

Economy and Society 1600-1719

Trade and Industry, 1600-1719

From Robert Bowes's salt-making initiative in the 1580s, there followed commercial growth and a rapid transformation into a town. The Sunderland salt-pans were not themselves very successful, but these early endeavours generated a minerals trade, in both salt and coal, and a merchant fleet which brought new life to the quiet harbour.¹ By 1634 the port was busy, frequented by English and foreign ships 'introducing and importing merchandize, goods, and other saleable articles, and exporting... seacoals, grindstones, rubstones, whetstones, and other merchandize'.² During the decade of the 1700s, when a visitor described Sunderland 'being crowded with company there being such a fleet in', thousands were employed in transporting coal from the Wear, and despite the still 'ill condition of the harbour' about 160,000 tons of coal were shipped out annually.³

The Sunderland fleet and a growing trade

At the beginning of the 17th century, much of the coal leaving Sunderland was collected by ships from the destination port, towns on the east coast including Scarborough, Hartlepool, Bridlington, Whitby, Hull and Yarmouth, or in London or Kent, like Dover and Sandwich. Wearside had very few of its own collier ships, boats such as *God's Grace*, *God's Help* and *Grace*.⁴ There were also ships coming from the continent, in 1606 the *Princerne* of Flushing, which carried 28 chaldrons, about 74 tons, and the *Lucas* of Boulogne (26 chaldrons). Others traded from France, the Netherlands, the Baltic and even Turkey. Butter and salt were exported alongside coal, or uncast Weardale lead, men's and children's stockings, and seasoned rabbit skins. In exchange came malt, rye and peas from southern of England; from overseas, wrought (worked) and unwrought flax, soap, hops, Norwegian deals (sawn timber), rye, fir balks (timber beams), buckstones, pantiles, tar, oil and tow (flax fibre), as well as hogsheads of French wine, cider, *aqua vitae*, apples, honey, prunes, tons of beef, copy paper, playing cards, sugar loaves, currants, raisins, nuts, ginger, cinnamon, cloves, pepper, starch, clay boards, fustian (coarse cotton and flax cloth), canvas, silk points and bone lace buttons. Some of these goods were used in local industries, especially for ship-building and its associated trades. These imports suggest a town of increasingly sophisticated tastes, and with the means to pay for such luxuries. The grain and other foodstuffs supported a growing population, and enabled townspeople to concentrate on trade and manufacture rather than agriculture. Timber and pantiles were used for new and improved dwellings and commercial premises.⁵

This thriving commerce was severely disrupted by civil war, and overseas trade continued to suffer under the interregnum and throughout the Anglo-Dutch wars, 1665-7 and 1672-4. Commercial rivalry was at the root of hostilities with the Dutch, which impacted seriously upon Sunderland's coal exports.⁶ Domestic sales compensated, and in the 1660s there were signs that foreign markets were again opening. In 1666, coals were loaded into ships from Emden, Tønning and Hamburg, and thereafter foreign vessels, from places such as Calais, Yarmouth and Dover,

heading for Amsterdam, Rotterdam, Tangiers, Hanover, Dunkirk and Ostend, increasingly came into Sunderland for coal. The loads varied from seven to 38 chaldrons (about 20 to 100 tons), depending upon the size of the vessel.⁷

Imports at this time included 'spruce' (Prussian) yarn, timbers, apples, wires, linseed, hemp, flax and tow, pan tiles, malt, barley, leather, mixed grain, rye, codfish and wheat. By 1670 Sunderland was importing thread from Ostend, earthenware and Rhine wine from Rotterdam, Silesian broadcloth and damask for tabling and linen drapery from Ostend, as well as Norwegian timber, French canvas, pantiles from Rotterdam, aquavitae from Dunkirk and iron from Flushing. Loads to Rotterdam and Ostend, though mainly consisting of coal, could include butter, grindstones, woollen stockings, short cloths and lead.⁸

