CULROSS:

THE RISE AND FALL OF A SCOTTISH BURGH

MURRAY BAIRD B.A. (1ST HONS.)

LOTTERY FUNDED

Slezer's View of Culross 1693

Slezer's View of Culross from an engraving dated 1693. Copyright - National Library of Scotland. Reproduced in Adamson D., "A Coal Mine in the Sea: Culross and the Moat Pit" *Scottish Archaeological Journal Volume 30* (2008)

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INTRODUCTION

When the English Romanticist landscape artist Joseph M. W. Turner likened the Bay of Culross in 1801 to the Bay of Naples[1] he was doubtlessly exercising a degree of artistic licence. One wonders if he would have waxed so lyrically about his view of Culross had he visited at the beginning of the 17th century when the reek from a multitude of coal fires fuelling the numerous salt pans pervaded the air, or during the 1780s when the air was filled with acrid chemicals from the production and distillation of coal tar and its by-products. Nevertheless, Culross is of enduring interest to people - from the Cistercian monks who occupied Culross Abbey and King James VI to the 17th century 'Water Poet' John Taylor and onto the present day where the National Trust for Scotland's conservation village stands as a prime example of what can be achieved with sensitive preservation and restoration that enthrals residents and its many visitors alike.

The purpose of this paper is to produce a narrative of maritime trade from Culross as part of Dr Kirsty McAlister's Forth Crossings project of the Inner Forth Landscape Initiative (IFLI). This Initiative is a four-year project supported by the National Lottery through the Heritage Lottery Fund. The aims of IFLI are fully listed in Appendix I. Briefly, they endeavour to turn around negative perceptions of the Inner Forth by increasing people's physical and intellectual access to the area's important heritage and simultaneously create a jigsaw of landscapes flourishing with wildlife. The Forth Crossings project contained within IFLI is a volunteer research project to investigate the vibrant trading heritage of the Inner Forth. Wherever possible, this paper attempts to intertwine the history of Culross' historical trade with the IFLI's modern conservation aims and promotion of natural landscapes within the perceived industrial heartland of the Inner Forth.

Whilst the essay attempts to adhere to the narrative remit, it has been well nigh impossible not to engage with some of the academic debate and produce a discursive paper. This essay will investigate the rapid, if not meteoric, rise of Culross to become a prominent trading port on the upper reaches of the Firth of Forth, and possibly on the east coast of Scotland from Dundee to Leith, during the latter part of the 16th century and the early 17th century. The burgh's apparently speedy decline into virtual destitution during the latter half of the 17th century, despite later efforts by the likes of Archibald Cochrane, 9th Earl of Dundonald, and Sir Robert Preston to turn around the burgh's fortunes, will also be examined. Together with being a narrative on trade from Culross harbour, this paper also therefore attempts to explain the reasons for the burgh's ascension to and demise from an eminently important position in the ranks of Scottish burghs.

The main discussion point will centre around the contention that the rise to prominence of Culross as an important coal and salt producing and exporting centre occurred during a relatively short period of time from roughly 1580 to

[1] Little C.A., "The Causeways of Culross" in *Scottish Field* (September 1971).

1625 during the stewardship of Sir George Bruce. More specifically, an argument exists that the sinking of Bruce's innovative and technically advanced Moat Pit shaft in the waters of the Firth of Forth at Culross was the primary reason for the rise of the burgh to one of economic importance. In order to test this hypothesis several useful primary sources exist for the period prior to 1625 including the Custumar Accounts of the Exchequer Rolls of Scotland and the online availability of the Sound Toll Registers of shipping taxation levied at the Danish customs point of Elsinore on vessels entering the Baltic Sea. Similar specific primary sources exist for the latter part of the seventeenth century. However, the locally available primary sources are more fragmented and less specific for the eighteenth and nineteenth century trade from Culross, other than perhaps records held in the foreign archives of the Hanseatic States and Dutch archives relating to trade with the Scottish Staple ports - particularly Campveere. Unfortunately, access to these records was outside both the financial scope of the project and its time constraints. This apparent paucity of existing relevant documents in the 18th and 19th centuries may simply be circumstantial or it may in itself be indicative of the brief prior impact that Culross had on Scotland's trade. Nevertheless, any comparative study of the export/import trade over the centuries has not been possible by the use of customs or shipping records alone. Documents other than those concerned with fiscal or customs matters do however exist and these first hand accounts of Culross have been used to establish a comparison over the centuries.

