*, 9; Mathias, *Brewing*, 6.

<sup>4</sup>For politics, see J.R. Krenzke, ‘Change is brewing: the industrialization of the London beer-brewing trade, 1400–1750’, Loyola University Chicago Ph.D. thesis, 2014; J.R. Krenzke, ‘“Moneys unreceived”: attempts to tax the brewing trade in London and its environs before the excise ordinance of 1643’, *Brewery History*, 162 (2015), 2–14; J.R. Krenzke, ‘Resistance by the pint: how London brewers shaped the excise and created London’s favorite beer’, *Journal of Early Modern History*, 23 (2019), 499–518; D.B. Palmer, ‘The brewers’ lament: porter and politics in seventeenth-century England’, *The Historian*, 73 (2011), 1–21. For technology and bureaucracy, see J. Sumner, *Brewing Science, Technology, and Print: 1700–1880* (Pittsburgh: 2018); J. Sumner and A. Nuvolari, ‘Inventors, patents, and inventive activities in the English brewing industry, 1634–1850’, *Business History Review*, 87 (2013), 95–120; G.M. Sechrist, ‘Excise taxation, practical mathematics, and cask measuring in seventeenth-century England’, Cambridge University Ph.D. thesis, 2021. For drinking and sociability, see A. Smyth (ed.), *A Pleasing Sinne: Drink and Conviviality in 17th-Century England* (Cambridge, 2004); M. Hailwood, *Alehouses and Good Fellowship in Early Modern England* (Woodbridge, 2014); and the work of the ‘Intoxicating Spaces’ project, at [www.intoxicatingspaces.org/outputs](http://www.intoxicatingspaces.org/outputs), accessed 10 Aug. 2023.

work, however, has not addressed the scale of early modern brewing in London to ask basic questions about the size and output of breweries and where they might be placed on a heuristic continuum distinguishing simple, pre-modern, household and un-commercial production from complex, modern, industrial and capitalist manufacturing. This and other more recent work, even where it adds new perspectives, fundamentally accepts and repeats one or the other of these narratives.<sup>5</sup>

This article will consider the period between these stories, and will offer a newly specific analysis of the scale of London brewing. Consistent with Bennett and her followers, it reveals an urban industry that, by about 1600, produced at scales that almost matched those which Mathias considered novel 150 years later. The largest urban brewers made tens of thousands of barrels of beer annually, with dozens of more modest producers sharing the urban market. Contemporary observers were right to perceive brewers getting rich, or their breweries belching out large smoke clouds, because such brewhouses operated on scales quite close to those of the early industrial revolution. In doing so, they also moved away from aspects taken to characterize the medieval craft, and towards those often considered modern: their scale entailed separation of capital from labour and an internal differentiation of tasks. They were not found on one street or district, nor were they relegated to suburbs. Rather, they were clustered in several distinct parts of the city that offered access to necessary resources like water, grain and fuel, a concentration that created urban industrial zones. These developments occurred late in the sixteenth century and then persisted, with growth mirroring that of the metropolis, until the stagnation of brewing during the decades around 1700. There was not a steady, gradual growth of urban brewing from the sixteenth to the eighteenth centuries, but rather a period of sudden expansion around 1600 followed by relative stasis. The decades before Mathias' mid-eighteenth-century explosion were not a continuation of some pre-modern model of small-scale production, but rather a modest decline in an industry that had been transformed more than a century earlier and had continued to develop thereafter.

### Divergent assessments of early modern brewing

From the perspective of the medieval period, English brewing in about 1600 looks large scale, specialized, highly commercial and capitalist. Judith Bennett has described this transformation, stressing its gendered dynamic: 'In 1300, brewing was a small-scale, local industry pursued by women who worked from their homes... it was unorganized and underdeveloped. By 1600, brewing in many cities, towns, and villages was so large scale and so centralized that it was assuming a leading role –

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<sup>5</sup>Work consistent with Bennett includes K.D. Burton, 'The citie calls for beere: the introduction of hops and the foundation of industrial brewing in early modern London', *Brewery History*, 150 (2013), 6–15; L.B. Luu, *Immigrants and the Industries of London, 1500–1700* (London, 2005). That following Mathias includes T. Almeroth-Williams, 'The brewery horse and the importance of equine power in Hanoverian London', *Urban History*, 40 (2013), 416–42; Unger's discussion of London brewing after about 1650 in 'Samuel Pepys and the decline of brewing in the late seventeenth century', *Brewery History*, 162 (2015), 66–75; and 'The brewing industries in England and Holland, 1650–1800', *Brewery History*, 185 (2020), 53–65; and A. Pryor 'The industrialization of the London brewing trade: part I', *Brewery History*, 161 (2015), 51–90; 'The industrialization of the London brewing trade: part II', *Brewery History*, 163 (2015), 56–83; and 'The industrialization of the London brewing trade: part III', *Brewery History*, 165 (2016), 51–80.

managerially, technically, and commercially – among other contemporary industries. It was also controlled by men.<sup>6</sup>

Among the key causes of this transformation was the simple development of hopped beer. As a natural preservative, hops allowed beer to be stored for longer and therefore to be made and sold in greater quantities than un-hopped ales. This provided an opportunity for expansion, but economies of scale were only accessible to those with the capital or credit to invest in large stocks of grain and fuel and increasingly expensive metal implements.<sup>7</sup> Lien Luu has also stressed the importance of the expertise of Dutch, German and French immigrants who settled in London during the middle decades of the sixteenth century. Indeed, in her account the growth of London's beer brewing is nearly indistinguishable from the process of incorporating expert brewers into the capital's civic structures and social networks. It also coincided with the switch, during the 1560s and 1570s, from wood to coal, which offered cheaper and more easily stored energy and whose resultant smoke quickly attracted criticism.<sup>8</sup> Together, Bennett and Luu describe an industry that was gradually consolidating throughout the later Middle Ages, with new expertise and new technology during the Elizabethan period pushing it further towards the 'large-scale' and 'centralized' industry visible by 1600. This story fits comfortably within Richard Unger's overview of late medieval and Renaissance brewing across northern Europe, in which a general expansion is visible but with pronounced variation in local chronologies, as cities from Ghent to Gouda to Gdansk acquired and lost major export trades.<sup>9</sup> For all these authors, by the year 1600 London's brewing industry had achieved dramatic and important growth.