With the renewal of war, coals exported filled only two pages in the port books in 1673. Fewer ships came from abroad, though there were arrivals from France, Germany and parts of the Low Countries. New products and luxuries were imported from English ports: soap, tobacco and brandy from London, herrings and butter from Yarm, peas, beans and wheat from Bridlington, barley and malt from Scarborough, tarred ropes from Boston, paper, shot, beer, pitch and resin from London, and alum from Whitby. In 1679 new kerseys (worsted cloth) came from Newcastle, and from London, English spinets (small harpsichords), brandy, linen drapery, tobacco, a coach harness and three cases of looking glasses.⁹

New markets for Sunderland coal opened up in the 1670s in Scandinavia, the Low Countries and Germany, at Christiansand, Flekkefjord, Flushing, Gothenburg, Grimstad, Helsingør, Lübeck, Middelburg and St Valerie. By 1677 coal, lead, grindstones, butter, worsted and woollen stockings were being sent to Calais, Emden, Rotterdam, Amsterdam, Boulogne and Newhaven. The stockings were knitted by rural workers, and lead mined in upper Weardale.¹⁰ Sunderland's own colliers in 1678-9 sailed primarily to east coast destinations – Whitby, Hull, Colchester, Boston, Scarborough, Grimsby, Yarm, London, King's Lynn, Stockton and Ipswich – while ships from these places brought malt, peas, herrings, rye, apples, soap, wine vinegar, hops, tobacco, and haberdashery, bundles of cotton, framed chairs, rugs, blankets, iron bars, worsted fringe, lead, oil, lathes, iron and tanned leather.¹¹

Much of what was brought in was used in shipbuilding. During the 1680s, 'trunnells' (wooden treenails) and pitch came from Emden (Germany), specially sawn timbers from Norway, and poldavy (coarse canvas) from Amsterdam. Bigg (inferior barley) and malt were also imported if there were local shortages. Annual imports of Rhenish (Rhine) wines and drinking glasses, alongside the gallons of 'Holland spirits' and 'Scotland's spirits' point to more sophisticated tastes, and luxuries from London included a 'pot of pickled cucumbers' and 'three chests of gingerbread'. Exports abroad in the 1680s were overwhelmingly of coal, with smaller amounts of butter, lead, grain, grindstones, textiles such as Yorkshire kerseys, and tanned leather. There was a little salt – it disappeared completely from the records by 1704 – and

occasionally kelp, probably gathered locally. Copenhagen and Bruges were new destinations for Sunderland exports during the 1680s.¹²

More than a quarter of the Wear coal sold on the home market in 1682-3 went to East Anglia, 12 per cent to Lincolnshire, and a little over a fifth each to Yorkshire and London. Newcastle at this time was supplying more than 70 per cent of London's coal, but the capital's growing demand meant that it took almost 40 per cent of the Wear's output by 1691. Cinders, apples, pipe clay (probably from Silksworth) and tobacco pipes joined the roll of Wear exports during the 1690s. 'Apothecary wares' came in from London alongside the usual luxuries, 'Scotch linen cloth' and yarn in 1697, and in 1696 there was a marked increase in grain imports to make up a local dearth.¹³

This pattern of trade continued into the 18th century. Boats from Sunderland, Whitby, Hastings, Scarborough, Stockton and Lowestoft shipped out goods in 1702, and coals, in quantities ranging from 30 to 100 tons, delivered to various English ports, and to Amsterdam, Dieppe, Dunkirk and Hamburg. Some of the ships carried additional items, such as the *Hopewell* of Sunderland, with 29 chaldrons of coal and 300 glass bottles, and the *Jon* of Sunderland with 12 chaldrons of coal, 50 quarters of meal, and 10 quarters of peas. For construction or shipbuilding, wainscot, oak boards and keel poles came from Rotterdam. The *Hope* of Arendal, Norway, brought in 900 Norway deals, 100 tent spars, 30 oars, 500 treenails and 5,000 barrel staves. Deals, oak timber, barrel staves, great balks, middle balks, small balks, small spars, 1,000 treenails, 400 small masts and 40 oars came from Kristiansand, Norway, on the *St John*. Other items included '3,000 Scotch herrings', cloth, apples, prunes and 3,000 pan tiles from Rotterdam aboard the *Queen's Goodwill* of Sunderland. The *Hopewell* of Sunderland delivered 'barbers' aprons, 75 ells Holland duck, eight cwt. odd rope... 24 keel poles' and four iron pots from Amsterdam.¹⁴

