

Eighteenth Century Britain's Missing Sawmills: A Return Visit¹

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Introduction

Writing about the large sawmill built in 1767 in London at Limehouse close to the Thames I surmised in an earlier article¹ that it seemed at the least not to have been a commercial failure². However, in a subsequent article by John H. Appleby in *London Topographical Record* he quotes Daniel Lysons's observation in 1795 that the mill 'still exists, but has not been employed for many years'³. Failure, however caused, does after all seem to have been its fate and its life a short one, considering the much longer life of windmills generally and the substantial fixed investment involved.

Origins of the Limehouse Mill

This sawmill featured in my article because it had been promoted by the Society for the Encouragement of Arts, Manufactures, and Commerce with Charles Dingley, timber merchant, as owner and James Stansfield as its designer, to demonstrate the feasibility of sawmilling in Britain. Robert Dossie, an active member, believed that Britain, already importing large amounts of unsawn and sawn timber, should saw with mills as was already done by the Dutch on a large scale and in other parts of northern Europe as well. He made the proviso, however, that such British products should be no dearer than imports.⁴ Uncompetitive costs are obviously one possible cause of failure but no evidence is so far available. Appleby's article reveals other possible causes: Dingley's death in 1769; his severe financial misfortune to which he referred in 1767; and the financial failure of his trading partner in 1779. Appleby describes the partners as having been overstretched since 1767.⁵

Such circumstances were clearly unfavourable to an innovation that involved a large investment of fixed capital, an even larger commitment of working capital for timber, and good understanding of its management. However the actual cause or causes of failure remain unclear.

Whether or not the mill was still at work in 1782, the Society of Arts declared in its *Transactions* for that year that 'sawmills are now firmly established in England.'⁶ Unfortunately they gave no details of their number or location and other evidence is slight before the nineteenth century.⁷ There was then a quite rapid growth in numbers but usually powered by steam and probably considerably more productive than wind or water mills. We seem therefore to be glimpsing at most an infant industry in the eighteenth century which was showing little sign of the vigorous growth that would have been needed to match the Dutch.

The Role of the Hand Sawyers

Considerations of productivity, finance and management do not comprise all that bears on the fortunes of eighteenth century sawmilling. There is also the hostility of the manual sawyers to be assessed. I outlined the indications of the determination of those men and their friends to protect - as they saw it - their livelihood from the machines, if necessary by smashing them. That is what they did at Limehouse in 1768, only to see the mill repaired at public expense and an Act of Parliament passed against machine breaking (prompted also by attacks on cotton spinning machines in the north of England). Overt violence may have been checked but intimidation and shaming of men who worked at the mill may not have been difficult. The moral economy of the crowd in those times could, as E.P. Thompson showed, be expressed effectively. If sawmilling seemed likely to be at best only modestly profitable then the risk of incurring the sustained resentment of the manual sawyers could have been enough to deter entrepreneurs.

The Implications of Foreign Timber

Foreign timber has already figured in these remarks. It also has an important bearing on the main conclusion of my previous article, which was that resort to sawmilling in Britain was hindered by a gradually increasing and widespread scarcity of timber, especially in the form of substantial forests and plantations, a difficulty not common on the Continent - although the districts of Holland where sawmills were established seem to have relied on imports. It needs to be said that my suggested explanation is attenuated, as Professor P.K. O'Brien has remarked, by the implications of timber imports.⁸ Such imports can be viewed as an alternative source for milling to the extent that they were economically available. Considering that the cost of timber was probably doubled by twenty miles of carriage on land in the eighteenth century, it can be seen that sites for sawmills using imports depended on proximity to water transport, as at Limehouse, which was much cheaper. Water transport was also likely to have been important in determining a market of sufficient size to keep a mill fully employed and more likely to be profitable. Another aspect of imports is that in the form of sawn wood, so readily available in ports such as London, it may - as Dossie allowed to be possible - have been cheaper than a local industry could match.

The Dutch Industry

Dossie's caution was well founded in view of the strength in particular of the Dutch economy, from which came much of Britain's imports of sawn timber. Jurrie Van Dalen and Barrie Trinder give a succinct description and explanation of the remarkable growth of the trade and shipping of the Netherlands to a pre-eminence in the seventeenth century that was maintained into the following century.⁹ It was in this setting that sawing of wood in windmills was developed on a large scale and with a concentration of locality that was unmatched elsewhere. A principal function of the mills was to meet the needs of Dutch shipbuilding which, together with the mills, developed most rapidly in a small area along the river Zaan north of Amsterdam. Some of the yards had their own mills and a number of mills were owned by the Dutch East India Company. Supplies of timber were assured by the country's well established ocean shipping which used the most efficient vessels of the age for transport from Scandinavia and the Baltic where material was abundant and cheap, which it was not in Holland. Timber was also floated down the Rhine, probably the least

costly of all means of transport.¹⁰ The flat lands around that river's delta offered further cheap transport. The open character of the land was also favourable to steady operation of windmills. These circumstances were important to decisions about the investment of relatively large amounts of capital in the mills compared with the requirements of hand sawing.