From the perspective of the early nineteenth century, by contrast, London's early modern beer brewing industry appeared unimpressive. Mathias' magisterial study of the industrialization of English (and in particular, London) brewing from 1700 to 1830 argued that the sixteenth century was decidedly un-industrial. Before 1600, the 'common' or wholesale commercial brewers, as opposed to modest 'publican' brewers who sold their own drink, were 'limited in numbers' and 'the largest of them very modest in size'. Thereafter, 'no great advance came to the leaders of the industry in the next 150 years, apart from a very slow growth in the size of individual plants'. By the late seventeenth century, the 'slow consolidation and the hesitant expansion of individual breweries in London were accelerating, while a general quickening of the economic pace in the industry as a whole becomes apparent'.<sup>10</sup> By about 1700, Mathias reckoned, London's large breweries each made 'not much in excess of 5,000 barrels or 10,000 at the very most', a figure 'insignificant' compared to those reached during the coming century.<sup>11</sup> This gradual, trickling growth became a flood during a decisive phase of expansion after about 1720, when the invention of porter, which required more time to mature and so rewarded economies of scale, allowed for breweries on scales that were entirely unprecedented and therefore helped create the industrial future.

<sup>6</sup>Bennett, *Ale*, 9.

<sup>7</sup>*Ibid.*, 86–7.

<sup>8</sup>Luu, *Immigrants*; W.M. Cavert, *The Smoke of London: Energy and Environment in the Early Modern City* (Cambridge, 2016); 'Industrial coal consumption in early modern London', *Urban History*, 44 (2017), 424–3.

<sup>9</sup>Unger, *Beer*, 118–19.

<sup>10</sup>Mathias, *Brewing*, 6.

<sup>11</sup>*Ibid.*, 38. 5,000 barrels of strong beer was in fact the late seventeenth-century average.

Mathias offered a brilliant portrait of how the great urban brewers of the later eighteenth century acquired vast stocks of grain, supplied networks of pubs and applied increasing technical and financial sophistication to the management of their businesses. But his picture of the pre-history of eighteenth-century brewing was sketchily drawn and internally incoherent. Sixteenth-century breweries were 'very modest in size' and yet it required only 'very slow growth' to reach a more impressive prominence by the later seventeenth century. Breweries of the middle decades of the sixteenth century were 'very similar in scale to what they were at the end of the seventeenth century', yet on the following page it is 'obvious' that individual breweries grew in important ways during this same period.<sup>12</sup> He had almost no quantitative information for the earlier period, as the company archives and excise material upon which his study is based are not available until the mid-eighteenth and mid-seventeenth centuries, respectively. Despite this, Mathias insisted that what happened thereafter was entirely new. Research by Bennett, Luu and their followers on the sixteenth century has not really displaced this picture because it has not engaged directly with his quantitative arguments, rarely showing precisely what 'large scale' meant. More recent work, therefore, has not replaced Mathias' picture of the pre-industrial character of London's early modern breweries.<sup>13</sup>

In an attempt to bring specificity and nuance to this issue, Unger deploys a six-stage model of industrial sophistication. He distinguishes between London's seventeenth-century brewing, which reached the 'manufactory' stage, from the late eighteenth-century's 'factory' system, characterized by a division of labour and 'machinery powered by something other than human or animal muscle power'.<sup>14</sup> Such a distinction, however, is misleading for brewing because energy was primarily needed not to provide motion but to heat water, however complex and large the operation. Thus, when large breweries added steam engines in the late eighteenth century, this required only modest increases to their already enormous coal budgets.<sup>15</sup> Animal muscle, furthermore, became more, not less, important later in the period.<sup>16</sup> Unger has also asserted that beer consumption was in decline during the late seventeenth century until the industry was rescued, in the process explained by Matthias, by the invention of porter in the 1720s.<sup>17</sup> Despite nods towards different definitions of industrialization than were used by Mathias, and despite careful investigation of many aspects of the 'mature' industry of the sixteenth century, Unger still reproduces Mathias' chronology in its suggestion that a qualitative as well as quantitative gulf separates sixteenth- from mid-eighteenth-century brewing. It is not in doubt that the industry achieved newly prodigious scales by around 1800, but this has led to an underestimation, by Mathias and Unger and scholars following their lead, of beer brewing in London during the sixteenth and seventeenth centuries.

<sup>12</sup>*Ibid.*, 5–6.

<sup>13</sup>The fullest study is Krenzke, 'Change', which accepts Mathias' assertions about the 'explosive growth' of the eighteenth century and finds 12,000–15,000 barrels per year a likely maximum for the largest London brewers by about 1700, pp. 12, 229.

<sup>14</sup>Unger, *Beer*, 11–13. This model is adapted from archaeologist David Peacock.

<sup>15</sup>After adopting the new steam engine in the 1780s, one urban brewery powered it with 47 chaldrons of coal per year, but 150 years earlier brewers already used 10 times that amount of coal annually to brew. Mathias, *Brewing*, 92; Cavert, 'Industrial', 440.

<sup>16</sup>Almeroth-Williams, 'Horse'.

<sup>17</sup>Unger, 'Pepys', and 'Brewing'.

While steam brought no radical change during the late eighteenth century, coal did contribute to the booming scale of sixteenth-century brewing, as did the incentives supplied by the exploding market of London's rapid growth after 1550, the economies of scale encouraged by hopped beer and the expertise of recent immigrants. By about 1600, London was likely Europe's leading centre of brewing, the site of breweries making about 30,000 barrels per year. At about 5*d* per pint, such output would retail for roughly £18,000, more than 1,000 times a worker's annual wage and comparable to the income of the richest aristocrats. On such a scale, London's large breweries were clearly not household crafts, nor even modest commercial manufactories comparable to a workshop. They required substantial and differentiated labour forces, sophisticated networks of supply, credit and marketing. While the sources do not allow for most of these dynamics to be reconstructed, they do allow estimates of scale showing London's brewing *c.* 1600 to have been thoroughly commercial, capital-intensive and large scale.

### Production of the early modern London brewing industry

A key part of Mathias' story is the explosion of the largest brewhouses, as leading firms grew at the expense of their competition and thereby transformed methods of production and distribution and relationships between management and labour. But the nature of such developments are not evident unless it is known what they replaced. Establishing such a clear picture of this or any other London trade is made frustratingly difficult, however, by the nature of the existing sources. Before the mid-seventeenth century, there was no centrally administered tax through which we can easily establish levels of production. The Brewers' Company, furthermore, kept archives that are an imperfect guide to their trade. Freemen of London were allowed to practise any trade they chose, but the brewers were among those with the right to police membership in their company by those practising the trade. Comparing membership lists with other evidence of beer making shows that most prominent members of the company were in fact owners or operators of brewhouses, though some prominent brewers were not members or only translated into the company after establishing their operation. Company records, therefore, contain much useful information but must be used with great care.

Despite these caveats, it is possible to discern more precisely the basic trajectory of brewing in the early modern city. We can begin with Mathias' claim that during Elizabeth's reign brewing was dominated by small-scale 'victuallers', who sold directly to customers, rather than 'common' brewers who supplied many taverns and public houses. His only evidence for this is that there were 26 common brewers in London and its suburbs *c.* 1585, growing to 194 by 1699, and the unsupported claim that they were small.<sup>18</sup> He does not examine the sixteenth- or early seventeenth-century sources, nor ask how demographic growth relates to such numbers.<sup>19</sup> While there are other Elizabethan records indicating 25–32 common beer brewers during the late sixteenth century, created both by the regime and by the company, Mathias'

<sup>18</sup>Mathias takes the earlier total from J.U. Nef, *The Rise of the British Coal Industry* (2 vols., London, 1932), vol. I, 192–3, 213–14, but dismisses Nef's broader argument regarding an early modern industrial revolution.