In 1704, Wear coal was reaching Holstein, 'Marylandsluce', Dort, Fredrikstad and 'Easterice' – perhaps Estoril – and more than 26 English ports. Also shipped out were 1,000 glass bottles, seven firkins of butter and three chaldrons of grindstones. The number of bottles had grown to 6,000 by 1711, pointing to an expanding local glass industry. A re-export trade was developing: of 586 rolls of tobacco from Whitehaven in 1704, 215 rolls were instantly re-exported, as was woollen cloth from the same source, and iron from Sweden.¹⁵

Rhenish and French wines, 41 and 43 gallons respectively, were received in 1710-11, and from Oporto in 1714 came 63 gallons of Portuguese wine. In 1718, 179 gallons of Spanish wines and 39 gallons of Rhenish wine were imported. A variety of English goods travelled in other directions: in 1712 the *Goodwill* of Sunderland left for Arendal with '120 bushels of rye, 300 bushels of malt, £214 worth of woollen manufactures, 10¾ yards of 16-pound cheeses, and 80 pairs of shoes'. On board the *Martin Blackney* in 1712 were '11 chaldrons of coal, 1,000 glass bottles, two chaldrons of grindstones' and lead, bound for Dunkirk.¹⁶

It appears that by 1715 there had been a significant increase in the size of ships, with some colliers loading from 55 to 78 chaldrons (about 150 to 200 tons) of coal. This largest shipment was carried by the *Jud and William* of Sunderland, bound for Amsterdam, and probably too big to load within the harbour bar, so loaded by keels offshore. The cargo of the *Prosperity* of Sunderland – which included 18,200 glass bottles – suggests a further multiplication in glass production.¹⁷

The coal trade and the local economy

Despite the tribulations of war, weather and shipwreck, and occasional epidemic, the 17th century saw a steadily upward trend in coal sales, with the domestic market more resilient than overseas trade. Lobbying by Tyne interests in 1608 resulted in a duty of 1s. a chaldron being applied to domestic sales of Sunderland and Blyth coal, and 5s a chaldron to overseas exports. While the export tax continued until 1641, supporters of the Wear trade in parliament succeeded in having the domestic levy cancelled in 1610.¹⁸ During the three years of the domestic tax, 1608-10, recorded sales averaged about 17,000 tons a year. The figure through the 1610s and 1620s was approximately double that. The Wear's growing prominence as a national source of coal was acknowledged in 1625, when James I issued a proclamation intended to stop the adulteration of north-east coal and ensure full payment of customs dues, referring to Sunderland alongside Newcastle and Blyth as the three centres of the north-east trade. The mid-1630s appears to have been a boom period, with around 70,000 tons shipped from the Wear in 1634. There are dramatic fluctuations in the figures, however.¹⁹ Trade was interrupted in 1637 by an outbreak of plague in Sunderland, which halted coal shipments to the royal alum works near Whitby, and presumably to other markets. In 1648 a deluge of rain swamped two collieries and reduced overall output. Meanwhile, increasing traffic highlighted the harbour's shortcomings.²⁰