Trade from Culross can be roughly categorised into four headings - coal, salt, ironwork and miscellaneous trade, including tar. Although most of these trading activities revolve around a ready supply of nearby raw materials they are not simply offshoot industries of coalmining and are industries in their own right. Christopher A. Whatley has adequately shown that coal and salt at least can be treated as separate industries with salt not necessarily being subservient to coal. Indeed, many coal-masters in the reaches of the upper Forth only survived financially by depending on income from the production from their saltpans.[2]

Donald Adamson argues that whilst Sir George Bruce's Moat Pit should not be considered in isolation, the pit under the sea was at the very core of the development of Culross. Indeed, he goes on to argue that there may be an under-assessment of the importance of industrial Culross, with the pit at its epicentre, at least in terms of archaeological appraisal.[3] There can be little doubt that Bruce's technical innovations and entrepreneurship were at the forefront of developments in Scottish coalmining and that he was a man ahead of his time. However, Adamson's argument does not take adequate account of other factors and influences in the development of Culross. These factors include the surge in demand for both Scottish coal and salt; the granting of Royal Burgh status in 1588[4] by King James VI, permitted the

[2] Whatley C.A., *The Scottish Salt Industry 1570-1850* (Aberdeen: Aberdeen University Press 1987).
[3] Adamson D., "A Coal Mine in the Sea: Culross and the Moat Pit" *Scottish Archaeological Journal Volume 30 No. 1/2* (2008), pp 161-199.
[4] Rolland R. and McAlpine W., "Parish of Culross" in Sinclair J., *The Statistical Account of Scotland First Volume* (William Creech: Edinburgh 1791), p. 136.

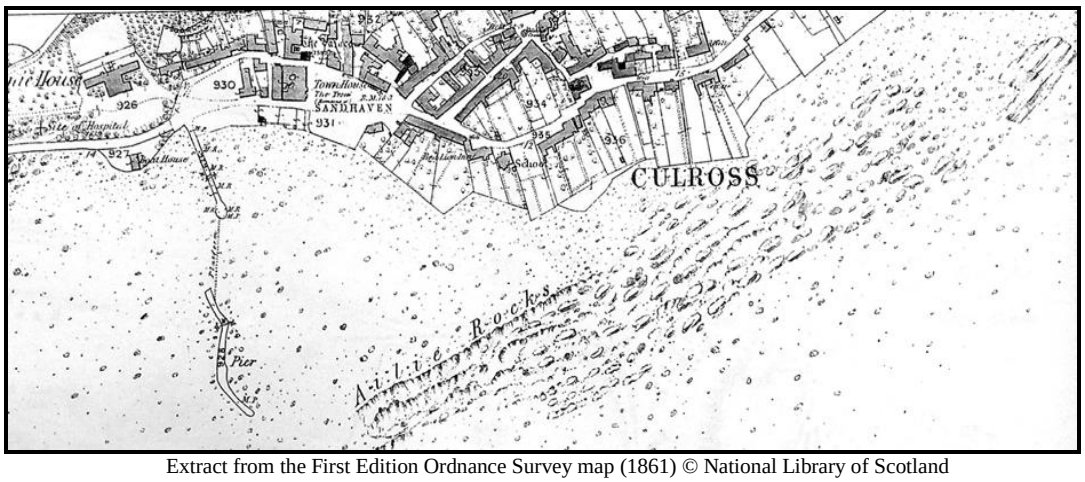
burgh to export goods; the master craftsmen who zealously protected the quality of their Culross girdle pans and manipulated trade to obtain the best price for their product; and the impact of men such as Archibald Cochrane who not only embraced 'The Age of Enlightenment' but made significant contributions to the new body of scientific advancement. All made telling contributions to Culross - albeit with varying degrees of success and perhaps with less tangibly obvious results than Sir George Bruce. This is not to mention the colliers, salters, weavers, smiths and mariners who made up the everyday social fabric of a vibrant trading port, many of whom worked in servitude. Hopefully, their stories will unfold throughout the course of this paper.