<sup>19</sup>V. Harding, 'The population of London, 1550–1700: a review of the published evidence', *London Journal*, 15 (1990), 111–28.

assumption that they must have been small scale is erroneous. The total of c. 26 brewers recurs in a list datable to 1573 giving 32 beer brewers or partnerships, plus 58 ale brewers.<sup>20</sup> Of the latter, only some operated on the small scales of brewing victuallers, while others are said to have consumed quantities of grain comparable to all but the largest beer brewers.<sup>21</sup>

Furthermore, the Brewers' Company internal assessments identified 27 beer and 56 ale brewers in 1595 and 79 brewers of all sorts in 1593.<sup>22</sup> In the context of rapid urban expansion, such stable numbers of beer brewers indicate either declining per capita consumption or rapidly increasing production from the large brewhouses (of the kind that Mathias denied existed). Both company and governmental records suggest that the latter was the case, with several breweries booming during the reign of Elizabeth I, followed by dozens of medium-scale operations that also grew to supply a rapidly expanding capital. The size of their operations is revealed by considering how much grain they used and estimating how much beer this would have made. The 1585 document (in Secretary Cecil's papers) numbering 26 brewers posits that they used 20 quarters of malt daily, six days per week, totalling 3,120 quarters weekly, during every week of the year.<sup>23</sup> As a project proposing new taxes, whose collection was doubtless intended to benefit the document's author, this claim must be viewed with scepticism, and yet the figure of about 150,000 quarters of malt consumed for urban brewing annually is repeated by other contemporary documents. The 1573 estimate, apparently produced by the brewers themselves, states that London's brewers consumed over 2,000 quarters of malt weekly, with the beer brewers responsible for three-quarters of that total.<sup>24</sup> In 1595, when dearth made brewing seem a waste of grain, the Brewers' Company estimated their own consumption at 147,264 quarters of malt, 76 per cent of which was for beer and the rest for ale.<sup>25</sup> While the 1585 proposal might have benefited from exaggerating its figures, the Brewers' Company interest would have been served by under-representing the true scale of their grain consumption, and yet the two totals are nearly identical. These figures suggest that the regime was not wrong to worry that brewing was using scarce food, as brewing may have accounted for about half of London's grain supplies.<sup>26</sup>

Moreover, in 1593 the company produced another nearly identical estimate, not intended for external circulation, confirming this overall picture but clarifying the leading producers' impressive scale. Brewers faced a troubling onslaught in

<sup>20</sup>London Metropolitan Archives (LMA) CLC/L/BF/B/001/MS05445/009, Brewers' Company court minute book 1590–97.

<sup>21</sup>British Library (BL) Cotton Faustina C. II, fols. 175–88, undated. Brewers' wills in TNA PROB/11 suggests a date of about 1573.

<sup>22</sup>LMA CLC/L/BF/B/001/MS05445/009, at 12 Apr. 1593 and 21 Oct. 1595.

<sup>23</sup>BL Lansdowne MS 71/28.

<sup>24</sup>BL Cotton Faustina C. II, fols. 175–88.

<sup>25</sup>LMA CLC/L/BF/B/001/MS05445/009, at 21 Oct. 1595.

<sup>26</sup>London's grain needs for baking and brewing together were estimated as 200,000 quarters in 1574, and 130,000–140,000 quarters for baking alone in 1631. N.S.B. Gras, *The Evolution of the English Corn Market from the Twelfth to the Eighteenth Century* (Cambridge, MA, 1915), 77. The quarter equalled 64 gallons, which was required by statute to weigh 512 pounds for wheat, but a lesser amount, later fixed at 336 pounds, for malt.

parliament related to regulation of production methods and prices.<sup>27</sup> The defeat of an unwanted bill required substantial outlays, including gifts to parliamentary ‘friends’ and one payment of £100 to the Lord Keeper, their former legal counsel Sir John Puckering.<sup>28</sup> To raise this, the company taxed its own membership at 20*d* per quarter of malt consumed weekly, which totalled, according to the internal assessors, about 3,200 quarters per week. The 79 contributors to this fund clearly included some small-scale brewing victuallers, makers of ale as well as beer, and so its total is based on a broader range of London’s brewers than are the above estimates which relied exclusively on the output of large beer brewers. *Pace* Mathias, these large common brewers dominated London production during the last decades of the sixteenth century. This will be explored further below, but the point here is that the internal assessment of 1593 implies production levels that fit quite comfortably with the earlier estimates. London brewers’ total malt consumption, then, whether or not the smaller producers are included, seems to have been something close to 100,000 quarters annually during the 1570s, reaching about 150,000 quarters annually during the 1580s and 1590s.

The likelihood of such totals for the mid-Elizabethan period, and the gradual increase of the capital’s brewing during the following decades, is evident from yet another species of document: those produced to manage or profit from the crown’s right to purveyance. This was a royal privilege of receiving a commodity for free or below market rate from areas surrounding the court.<sup>29</sup> The brewers resisted this but pressure from the privy council, including fines and arrests, persuaded them in 1616 to provide the household of James I with 2,000 tuns of beer.<sup>30</sup> Three leading brewers (James Desmaisters, Edmund Morgan and Mathias Otten) would produce the beer and be reimbursed by the company for its value of £3,000, paid for from an internal assessment of 4*d* per quarter on each brewer’s usual malt consumption.<sup>31</sup> To raise this total, London’s brewers would need to exceed 180,000 quarters of malt annually, and the company was confident enough of this that it discussed what to do with any extra funds. Within a year, this tax was farmed out to a projector named Christopher Smyth, who agreed to collect it and provide the court with a £3,000 payment in cash. This arrangement quickly led to lawsuits from Smyth over the real levels of production. His complaints show how difficult he found collection; he accused more than 100 different brewers of evasion, claiming that they refused to open their books or hid their true production figures.<sup>32</sup> In response, the brewers sometimes disagreed vehemently with Smyth: one William Yorke claimed to have brewed only 347 quarters rather than 2,000 as Smyth claimed, and William Kinton stated that 175 quarters was the correct figure rather than 400.<sup>33</sup> Their answers also provide an ingenious range of

<sup>27</sup>D. Dean, ‘London lobbies and parliament: the case of the brewers and coopers in the parliament of 1593’, *Parliamentary History*, 8 (1989), 341–65.

<sup>28</sup>LMA CLC/L/BF/B/001/MS05445/009, at 12 Apr. 1593; Dean, ‘Lobbies’, 346.

<sup>29</sup>S.M. Healy, ‘Crown revenue and the political culture of early Stuart England’, Birkbeck College, University of London Ph.D. thesis, 2015, 113–20, 147–9.