Data about the costs and profits of sawmilling are lacking but an impression of its potential for savings of labour is given by the observation that a mill sawed as much timber in four or five working days as took sixty days by hand. Sawing by wind power is credited to the invention of Cornelis Corneliszoon, a hand sawyer and millwright, who designed a mill in the last decade of the sixteenth century which included crankshafts so arranged that they increased the efficiency of the process.¹¹ By 1630, 83 mills had been built north of Amsterdam, 53 of them in the area called the Zaanstrek. The largest number of mills was reached in 1731 at 450, of which 256 were along the Zaan. A single village, Westzaandam, had 159 sawmills (and 35 for other uses).¹²

The Importance of Demand: Dutch Shipbuilding

What does this view suggest about the failure of London's solitary mill and the absence of mills generally from coastal places where imported timber for sawing was readily available? Timber supplies in Holland may have been cheaper because of the efficiency of their trading and transport but the really striking difference, I suggest, is the close involvement of Dutch mills with the fast-growing shipbuilding industry. This dynamic connection, rather than the needs of building construction, seems likely to have been the prime stimulus to sawmilling. Profitable investment was more secure when faced with such strong demand. Also of some importance was concentration in a rural area free of a city's constraints on space - mills in Amsterdam were checked by that difficulty - and free too, maybe, of craft and civic restrictions. Such a concentration was also likely to have favoured provision of knowledge, skills and services. Timber auctions, for instance, were established.¹³

The situation along the coasts and estuaries of Britain looks less favourable. Shipbuilding was a scattered industry. In the seventeenth and eighteenth centuries it underwent no development comparable to that of the Dutch industry. Indeed, Britain was among several European countries that bought Dutch ships. There was, however, a significant episode at the beginning of the nineteenth century during the Napoleonic Wars when high and urgent demand in the naval dockyards was met by setting up sawmills and by invention of a variety of woodworking machines.¹⁴ Otherwise, it remained for growing urban demand in later decades, together with the greater efficiency of steam power and the effect of a tariff on imports of sawn wood, to bring about a sawmilling industry in Britain.¹⁵

The Survival of Hand Sawing

Against this background how can one account for the survival of manual sawing in the face of imports, so that it continued well into the nineteenth century, only succumbing to the efficiency of the steam powered mills? It probably had two advantages in the earlier period over wind and water mills. Hand sawing required very little fixed capital, which was an advantage to employers, especially in times of slack trade when an idle mill would have been a heavier expense. It was also much more mobile. Sawpits could be dug quickly wherever needed. Hand sawing can therefore be understood as a niche sector, gradually declining in relative importance over a long period, first from the competition of foreign machine sawn imports and in the end from steam power.

Sawmills on the Spey: an Illuminating Exception

Understanding of the 'missing' sawmills can be furthered by one more set of observations. In the north-east of Scotland on the River Spey there were sawmills for which there is evidence both in the first half of the eighteenth century and again from 1786 into the following century. The York Buildings Company of London - established to provide the city with a waterworks - undertook in the 1720s and 30s a variety of mining and metallurgical enterprises in the Highlands as well as several ventures into timber. Their undertaking on the Spey included water powered mills amounting to at least 20 by 1735. There were already some mills on the site when the company acquired it. The aim was to send products to England, particularly to meet the needs of the Royal Navy. Initially these efforts had limited success and the business lost money. Nevertheless, the Company persisted: better mills were built, roads were made through the forest, and the floating of timber down the river to its mouth was improved by the use of rafts. These facilities continued in use after the company's failure in 1733.¹⁶

A more successful enterprise was that of William Osbourne, described as the leading timber merchant of Kingston-upon-Hull, who between 1786 and around 1806 employed his mills at the mouth of the Spey to provide wood for his shipyard there which he named Kingston-upon-Spey (the name has survived). The Scottish fir that he used, 'good enough for the royal dockyards at Deptford and Woolwich', was probably floated down the river.¹⁷ Here, in microcosm, we see a version of the Dutch industry with its efficient transport of supplies of material and strong integration of sawing with shipbuilding.

Osbourne's withdrawal from the Spey was not the end of sawmilling there although the outcome for his shipyard is uncertain. Mills were still at work in the 1820s according to the German traveller, H. Meidinger, who wrote that timber from the Duke of Gordon's forests was floated by the London Timber Company to Garmouth near the river's mouth for sawing and shipped mostly to Deptford and Woolwich on the Thames at London.¹⁸

Conclusion

Osbourne and other businessmen would no doubt have invested in sawmills elsewhere in Britain had they perceived opportunities comparable to the Spey. The indications so far are that throughout the seventeenth and eighteenth centuries there was little to interest them. Suitable stands of domestic timber were becoming scarce and means of moving it by water were limited. Profitable milling of imported timber faced the competition of well established continental suppliers, especially the remarkably well organised Dutch industry.

There is, however, another side to the scarcity of domestic timber. It was helping to stimulate coal mining to a much stronger development than on the Continent, thereby laying the foundation of a transformation of Britain's economy that opened the way to worldwide industrialisation.

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- 5 Appleby, p.190.
- 6 'Missing Sawmills', p.37.
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- 11 Dobber and de Vries, pp.12-13 and 17.
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- 17 Gordon Jackson, *Hull in the Eighteenth Century*, (Oxford, 1972), pp.185-6.
- 18 Cooney, 'Missing Sawmills', pp.39-40.