The domestic market for Sunderland coal was largely fed through ports on the east and south coast of England. London was never so significant a customer as it was for the Tyne.²¹ By the 1670s and 1680s, coal sales from the Wear in the years for which information survives were running at around 50,000 to 60,000 chaldrons (130,000 to 160,000 tons). The price fluctuated, sometimes inflated by war or other adverse circumstances, though with a generally downward trend: in London, £1 12s. (32s.) per chaldron in 1666, a little under 21s. during the 1680s, and recovering to 25s. in 1700. Ship owners petitioned the Commons against increases in coal duties in 1689. The levy, charged by the Winchester chaldron, slightly smaller than the Newcastle measure, was reduced in 1694 to 3s. for domestic shipments and 10s. for foreign-bound loads, but soon afterwards raised to 5s. Again the north-east trade complained, having lost 200 sailing ships worth £200,000 in a storm in 1696, and the duty was reduced once more.²² Average sales from Sunderland in the four years to 1710 were 65,760 chaldrons, about 175,000 tons. The Tyne remained some distance ahead, at 178,148 chaldrons, or 472,000 tons.²³ But the Wear coal trade was entering a period of exceptional growth, topping 90,000 chaldrons in 1712, and reaching 100,000 chaldrons for the first time in 1720.²⁴

This success was accomplished in the face of fierce local rivalry, as Newcastle reacted to the growing power of its smaller neighbour. But Sunderland benefitted from several circumstances over the course of the 17th century, not least its pro-parliamentary allegiance during the Civil Wars. From 1639, a series of conflicts disrupted trade and threw into chaos the collection of coal duties.²⁵ In 1642, with 'every species of fuel so scarce in London' because of the hostilities, coals fetched up to £4 a chaldron. During the siege of Newcastle, the importance of the cluster of collieries around Biddick was such that a parliamentary garrison protected Sunderland.²⁶ It was in parliament's interests to promote the Wear trade over that of the Tyne. Miners were brought from the south, and the Wear collieries frequently debated in the Commons in 1644. Colliery leases at Lumley, Lambton and Harraton were removed from 'delinquent' Royalists or Catholics, to be granted in 1644 to loyal parliamentarians, Sir William Langley, George Lilburne and George Grey. The three also had restored colliery leases seized by Royalists at the start of the Civil Wars, and were compensated for coals taken by the enemy.²⁷

As Tyne keelmen agitated for higher pay in 1654, Sunderland was still in the ascendant. The hostmen of Newcastle were sufficiently alarmed by the time of the Restoration that in 1661 they petitioned for additional duty of a shilling a cauldron on Wearside coal and a port 'fast growing into rivalry'.²⁸ In this the hostmen succeeded, and the tax stood through the 1660s, but did nothing to restore Newcastle's advantage to the level it enjoyed before the free-for-all of the 1640s and 50s.²⁹ Doubtless it proved ineffectual because taxes were widely evaded. A visiting inspector noted in 1663 that 'no English custom is paid at Sunderland for coals'. While this may have been an overstatement, fraud was endemic, with generous loading of ships, and overseas exports passed off as domestic sales to avoid the higher levy. The customs officials were often overstretched, and in 1697 Sunderland could not pay its surveyors and receivers.³⁰ Bad weather and shipwreck added to the confusion, for lost cargoes were offset against customs dues. In severe conditions in summer 1714, the *Rose of Scarborough* carrying 35 chaldrons of coal from Sunderland to Amsterdam was lost. A 54-chaldron load was allowed to replace it free of duty 'with the affidavit of the Lord High Treasurer'. The *Conlunon* of Sunderland that same year took coal to Amsterdam, 50 chaldrons of which were to 'pass old duty free for the loss at sea of the *Unity*'. Misunderstandings ensued when storms forced Sunderland ships to take refuge unexpectedly in ports such as Yarm. If coal intended for overseas was instead landed in England, for example in the cases of the *Robert and Thomas* and the *Palmtree* which unloaded in London rather than Amsterdam in 1719, the master was allowed more export coal duty-free.³¹