<sup>30</sup>E.G. Atkinson (ed.), *Acts of the Privy Council of England*, vol. XXXIV: 1615–1616 (London, 1925), 9, 37, 51, 82–3, 100.

<sup>31</sup>LMA CLC/L/BF/B/001/MS05445/0013, Brewers’ Company court minute book 1612–20, at 14 Feb. 1616 and 2 Jul. 1616.

<sup>32</sup>TNA REQ 2/420/133. Thanks to Simon Healy for advice and notes on this case.

<sup>33</sup>TNA REQ 2/392/83, fols. 5, 20.



excuses and refusals. Yorke stated that his composition with Smyth was too high because the 'daily increase of brewers' had hurt his business, while some suburban brewers claimed to be beyond the scope of the original bargain. William Hartley could 'not precisely remember' how much he had brewed, but he thought 'to his best remembrance' that it was (precisely) 1,062 quarters over 18 months. Edward Manye refused to divulge trade secrets, while Robert Offley claimed to be 'utterly ignorant' because the brewhouse was entirely his wife's affair. Still others protested that the whole business was 'against the ancient common laws of this realm and their birthright', connecting these squabbles with fears of extra-parliamentary taxation and the creeping absolutist ambitions of the crown.<sup>34</sup> These records are the most detailed discussions of the scale of early seventeenth-century brewing that I have located, but the distance between claim and counter-claim renders the true state of affairs murky. What is clear is that the brewers had accepted that the 4d rate would yield over £3,000, and Smyth expected it to bring him a profit. The minimum figure of malt used by the brewers of the city of London and its suburbs in about 1616 is therefore 180,000 quarters per annum. Considering Smyth's willingness to farm this tax as evidence for his belief that he would turn a substantial profit, the real figure was higher, perhaps something like 220,000 quarters.

How much beer a quarter of grain produced is uncertain, in part because brewers produced multiple grades of beer using grain in differing ways. The evidence is ambivalent regarding whether or not 'small' beer was brewed by reusing the same grains as had produced 'strong' drink. Both methods seem to have existed, but on balance it appears more common for large urban brewers to focus on strong beer and avoid using the partially exhausted malt which would, in household brewing, have made another batch of small drink.<sup>35</sup> That brewers would make strong beer but not also small is assumed in several brewing budgets which claim that a quarter of malt would produce four barrels of strong beer and nothing else. One such budget found in the state papers for 1574, another from 1637, another in a 1699 pamphlet and two budgets produced during the 1750s for London's Foundling Hospital all agree that a quarter of malt made four barrels of beer.<sup>36</sup> The Brewers' Company claimed an identical ratio for 'double' beer in 1575.<sup>37</sup> This is also quite close to the only known archival record of brewing in early modern London, in the records of Westminster Abbey. During the period from 1580 to 1635, its brewery purchased an average of 142 quarters of malt annually and brewed an average of 494 barrels of 'double' beer, plus just 25 barrels of strong beer.<sup>38</sup> This is a ratio of slightly over 3.5 barrels per quarter, for a variety of beer which Luu suggests was of intermediate strength.<sup>39</sup>

<sup>34</sup>*Ibid.*, fols. 3, 5, 7, 9, 12, 18, 19, 21.

<sup>35</sup>Unger, *Beer*, 188, suggests this was general amongst large brewers. During the eighteenth century, and probably earlier, large urban brewers and distillers used spent mash as animal feed. C. Muldrew, *Food, Energy, and the Creation of Industriousness: Work and Material Culture in Agrarian England, 1550–1780* (Cambridge, 2011), 79; BL Add. MS 39,683. For 1630s brewhouses typically employing a 'hogs man', see TNA SP 16/341/124.

<sup>36</sup>TNA SP 12/98/37; SP 16/341/124; *An Essay upon Excisi[n]g Several Branches* (1699, Wing E3298), 21–3; LMA A/FH/M/1/5, p. 30, Foundling Hospital estimates for a brewing office, 1755; LMA A/FH/A/6/1/10/2, 1757, John Goodechild's estimate on brewing costs for the Foundling Hospital.

<sup>37</sup>LMA CLC/L/BF/B/001/MS05445/005, Brewers' Company court minute book 1573–79, at 20 Oct. 1575.

<sup>38</sup>Westminster Abbey Muniments 33,906–63, stewards' accounts, 1586–1635.

<sup>39</sup>Luu, *Immigrants*, 273.

Outside of London, where brewers operated on more modest scales and presumably with less efficiency, the ratio was lower. In the mid-eighteenth century Corpus Christi College, Cambridge, made only 2.1 barrels of small beer and ale (which used grain less efficiently) per quarter of malt.<sup>40</sup> If 4 barrels of beer was a common product of 1 quarter of malt in large urban breweries, this is a ratio of 2.25 units of drink per unit of volume.<sup>41</sup> Richard Unger's examination of medieval and early modern brewing in Europe has found that German and Netherlandish brewing rendered about 1.5 litres of beer per litre of grain, though ratios of individual brews ranged widely from under 1 to better than 3 units of beer per unit of grain.<sup>42</sup> This suggests that the ratio of 2.25, or 4 barrels of beer per quarter of malt, is a likely estimate for brewers who imported best practices from northern Europe and were incentivized to achieve economies of scale in their large urban market.

Combining this ratio and the figures of malt consumption show the impressive scale of beer production in late sixteenth- and early seventeenth-century London. The above estimates suggest that London and suburban brewers made about 400,000 barrels of beer during the 1570s, rising towards 600,000 later in the decade and over 850,000 by 1620. By the later seventeenth century, the more precise excise taxation records show that between 1684 and 1735 urban breweries were taxed for an average of 1,075,958 barrels of strong beer and 729,629 barrels of weak beer annually, a total of about 1,806,000 barrels.<sup>43</sup> This period saw a stagnation, and even modest decline, in the overall amount of beer produced, as highs of about 1.2 million barrels of strong beer were reached in the years around 1690 but never again during the subsequent 40 years. The decade from 1726 to 1735 saw 963,054 barrels of strong and 699,823 of weak beer, declines of 16 per cent and 14 per cent from the totals of 1,141,195 and 809,235, respectively, during the decade after 1684. During these years, moreover, London continued to grow, so the per capita decline of the London brewery relative to its local demand would exceed even these figures.<sup>44</sup> Even during this early eighteenth-century decline, however, London's total brewery was about twice in absolute terms (though less per capita) than the production levels achieved around 1600.

Finally, the importance of small beer in the later excise figures suggests that the totals for the decades around 1600, based as they are on the assumption that all of London's malt made strong beer, might be too low. Because small beer seems to have used grain more efficiently, the earlier production totals are quite likely to underestimate the total amount brewed. If brewers made 6 barrels of small beer per quarter of malt, for example, then the c. 220,000 quarters of 1620 could have yielded 600,000 barrels of strong and 420,000 barrels of weak beer, totals about 75 per cent of those achieved a century later.<sup>45</sup> If, moreover, some brewers had made small beer with the same malt from which they had already made strong, the figures would be higher still.