1

CULROSS' HARBOUR AND PIERS

This section will provide an overview of the features employed in Culross to provide safe havens for trading vessels. Illustration 1 is an extract from an Ordnance Survey map dated 1861. Although the map dates from some 300 years after the acquisition of the mining rights by Bruce it serves to highlight several points. It illustrates the natural tidal anchorage protected by the Ailie Rocks to the south and east. An area exists on the foreshore named 'Sandhaven.' Similar place names also exist - for instance Blackadder Haven and Cochrane Haven. Such names suggest areas where vessels could safely shelter - possibly at land-based quays[5] or by simply being pulled onto the foreshore. Any archaeological trace of such quays would have been destroyed by the reclamation of land on the foreshore and the building of the railway that now extends along the shore embankment. The long pier on the map is a later addition to the harbour and will be discussed in detail hereunder.

Illustration 1 - Map of Culross



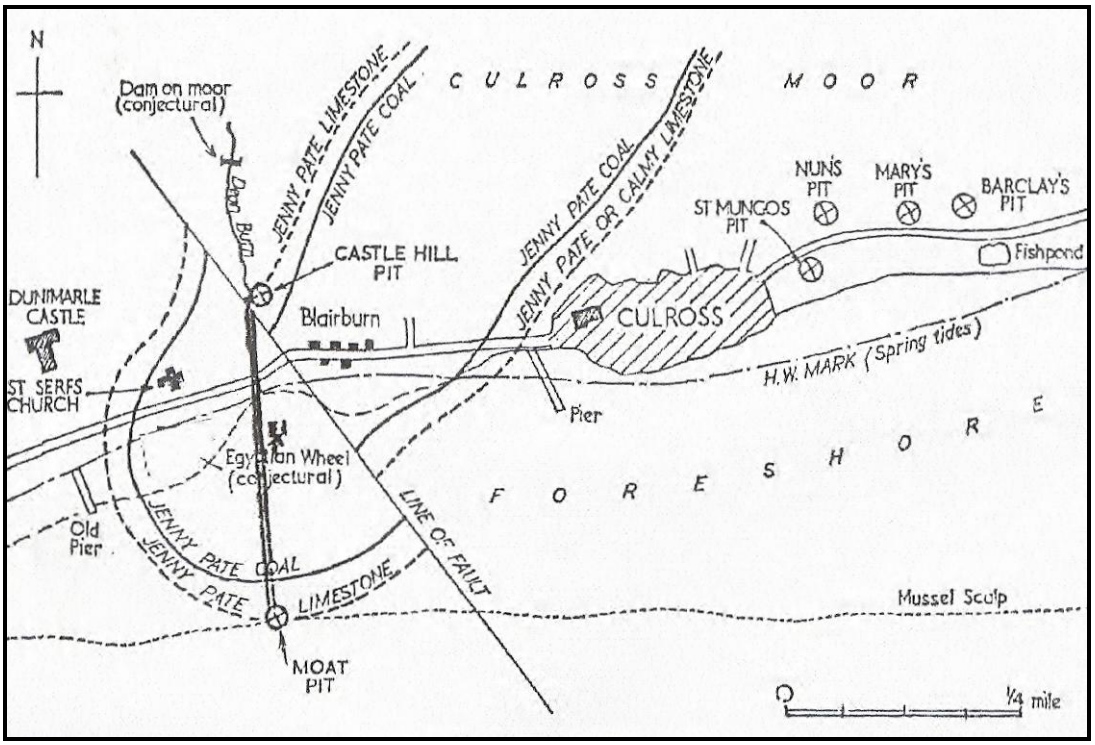
Extract from the First Edition Ordnance Survey map (1861) © National Library of Scotland

The Old Pier was located to the west of Culross in the vicinity of Dunimarle Castle and in close proximity to the monks' Castlehill pit. Illustration 2 shows both the position of the Old Pier and another pier on the western edge of Culross. The second pier would form the basis of the long pier shown in Illustration 1 and form a protective barrier for the anchorage from the west. The archaeology of the Long Pier on Illustration 1 is somewhat confusing for the lay-person. The outer section of the pier is also referred to as the 'Old Pier' and there appears to be some dispute as to whether it was used as a pier to dock vessels or as a breakwater to give protection for the natural anchorage from the south and west and to deflect silt from collecting in the

[5] Graham A., "Archaeological Notes on Some Harbours in Eastern Scotland" *Proceedings of the Society of the Antiquaries of Scotland Volume 101* (1968-1969), p. 230.