The promoters of the Wear coal trade during this formative period were drawn from within its own ranks, and from the local land-owning gentry and salt industry. London merchants including Richard Evans and Josiah Primatt were involved as investors or money-lenders to the Wear collieries.³² There is evidence too of close connections to the North Riding alum industry – Whitby, a centre of alum production, was a heavy user of coal from Sunderland as early as 1611-12. In 1623, Richard Wynne of Guisborough, Yorkshire, where there was also an alum industry, and George Lilburne of Sunderland took over from Nicholas Barker of Gravesend, mariner, a coal

contract with Sir William Lambton 'touching the main coles at Lambton and keeles'. The wording, and the previous involvement of a ship's captain, suggests that this was about moving, rather than mining, coal. Before the middle of the 17th century, the system of port-based coal-fitters working in Sunderland under contract for one colliery had become well-established.³³

The volume of trade is itself evidence of how the mines around Biddick were expanding. Harraton, a great colliery long before the Civil War, developed under 'successive consortia of primarily local adventurers': firstly, John Sheppardson of Bishopwearmouth; then Conyers; then a partnership between George Grey of Southwick and George Lilburne. Christopher Wharton of Offerton had taken over the lease of Lumley colliery from Lilburne and Grey. In 1639 Lambton colliery was let by Sir William Lambton to Sir William Bellasis and George Grey for nine years; from 1651, managed by Grey and Lilburne as partners of 'two members of the greater gentry, Ralph Lambton and Sir William Bellasis'. When George Lilburne in his turn bought a quarter of Bellasis and Grey's lease, he found himself with a 'controlling interest in all the chief collieries on the Wear'.³⁴

By the end of the century, when the Wear united in opposition to a proposed navigation which would open up Yorkshire coalfields, it is clear that hundreds defined themselves as part of the local coal trade. The petition's signatories included not only those employed directly in winning and moving coal, but men with wider shipping, commercial and industrial interests. The prosperity of the town, and every trade within it, rested upon coal.³⁵

Industries, 1600-1719

Salt

Robert Bowes established salt production at the Panns in the late 1580s, but was soon in financial difficulty. His son Ralph recovered the various family assets, resumed business and built a quay in c. 1601 to export coal of higher quality than salt-boiling required. The Bowes enterprises had a synergy: the mine at Offerton, salt-making consuming dross coal, Ralph's lease of the borough, fisheries and ferry, and from 1601 his licence over the whole tidal area on the south bank of the Wear.³⁶

Several other coal trade entrepreneurs crossed over into salt-making, perhaps attracted by scarcity during wars with France and Spain, 1627-8, which pushed the price of salt as high as 10s. a bushel. This boosted the industry in northern England, where coal unfit for domestic uses could be had for little or no cost. Tyneside salt-makers were, however, favoured under the terms of a government monopoly for sea-salt in 1635, and Sunderland's output remained relatively small, perhaps a twelfth of that of South Shields in the 1640s. Wearside salt-making then used 300 tons of coal a year, compared with 3,600 tons consumed at South Shields, and was so modest in size that the town never merited its own salt inspector.³⁷

Sir William Lambton took a lease on the ten Bowes salt pans from 1635, which although having recently burned 300 tons of coal a year, had fallen 'out of repair'. John Sheppardson, Christopher Wharton, George Lilburne and George Grey all developed interests in salt.³⁸ The viability of the trade rested on levels of duty, in which the north east felt unfairly positioned compared with Scotland. Appeals to fishermen to preserve their catches with local salt proved ineffectual, and from about 1670 rock salt mined in Cheshire posed serious competition. Sunderland's entire output of salt may then have come from ten salt pans John Tempest had worked since the 1660s, presumably those at the Panns. Thomas Bateman was appointed collector of salt duty at North and South Shields and Sunderland in 1694, suggesting some limited production still, but the trade had virtually ceased by 1700.³⁹

Shipbuilding and associated trades Shipbuilding, with all its associated activities – making sails, anchors, masts, blocks, oars and ropes – while solidly founded, remained relatively small-scale before 1700. It grew substantially larger from the early 18th century, the era which saw 'a fundamental shift of English shipbuilding' to the north east. Vessels were then rather smaller than those built in East Anglia and on the Thames, but the tonnage of colliers was increasing, there was urgent need of replacements for ones lost in war, and a constant demand for keel boats.⁴⁰