<sup>40</sup>Corpus Christi College Cambridge Archives GBR/0268/CCCC02/S/2/3–21, brewhouse vouchers 1748–67.

<sup>41</sup>Quarters of malt were defined as 64 gallons, while barrels of beer were 36, so if 64 dry gallons produced 144 gallons of drink the ratio would be 2.25 measures of beer per measure of grain, by volume.

<sup>42</sup>Unger, *Beer*, 135–8, with a summary table at 138.

<sup>43</sup>Oxford University Bodleian Library, Rawlinson Manuscripts A. 339, fol. 16v, the number of common brewers in London, with the amount of beer, 1684–1735.

<sup>44</sup>Harding, 'Population'.

<sup>45</sup>The Brewers' Company complained of low profits if they brewed only 5.25 barrels of weak beer per quarter. LMA CLC/L/BF/B/001/MS05445/009, at 8 Jun. 1592.

These numbers are substantial when compared with eighteenth-century figures, and comparison with the output of other contemporary urban centres shows how large London's early modern brewery had become. Unger finds that early seventeenth-century Haarlem emerged as northern Europe's leading brewing centre, producing about 350,000 barrels annually. This was more than had ever been achieved by other Netherlandish or Baltic cities, as Antwerp, Delft, Gdansk, Gouda and Hamburg had all, at various points during the fifteenth or sixteenth centuries, emerged as leading brewing centres with large exports.<sup>46</sup> Despite its European pre-eminence and successful exports, however, from 1600 to 1620 Haarlem only produced around 40–50 per cent of London's total beer output.

From this perspective, what is most noteworthy about London brewing before the eighteenth-century rise of porter is not, as Mathias suggested, its slow and gradual rise from small-scale production to a larger-scale, more commercial industry. Nor is it the dips that followed the new taxes of the 1690s and the rise of gin during the eighteenth century. Rather, it is the remarkable early growth of brewing in London during the decades around 1600, long before porter changed the face of the industry yet again. Far from being traditional urban craftsmen, London's brewers manufactured beer on a scale that even bears comparison to the early years of the great porter producers, whom Mathias thought represented an entirely new scale and level of sophistication. Porter arrived during a period of slight decline when the industry had long established itself, over the previous 150 years, as Europe's largest centre of beer brewing.

### Production of early modern London's breweries

Despite the scale of the London brewery as a whole, its most noteworthy aspect may in fact be the size and prominence attained by individual brewhouses before the eighteenth century. For Mathias, it was the scale of individual breweries, the organization of the trade rather than its amplitude that underwent such a profound transformation during the eighteenth century. Whereas industries like cotton and iron saw an explosion in total production during industrialization, the beer industry witnessed a remarkable consolidation despite limited overall growth, a distinction that perhaps explains why it did not have a significant place in narratives of the industrial revolution before Matthias' work.<sup>47</sup> The relative smallness of breweries in London before the rise of porter after the 1720s is therefore crucial to Mathias' argument, but closer inspection of available data suggests that he quite seriously underestimated the size of brewhouses in the early modern metropolis.

There are no systematic tax records of brewery operators, but there is enough information to produce a coherent picture. Beginning with the 1573 document, discussed above, we find 32 beer brewers listed along with their weekly consumption of malt.<sup>48</sup> The smallest is said to use 24 quarters per week, the largest 90. Even this smaller total was not small; it was almost 20 times more than required by Westminster Abbey, and could have produced almost 5,000 barrels of beer annually, about 2,000 litres daily. This surely indicates that these were common brewers, wholesalers rather than men merely supplying their own taverns. The 16 brewers said to have

<sup>46</sup>Unger, *Beer*, 113–25, esp. 118–19.

<sup>47</sup>Mathias, *Brewing*, 22.

<sup>48</sup>BL Cotton Faustina C. II, fols. 175–88.

used over 50 quarters per week would have produced more than twice this amount, with Anthony Duffield credited with the largest establishment. His 90 quarters weekly, if he brewed throughout the year, would have made 18,000 barrels at 4 barrels/quarter.

This is a substantial figure, but it was soon surpassed. A 1585 petition claimed that there were 26 common brewers in London, each of whom brewed 20 quarters daily, six days a week, throughout the year. While the 1573 survey indicated that only 4 brewers used 70 or more quarters per week, this document finds 120 a likely weekly average. The proposal then computes that this indicates an average annual production of about 25,000 barrels per brewhouse.<sup>49</sup> The Brewers' Company themselves described production on a similar scale, on several occasions and in different ways, during the 1590s. First, sample budgets drawn up in 1592 in an attempt to justify higher prices claimed that most brewers brewed four times per week, using either 15 or 20 quarters per brew depending on whether they produced small or strong beer.<sup>50</sup> A 1595 statement regarding their grain consumption repeated this, claiming that the 27 common brewers averaged 80 quarters weekly based on 4 brewings of 20 quarters each. Both of these statements were company-wide averages intended to persuade the Queen's Council, not accurate representations of any specific brewhouse.

The 1593 internal assessment, however, suggests that these averages were plausible but hid the scale of London's largest brewers. The fund collected to lobby and bribe in parliament was based on weekly malt consumption, which the company minute books recorded for every London brewer, large or small. While other such levies during this period frequently used convenient figures like 10s, £3 or £5, the 1593 assessment recorded grain consumption with particular precision, showing an enormous range as the largest brewers paid one hundred times the smallest.<sup>51</sup> The procedure suggests a great concern for accuracy and accountability within the company, as there were two assessors appointed for each of six districts within the London metropolis and a majority of the large brewers were involved in the assessment and collection of the rates. Their survey, therefore, offers the best snapshot available of the scale of London brewhouses during the early modern period.

According to this internal assessment, many brewers operated on very substantial scales. Whereas the 1573 survey found only 4 brewers to use between 70 and 90 quarters per week, and another 18 between 40 and 60, and whereas the brewers told the council during the 1590s that most brewed about 80 quarters weekly, the company found in 1593 that 11 brewers consumed more than 100 quarters weekly, plus another 9 between 60 and 80 quarters. The very largest assessment fell on Mathias Rutton, for 200 quarters weekly, with 'Mr Duffield' at 150 and 'Mr Haunce' at 140.<sup>52</sup> These are unlikely to reflect operations using multiple brewhouses, as

<sup>49</sup>BL Lansdowne 71, n. 28; BL Cotton Faustina C. II, fols. 75–88.

<sup>50</sup>LMA CLC/L/BF/B/001/MS05445/009, at 6 Jun. 1592.