anchorage.[6] The 'Old Pier' may therefore have extended all the way to land or it may not have reached land and was only accessible from the shore at low tide or by wading.[7] The confusing title of the 'New Pier' applies to the section of stone pier running directly south from the shore. This pier appears to have been constructed in two stages with the upper, newer section giving the structure its title as the 'New Pier.' Graham suggests that the 'Old Pier' did extend to the shore and that the middle section was destroyed by a natural disaster.[8] This may be confirmed by an entry in Culross Burgh Minute Book dated 22 May 1775 when a mason spent 4 days repairing the 'Long Pier.' A similar entry for February 1775 also makes mention of a 'Long Pier' together with two other piers.[9] In any case both the detached 'Old Pier' and the landward 'New Pier' were eventually connected by a wooden jetty at some point between 1844 and 1861.

Illustration 2 - Plan of Culross showing the Moat Pit



Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* p. 99

Another facet of provisions made for dealing with vessels is also highlighted on Illustration 2 by the presence of the Moat Pit. The creation and impact of

[6] For a detailed discussion see Graham A., "Archaeological Notes on Some Harbours in Eastern Scotland" *Proceedings of the Society of the Antiquaries of Scotland Volume 101* (1968-1969); Adamson D., "A Coal Mine in the Sea: Culross and the Moat Pit" *Scottish Archaeological Journal Volume 30 No. 1/2* (2008) and Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7.*

[7] Beveridge D., *Between the Ochils and the Forth* (Blackwood and Sons: Edinburgh 1888), p. 195.

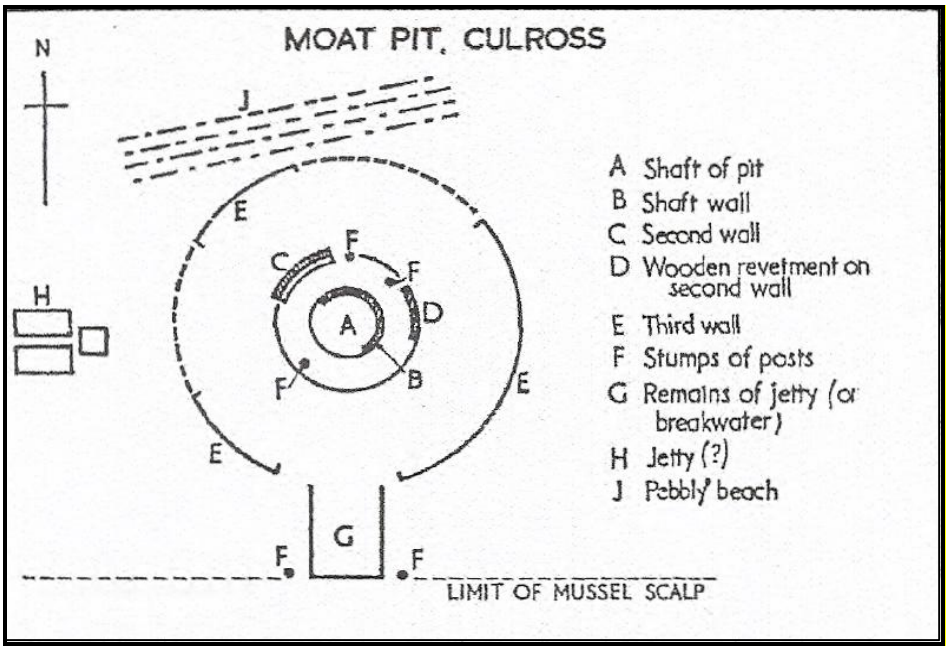
[8] Graham A., "Archaeological Notes on Some Harbours in Eastern Scotland" *Proceedings of the Society of the Antiquaries of Scotland Volume 101* (1968-1969), p. 230.