Apprentices trained for specific types of work within the industry. Henry Armstrong was an apprentice shipwright in the 1620s. Robert Nicholson inherited a thriving Panns shipyard from his master, William Huntley (d. 1647), ship carpenter, with whom he had lived and trained. The witnesses were two other shipbuilders at the Panns, Francis Redhead and Roger Thornton. Huntley's estate, worth £63, was in trust for his four children, but Nicholson and his heirs appear to have continued Huntley's business. Robert Nicholson jun. left 'work gear, screws, two old boats, valued to £6 10s' as well as £15-worth of timbers and planks, in 1692; Adam Nicholson was a boat builder in 1667, and Ralph Nicholson a shipbuilder in the opening years of the 18th century. Members of the Goodchild family built small lime-carrying ships at Pallion from 1672 or earlier, a business which continued for 150 years, complementing their lime-kilns there. Thomas Burn, first noted as a boatbuilder at Monkwearmouth Shore in the 1690s, also established a shipbuilding business which lasted for generations. At his death in 1678, the shipwright Bryan Crosyer, of Sunderland, left a quay, timber, toolers (a type of broad chisel), and two pitch pots, valued in all at £7 10s., as well as a ballast keel and half an old coal keel worth respectively £8 and £4 10s. William Potts, a shipwright who died in 1679, bequeathed to his daughters premises between the low water mark of the Wear and Sunderland High Street.⁴¹

Seeing a growing demand for iron goods, especially nails, in shipyards, Ambrose Crowley (1658-1713) set up an ironworks in Low Street to make 'chains, edged-tools, files, hammers, locks, nails and every sort of smith's ware'.⁴² Crowley, a Quaker from Stourbridge who had been apprentice to a London ironmonger, calculated 'that very real material economic advantages would accrue to him' if he 'fix[ed] a nail trade at Sunderland'. Iron could be carried in for nothing, as it saved

ballast, as could any imports from Dort: 'The masters take it in instead of ballast it being a constant trade to carry coals from Sunderland to Rotterdam and Dort.' Workmen were 'easily procured' for 'planting', with victuals above a third cheaper than in the present nail country of the Midlands. 'The country is very poor and populous so workmen must of necessity increase'. Carriage to London and elsewhere was cheap: 'Frosts never freeze up Sunderland river so low as my warehouse and in my time frosts never hindered shipping a week...' The only danger to trade, he thought, was war with the Dutch, but this was remote, and even so 'the city [of London] cannot be without coals so I shall not need to be without carriage for my nails. And further there is several ships imploy'd in carrying coals to the plantations...' ⁴³

Crowley opened his Sunderland factory c. 1682-5. By this time he had left the Society of Friends and so was able to pursue, with success, contracts with the Royal Navy. He also sold large numbers of nails to shipyards on the Thames estuary and south and east coasts, and reckoned to be processing 24 tons of iron a week. Crowley probably began to make anchors in Sunderland in about 1690.⁴⁴ The stone-built ironworks he had built survived until 1918.⁴⁵ Despite Crowley's careful planning, he had not anticipated labour problems. By 1688 he employed over 100 workmen in Sunderland, of whom some – maybe only eight or ten – were Catholics from Liège. These men had 'taught the English workmen there to work better and swifter than formerly, and to make such nails as are used in Holland for sheathing of ships'. But the foreigners provoked hostility, and were driven away by George Harrison, Will Harrowsmith and others. In 1688, Crowley petitioned James II for tolerance, 'humbly pray[ing] that his workmen may not be molested on account of their religion or otherwise'. The king referred the petition to the attorney general, and the bishop of Durham was ordered to 'take speedy and effectual care that the petitioner's workmen be protected and quieted in their carrying on the manufacture'. But in 1691, Crowley moved his works to Winlaton, 4 miles west of Newcastle, and evidently abandoned the Sunderland factory.⁴⁶

¹ Origins, 96-102.