<sup>51</sup>Other ratings with simpler systems include LMA CLC/L/BF/B/001/MS05445/009, at 24 Jun. 1591; LMA CLC/L/BF/B/001/MS05445/0010, Brewers' Company court minute book 1597–1600, at 25 Aug. 1598; LMA CLC/L/BF/B/001/MS05445/0013, at 15 Sep. 1612.

<sup>52</sup>The brewers assessed at over 60 quarters per week were: in St Katherine's Arnold James (80), Anthony Duffield (150), Mathias Rutton (200), Nicholas Longe (120), 'Mr' Haunce (140) and Henry James (100); in Thames Street Roger James (120), Francis Snelling (80), 'Mr' (probably Wassell, not Nicholas) Webling (120),

Duffield's 'house' is listed in the singular, as is 'Mr Haunce at the Ship'. Haunce is again listed as a partner to Mr Jacque, and different holdings of the James family were each listed separately. The wills of Mathias Rutton senior in 1603, and junior in 1604, each refer to a single brewhouse only.<sup>53</sup>

Less systematic records from the 1610s and 1620 describe similar scales. In the purveyance cases Smyth complained that several brewers used thousands of quarters of malt per year. Though such claims were disputed, Smyth stated that James Desmaisters had compounded for £12 10s per month, corresponding to 750 quarters of malt. Smyth also claimed that others brewed at a similar rate, including William Campion who was said to use over 700 quarters per month during a period of almost three years, Mathias Otten who was said to have used 750 quarters monthly over 18 months, and Edmund Morgan who was said to average 836 quarters during the last 3 months of 1617 but had paid for only 513.<sup>54</sup> While these brewers contested or evaded the charges attendant on large-scale brewing, a few years later another brewer went out of his way to claim, in his only speech to the House of Commons, a payment very close to these amounts. Westminster brewer Joseph Bradshaw complained in 1628 that the malt imposition continued and that he himself paid £12 monthly, implying a consumption of 720 quarters of malt. As Bradshaw's purpose was to denounce non-parliamentary taxation, lying would have been an unnecessary risk when accuracy would have supported his legal claim nearly as well.<sup>55</sup>

Bradshaw on the floor of the House of Commons, Smyth in a lawsuit and the Brewers' Company in their internal assessments: in these quite different contexts, very similar claims were made. London's largest breweries, each asserted, consumed 600–800 quarters of malt per month, suggesting production of 30,000–40,000 barrels of beer per year. Even making conservative assumptions on both the brewing calendar and the yield renders high figures; 9 months' worth of brewing and merely 3 barrels per quarter, for example, would still mean that these brewers made 18,000–24,000 barrels of beer annually. But the higher multipliers are more likely; seventeenth-century brewers appear not to have paused during the summer in the ways that their eighteenth-century successors did.<sup>56</sup> Assuming that at least one of these estimates was valid implies that some brewers produced over 30,000 barrels of beer annually between the 1590s and 1620s.

Below these largest brewers were others operating at about half of their scale. In 1593, there were 10 brewers consuming between 100 and 150 quarters/week, and the company asserted in 1595 that 80 quarters was the average consumption of the

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'Mr' (Abraham?) Campion (60), (Joseph?) Jacques and Haunce, partners (120), 'Mr' (William?) Hudson (80), John Vanhulst (100) and Mary James (120); for Fleet Street and westward 'Mr' (Thomas?) Draper 80; for Southwark Cornelis Deneva (80), John Burdle (60), 'Mr' (John) Powell (120), Henry Draper (60) and James Smith (80); for Smithfield, Newgate Market, St Giles and Islington none; for Bishopsgate, Whitechapel, Hoxton, Deptford and 'Fanchurch' none. Another 59 brewers used less than 60 quarters of malt weekly. LMA CLC/L/BF/B/001/MS05445/009, at 12 Apr. 1593.

<sup>53</sup>TNA PROB 11/102, fols. 38v–39; PROB 11/103, fols. 112–13.

<sup>54</sup>TNA REQ 2/420/133; REQ 2/392/83.

<sup>55</sup>For Bradshaw's association with Sir Edward Coke, a leading opponent of non-parliamentary taxation, see A. Thrush, 'Bradshaw, Joseph (aft. 1585–1632)', at [www.historyofparliamentonline.org/volume/1604-1629/member/bradshaw-joseph-1585-1632](http://www.historyofparliamentonline.org/volume/1604-1629/member/bradshaw-joseph-1585-1632), accessed 10 Aug. 2023.

<sup>56</sup>One brewer's records showed that brewing *peaked* during summer months. TNA REQ 2/392/83, fol. 3. Summer brewing was also normal in Norwich during the 1660s: TNA E1/637/5. Early seventeenth-century fines for brewing on Sundays also show year-round production: LMA CLC/L/BF/B/001/MS05445/0010–11.

27 common beer brewers. In 1612, moreover, the company ordered its own members temporarily to avoid brewing more than 4 times per week, or more than 24 quarters per brew.<sup>57</sup> Exceeding 100 quarters weekly, then, was thought to be common for some members, and Smyth similarly asserted that over 20 operated on this scale, followed in 1621 by a parliamentary debate making a similar claim.<sup>58</sup> This implies as much as 20,000 barrels annually. Altogether then, it seems that a few unusually large London breweries produced over 30,000, even up to 40,000 barrels, in some years. Just below these largest producers were another group of perhaps a dozen leading brewers who usually produced about 20,000 barrels. This is not the picture described by Mathias, who argued that production of 34,000–55,700 barrels per year in 1748 was ‘unprecedented’, totals of a new booming industrial age.<sup>59</sup>

In fact, however, individual breweries during the Elizabethan period expanded in parallel with the trade as a whole, such that the largest brewery in Shakespeare’s London would probably still have been the fifth largest in the city of Samuel Johnson. In addition to their exploding scale, Mathias also argued that eighteenth-century brewhouses were increasing their market share, growing rapidly at the expense of smaller competitors during a period of shrinking overall demand. He noted that by 1748 the first 12 of the 158 common brewhouses produced 42 per cent of London’s total.<sup>60</sup> Around 1600, however, a similar picture already emerges. In 1593, 11 out of 79 brewers were recorded as using 100 or more quarters of malt per week, making them responsible for a nearly identical proportion of London’s consumption.<sup>61</sup> In the 1590s, not only were several brewhouses producing on a large scale, but they also far outstripped their fellow brewers in ways that Mathias thought could only have begun after the porter revolution of the eighteenth century.

This early growth was matched by an improving social and political position. In the late seventeenth century, Mathias finds leading brewers enjoying ‘heightened status’, including one who was a London aldermen, several serving as Southwark MPs, more who were knighted and one whose daughter married a peer.<sup>62</sup> But much the same can be observed at the beginning of the century. Brewer William Mayhew was Southwark’s MP in 1610 as was Richard Yearwood, who had interests in local breweries, in six separate parliaments. Joseph Bradshaw sat for Westminster in 1628, and Isaac Penington, future lord mayor, MP and member of council of state during the 1650s, who was important enough to die a prisoner in the Tower in 1661, had been a partner in a Whitefriars brewery during the 1630s.<sup>63</sup> Brewer Samuel Cranmer was a London alderman and sheriff during the same years, and Southwark brewer Richard Tufnell sat in the Short Parliament of 1640. Many others acquired substantial land holdings, including Jacob Wittewronge whose son became Hertfordshire gentry.