² DCM, Dean and Chapter Reg. 11, f. 269v. (in translation).

³ DULASC, DPR 1704; 'Compleat Collier', 9, 17, 22, 38-40, 44-54.

⁴ TNA, E190/187/5.

⁵ TNA, E190/185/6; E190/186/4B; E190/187/2; E190/188/8; E190/188/4; E190/190/5; E190/190/9; E190/190/12; E190/190/12; E190/191/9; E190/192/4; *Cal.S.P. Dom.* 1623-5, 140; 1625-6, 419.

⁶ *Origins*, 149.

⁷ TNA, E190/193/1, E190/193/6.

⁸ TNA, E190/194/1-2, E190/194/6, E190/194/7, ff. 15r-16r, 21r, 40r-v.

⁹ TNA, E190/195/7, E190/195/11, E190/195/15, E190/198/3; Hatcher, *British Coal Industry*, 494.

¹⁰ TNA, E190/195/13, E190/196/2, E190/197/2, E190/197/7, E190/198/5.

¹¹ TNA, E190/197/10 ff. 70r-100r.

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- ¹² TNA, E190/199/7, f. 14v, E190/199/4, E190/199/14, E190/199/1, E190/199/9, E190/200/8, E190/200/9, E190/201/6, E190/201/8, E190/201/12, E190/201/13, E190/201/16.
- ¹³ Hatcher, *British Coal Industry*, 499-500; TNA, E190/203/1, E190/203/7, E190/204/5, E190/204/8, E190/205/1, E190/205/3, E190/205/6, E190/206/8, E190/206/11, E190/207/1, E190/207/4, E190/207/6; Northumbs. RO, ZMI/B8/X/1.
- ¹⁴ TNA, E190/207/13, E190/208/4.
- ¹⁵ TNA, E190/209/5, E190/210/11, E190/209/19, E190/208/4, E190/210/5, E190/210/13, E190/216/6, E190/216/7, E190/217/1, E190/219/14, E190/220/4.
- ¹⁶ TNA, E190/211/3, E190/217/6, E190/216/6, E190/217/1, E190/219/14, E190/222/1.
- ¹⁷ TNA, E190/220/1.
- ¹⁸ East Sussex RO, GLY/477-9; *Cal.S.P. Dom.* 1603-10, 631; *LJ* 2, 639.
- ¹⁹ **Cross ref coal sales chart**; TNA, E190/187/5; Hatcher, *History of the British Coal Industry*, 82, 493-4; Francis L. Bickley (ed.), *Reports on Manuscripts in Various Collections, VIII (Wood, Clements, Unwin)* (Historical Manuscripts Commission, 1913), 195; WYAS, Leeds, WYL100/PO/6/VI/4-10.
- ²⁰ Garbutt, *A Historical and Descriptive View*, app., 39; Nef, *Coal Industry*, II, 73.
- ²¹ *Cal.S.P. Dom.* 1637, 152-53; Anon., *Proclamation touching the surveying of the Seacoales* (1625), 1; **cross ref coal trade**.
- ²² Hatcher, *British Coal Industry*, 495, 583-5; *CJ*, 10, 122; Garbutt, *A Historical and Descriptive View*, 391-2; Nef, *Coal Industry*, II, 234-6.
- ²³ M. Dunn, *View of the Coal Trade of the North of England* (1844), 22.
- ²⁴ **Cross ref coal sales chart**.
- ²⁵ East Sussex RO, GLY/418; GLY/493-96; *CJ* 4, 85; *LJ* 6, 257-59; I. Gentles, *The New Model Army in England, Ireland and Scotland, 1645-53* (1994), 145; *CJ* 3, 561-2.
- ²⁶ Dunn, *View of the Coal Trade*, 15.
- ²⁷ *CJ* 3, 501, 503, 538, 549; Howell, *Newcastle upon Tyne*, 158-9; *Cal.S.P.Dom.* 1644, 393; *CJ* 3, 556, 560-2; Howell, *Newcastle upon Tyne*, 158-9.
- ²⁸ Dunn, *View of the Coal Trade*, 17.
- ²⁹ *CJ*, 8, 383-4; F.W. Dendy (ed.) *Extracts from the Records of the Company of Hostmen of Newcastle upon Tyne* (Surtees Soc., cv, 1901), 118, 120, 122-3; *Cal. Treas. Bks* 1667-8, 264, 281, 505, 631.
- ³⁰ F.W. Dendy (ed.) *Extracts from the Records of the Merchant Adventurers of Newcastle upon Tyne*, II (Surtees Soc., ci, 1899), 151-2; TNA, PRO 30/24/7/480; E122/229/95; *Cal. Treas. Bks* 1696-7, 16, 249.
- ³¹ TNA, E190/222/7, E190/220/1, E190/223/2; *Cal. Treas. Bks* 1714-16, 101.
- ³² J. Hatcher, *History of the British Coal Industry, 1: before 1700* (1993), 255; *Origins*, 117.
- ³³ R. Barker, *The Rise of an Early Modern Shipping Industry: Whitby's Golden Fleet, 1600-1750* (Woodbridge, 2011), 25; West Yorkshire Archive Service, WYL100/PO/8/VI; **cross ref coal trade**
- ³⁴ Hatcher, *History of the British Coal Industry, 1*, 255; TNA, Prob11/210, register copy; James, *Family, Lineage and Civil Society*, 88-9; Robson, 'George Lilburne', 92; *Origins*, 116.