<sup>57</sup>LMA CLC/L/BF/B/001/MS05445/0013, at 16 Oct. 1612.

<sup>58</sup>TNA REQ 2/420/133; J.P. Ferris, ‘Snelling, Robert (-d.1627)’, at [www.historyofparliamentonline.org/volume/1604-1629/member/snelling-robert-1627](http://www.historyofparliamentonline.org/volume/1604-1629/member/snelling-robert-1627), accessed 10 Aug. 2023.

<sup>59</sup>Mathias, *Brewing*, 22.

<sup>60</sup>*Ibid.*, 23, 544.

<sup>61</sup>LMA CLC/L/BF/B/001/MS05445/009, at 12 Apr. 1593.

<sup>62</sup>Mathias, *Brewing*, 7.

<sup>63</sup>Thrush, ‘Bradshaw’; A. Davidson, ‘Mayhew, William (-d.1612)’, at [www.historyofparliamentonline.org/volume/1604-1629/member/mayhew-william-1612](http://www.historyofparliamentonline.org/volume/1604-1629/member/mayhew-william-1612); A. Davidson, ‘Yearwood, Richard (c.1562–1632)’, at [www.historyofparliamentonline.org/volume/1604-1629/member/yearwood-richard-1562-1632](http://www.historyofparliamentonline.org/volume/1604-1629/member/yearwood-richard-1562-1632); K. Lindley, ‘Isaac Penington’, *Oxford Dictionary of National Biography*, at [oxforddnb.com](http://oxforddnb.com), all accessed 10 Aug. 2023.

Richard Platt's huge estate funded a substantial school, still thriving, at Aldenham in Hertfordshire; Abraham Campion left thousands of pounds in cash as well as manors in Hampshire; and Roger James left an Essex manor to his heir who became an MP.<sup>64</sup> James Desmaistres, finally, was prominent enough for parliament to naturalize him in an act of 1607.

If there was any gradual increase in the social standing of brewers during the seventeenth century it is likely to stem not from new wealth but from their gradual integration into London's mercantile community. Most of the great brewers of the mid- and late sixteenth century were immigrants, often Protestant exiles, from Germany, the Low Countries or France, and therefore needed a few generations to become integrated into the civic elite. Their strongest ties, for a generation or more, were with fellow migrants and fellow members of the French and Dutch churches.<sup>65</sup> Brewing was perceived to be dominated by foreigners, with one late Elizabethan survey counting 36 'stranger' brewers within the wards of London, and another 49 in suburban Surrey and Middlesex.<sup>66</sup> What changed was their integration into civic networks, their familial and religious ties and how they were perceived by others, rather than their wealth.

One final factor that rendered breweries prominent in London by about 1600 was their physical concentration along the river. Because they required cheap access to large supplies of grain, fuel and water, almost all large houses were near the Thames, clustering in particular areas. While it is sometimes repeated that such polluting and resource-intensive industries were relegated to suburbs, this was not the case. 'By Thames you shall have brewers store', observed the poet Isabella Whitney in 1573, and the company's records agreed that most brewing was indeed near the water and within the city's jurisdiction.<sup>67</sup> The 1593 assessment was divided into six districts, with the riverside areas of St Katherine's, Thames Street, 'Fleet Street and Westward' and Southwark combining to use 2,731 quarters of grain per week, against only 213 for the district including the city's northern parishes and suburbs, and only 152 for a district comprised of eastern suburbs, both riverside and not. The largest houses were either within the City or in liberties such as St Katherine's and Whitefriars, areas subject to many if not all of the corporation's powers.<sup>68</sup>

As London grew, new brewhouses appeared and existing establishments expanded to meet booming demand. Such expansion occurred for Bond's establishment in Westminster which, as he claimed to parliament, originally dated from the 1460s.<sup>69</sup> A similar case is a brewhouse at Charing Cross, dating from Henry VIII's reign but large enough by the seventeenth century to annoy the nearby palace at Whitehall in the 1630s and 1660s.<sup>70</sup> What was new about such brewing during the reigns of Charles I

<sup>64</sup>Campion will, 1611, TNA PROB 11/117, fols. 221–222v; A. Davison and B. Coates, 'James, Sir Roger (1589–1636)', at [www.historyofparliamentonline.org/volume/1604-1629/member/james-sir-roger-1589-1636](http://www.historyofparliamentonline.org/volume/1604-1629/member/james-sir-roger-1589-1636), accessed 10 Aug. 2023.

<sup>65</sup>Luu, *Immigrants*.

<sup>66</sup>Huntington Library, San Marino, California, Ellesmere MS 2514.

<sup>67</sup>I. Whitney, 'The maner of her wyll', in *A Sweet Nosegay, or Pleasant Posy* (1573).

<sup>68</sup>I. W. Archer, *Pursuit of Stability: Social Relations in Elizabethan London* (Cambridge, 1991), 234–6.

<sup>69</sup>TNA SP 16/499/20.

<sup>70</sup>TNA E367/1035; see also the 1621 'Platt of certayne howses scituate neere Charing Crosse', Westminster Archives. Acc. 1815. Cavert, *Smoke of London*, 189.

and II was not its scale but its location, as London's spread up and down the river prompted additional breweries away from the central district in which had clustered the prodigiously large breweries of the Elizabethan period.<sup>71</sup> From the later seventh century, convenient access to water supplies from the Thames had become less important as the New River Company's pipes allowed for breweries to be increasingly found along and outside the walled city's periphery.<sup>72</sup> By the mid-eighteenth century, the New River Company's records show that its largest customers were brewers, who no longer clustered around the river in the ways that their Elizabethan predecessors had done.<sup>73</sup>

### Conclusion: implications and questions

It has been argued that the rapid expansion of large London breweries during the century after about 1730 built on an industry that was already quite substantial and had been so since the later decades of the sixteenth century. This has been presented as a critique of Mathias' great work on eighteenth-century brewing, but it has only addressed the earliest stages of his story rather than the period after 1750 when his company archives become illuminating. If Mathias overstated the eighteenth century's changes, it follows that the rest of his account may also have early modern antecedents. If metropolitan brewers of the sixteenth and seventeenth centuries operated on a larger scale than has been appreciated, then we need to ask some of the same questions of the early modern industry which Mathias asked of the industrial period.