³⁵ HL, LP/189/5; **cross ref lime and glass industries.**

³⁶ *Origins*, 97-102; **cross ref 16th-c town.**

³⁷ *Cal.S.P. Dom.* 1635-36, 43; 'A Narrative concerning the Salt works of the North', *Reprints of Rare Tracts & Imprints of Antient Manuscripts. Historical*, 3 (1845); Garbutt, *A Historical and Descriptive View*, 110; James, *Family Lineage and Civil Society*, 88-9; Robson, 'George Lilburne', 101-2; *Origins*, 116.

³⁸ **Bowes, lease:** TNA, Prob11/210, register copy. **Investors in coal, salt and lime:** James, *Family, Lineage and Civil Society*, 88-9; Robson, 'George Lilburne', 92.

³⁹ 'A Narrative concerning the Salt works of the North'; *Cal. Treas. Bks* 1667-8, 553; 1693-6, 692; *Cal.S.P.Dom.* 1670, 580; Nef, *Coal Industry*, I, 178; TNA, E190/196/1; DRO, D/Lo/F268; *Origins*, 160-1.

⁴⁰ G.V. Scammell, *Seafaring, Sailors and Trade, 1450-1750* (2003), ch. 3, 31, 38-9; **cross ref rope-making.**

⁴¹ DULASC, DPR1678/C13/1; DPRI/II/1647/H10/1,2; DPRI/I/1691/N3/1; TNA, E134/1Jas2/Mich37 (Durham); E134/5Anne/Mich31 (Durham); DRO, M42/168; J.W. Smith and T.S. Holden, *Where Ships are Born: Sunderland 1346-1946. A History of Shipbuilding on the River Wear* (1946), 7-8.

⁴² Ambrose Crowley, DNB; Garbutt, *A Historical and Descriptive View*, 146; Mitchell, *History of Sunderland*, 68; M.W. Flinn (ed.), *The Law Book of the Crowley Ironworks* (Surtees Soc., clxvii, 1952), xii.

⁴³ M.W. Flinn, *Men of Iron: the Crowleys in the Early Iron Industry* (1962), 34-8.

⁴⁴ Flinn, *Men of Iron*, 34-41, 191; DNB.

⁴⁵ Flinn, *Men of Iron*, 39-40; BAC, 44.

⁴⁶ Flinn, *Men of Iron*, 40-1; TNA, SP44/236 f. 24; *Cal.S.P.Dom.* 1687-9, 227 (no. 1247).