What, for example, was the precise chronology of sixteenth-century growth, and what was the relative importance of an expanding urban market, technological development and immigrant expertise? In the absence of the brewery archives used by Mathias, what can be known about the operation of breweries as firms? One London parish recorded the burials of 95 brewers but 624 brewers' servants from 1654 to 1693, about 6.6 servants per brewer, suggesting large operations with a separation between management and labour even in a parish away from the river.<sup>74</sup> Large operations had many more employees than this, as totals over 20 and even 40 were recorded during the 1590s and following decades.<sup>75</sup> If this was common, then brewers must have developed systems to manage and organize such labour forces. Large operations also must have had sophisticated ways to acquire grain and deal with customers. It is clear that they extended significant credit, as in the case of Mrs Randall who was owed £300 by the Middle Temple in 1620, or Abraham Campion who in 1601 submitted a bill to the new East India Company for almost £650.<sup>76</sup> Company and legal records might illuminate how large operations received and

<sup>71</sup>Cavert, 'Environmental.'

<sup>72</sup>C. Spence, *London in the 1690s: A Social Atlas* (London, 2000), 116.

<sup>73</sup>L. Tomory, *The History of the London Water Industry 1580–1720* (Baltimore, 2017), 190.

<sup>74</sup>T.R. Forbes, 'Weaver and cordwainer: occupations in the parish of St Giles without Cripplegate, London, in 1654–1693 and 1729–1743', *Guildhall Studies in London History*, 4 (1980), 121.

<sup>75</sup>Luu, *Immigrants*, 276.

<sup>76</sup>LMA CLC/L/BF/B/001/MS05445/0013, at 9 May 1620; H. Stevens (ed.), *The Dawn of British Trade to the East Indies as Recorded in the Court Minutes of the East India Company 1599–1603* (London, 1886), 155.



extended credit, how they procured their grain and fuel and on what bases they supplied their customers.<sup>77</sup>

Excise records may be revealing regarding the nature and scale of the industry during the later seventeenth century when brewers resisted or accommodated themselves to new taxation.<sup>78</sup> The trade as a whole probably suffered by this tax, and yet the way it was administered and, in its early decades, farmed by leading brewers themselves shows that not all brewers lost out with the creation and expansion of the excise. The Brewers' Company relationship with the state was complex in other ways as well; some of its members attracted the crown's attention for polluting the air around Westminster, while others made their fortunes supplying the court, the royal navy or the growing fleets of the chartered trading companies and colonial trade.

The range of possible interactions with the state during the seventeenth century is nicely illustrated by the various fortunes of Michael Arnold and his family. Before his operations were criticized as smoky nuisances by the privy council during the 1630s, Arnold was brought up in the trade that his father had practised near the court in Westminster. When he came of age during the 1610s, the family's brewery was managed by his mother, and their complaints to the Brewers' Company regarding unpaid debts shows that their clients included some of Westminster's resident nobility.<sup>79</sup> His testimony during Laud's trial presents him as the victim of illegal oppression, but he also attempted to become a patentee for a new variety of heating vessel during these years, showing that he could try to turn royal anti-smoke policies to his own benefit.<sup>80</sup> During the 1640s and 1650s, he continued to extend credit and to use the legal and punitive machinery of the state to collect debts owed. His trade remained lucrative, and by Arnold's death in 1659 he was able to style himself a gentleman. His son, moreover, soon became an excise farmer, the king's brewer and MP for Westminster.<sup>81</sup> But Michael Arnold junior paid a heavy price for his association with the crown, and his heir later complained of his 'barbarous' usage by those who called him a Jacobite, which also caused the son to abandon the trade.<sup>82</sup> Others in the family, however, continued to prosper into the eighteenth century.<sup>83</sup> Such diverse and divergent relations with the state should indicate the inadequacy of Mathias' simple depiction of the seventeenth-century Brewers' Company as complacent and conservative *rentiers*, uninterested in expansion.<sup>84</sup> They did indeed fight

<sup>77</sup>Brewers stated in 1595 that the 'shires supplying our want of corn' included every county in south-eastern England, every county on the east coast south of Yorkshire and the Thames valley as far west as Oxfordshire and Berkshire. LMA CLC/L/BF/B/001/MS05445/0013, at 21 Oct. 1595.

<sup>78</sup>Krenzke, 'Change', and 'Resistance'.

<sup>79</sup>LMA CLC/L/BF/B/001/MS05445/0013, at 8 Feb. 1619/20; LMA CLC/L/BF/B/001/MS05445/0014, Brewers' Company court minute book 1620–28, at 5 Feb. 1624; LMA CLC/L/BF/B/001/MS05445/0015, Brewers' Company court minute book 1628–34, at 11 Nov 1629; LMA CLC/L/BF/B/001/MS05445/0016, Brewers' Company court minute book 1634–42, at 12 Jul. 1638.

<sup>80</sup>Cavert, 'Environmental'.

<sup>81</sup>TNA C 10/39/3; TNA KB27/1761, r. 765; TNA PROB 11/288, fol. 4; E. Cruickshanks, 'Arnold, Michael (d.1690)', at [www.historyofparliamentonline.org/volume/1660-1690/member/arnold-michael-1690](http://www.historyofparliamentonline.org/volume/1660-1690/member/arnold-michael-1690), accessed 10 Aug. 2023.

<sup>82</sup>R.P. Mahaffy (ed.), *Calendar of State Papers, Domestic Series, of the Reign of Anne, Preserved in the Public Record Office, 1702-1703* (London, 1916), 619–20.

<sup>83</sup>TNA PROB 11/466, fols. 3–4, will of Nehemiah Arnold, 1701.

<sup>84</sup>Mathias, *Brewing*, 5–6.

to protect their corporate privileges, and may perhaps have benefited themselves to the detriment of overall efficiency, but this does not mean they were uninterested in new opportunities. The state's many powers and requirements, as well as the enormous market provided by the capital, provided brewers with a range of possibilities, allowing some to prosper as others suffered.

The story of brewing in early modern London, then, fits within a broader narrative of economic development and social change from the sixteenth through eighteenth centuries that stresses dynamism, growth, change and unbounded intellectual, philosophical and political ambition.<sup>85</sup> The dramatic changes of industrialization in general, charted by Mathias for brewing in particular, built on significant earlier foundations. Despite the eventual explosion of midland and northern industry, London was central to this process as the locus of the largest and most diversified site of manufacturing in early modern Britain. The brewhouses of early modern London were among the most visible examples of this: emblems of urban industry and industriousness, large, complex, productive and polluting enough to complicate any simple distinction between the modern world of the factory and the 'pre-industrial' world preceding it.

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<sup>85</sup>E.g. Nef, *Coal*; K. Wrightson, *Earthly Necessities* (New Haven, 2000); K. Yamamoto, *Taming Capitalism before Its Triumph: Public Service, Distrust, and Projecting in Early Modern England* (Oxford, 2018); V. Keller, *The Interlopers: Early Stuart Projects and the Undisciplining of Knowledge* (Baltimore, 2023); M. Park and J. Luiten van Zanden, *Pioneers of Capitalism: The Netherlands 1000–1800* (Princeton, 2023).