[9] *Culross Burgh Records 1588-1975* Fife Council Archives Reference Number B/Cul. I am indebted to Sue Mowat for providing information from Fife Council Archives.

this artificial island will be discussed in full hereunder. The Moat Pit provided direct access for vessels to load coal from the pit head as opposed to the laborious process of loading coal onto carts from the inland Castlehill pit head and transporting it to the old pier and thereafter loading it onboard waiting vessels, before the carts trundled back to Castlehill - a somewhat time-consuming and "wasteful process."[10]

Illustration 3 gives a more detailed plan of the Moat Pit. The important features of this diagram for the purpose of this chapter are those marked as H - a possible jetty, F - stumps of posts and G - remains of a jetty or breakwater. The possible jetty is to the east of the Moat Pit and may only have been viably used at high water and hence the query as to the accuracy of its description. However, the stone jetty depicted at the south end of the artificial island extended into deep water and the remains of the wooden posts on either side of the jetty indicate that they were used as mooring posts for vessels.[11] Given that the Moat Pit jetty was in deep water, both seagoing vessels, with a carrying capacity of between 20 and 80 tons,[12] and smaller tenders carrying coal to the plethora of salt pans that lined the Culross foreshore was eminently possible.

Illustration 3 - Diagram of Moat Pit

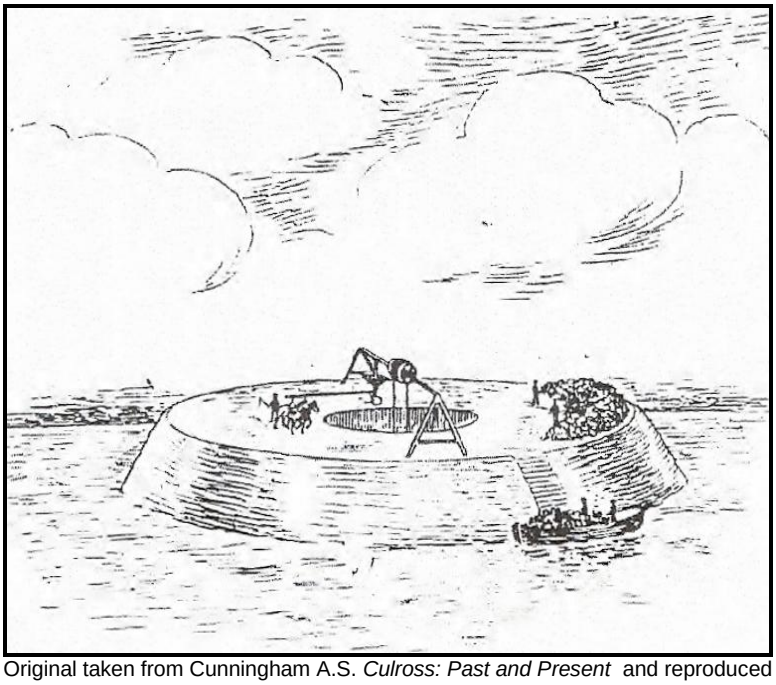


Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983) p. 106

[10] Bowman A.I., "Culross Colliery: a Sixteenth Century Mine," *Industrial Archaeology* (November 1970), p. 362.
[11] Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983), p.105.
[12] Lythe S.G.E., *The Economy of Scotland 1550-1625* (Oliver and Boyd: Edinburgh 1960), p. 131-133.

Illustration 4 is an artistic impression of the facility to moor and load ships alongside the pit head. The small vessel depicted presumably being a tender servicing the saltpans ashore. Although the deep-water jetty is not clear on the artistic impression, the archaeological studies carried out on the remains of the Moat Pit appear to be relatively conclusive to the existence of a technically advanced pit head and docking facility.

Illustration 4 - Drawing of the Moat Pit



Original taken from Cunningham A.S. *Culross: Past and Present* and reproduced in Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983), p.106.

The upkeep of the harbour was an ongoing concern for Culross; doubtlessly other Scottish burghs viewed their harbours similarly as a burden to maintain. In 1603 Culross made an apparently frivolous appeal to the Convention of Royal Burghs " craweing supporte of the burrowes for the reparation of their hewin and schore."[13] Following the customary inspection of the harbour by appointed Commissioners from other burghs, Culross was rebuked and reprimanded by the Convention as it had "grit ankarageis and schore dewties grantit to them be the burrowes quhilk …may uphald and intertene thair schores and herbereis"[14] - in other words, take care of the harbour yourself! The burgh council did make a successful supplication to the Convention in 1613 when Culross was granted a licence for seven years to "tak and uplift of ilk schip …crear (a small trading vessel) … gritt bott … small bott … cummand within thair heavin and herbere, to be imployit be thame upon the

[13] Marwick J.D. (ed.), *Records of the Convention of Royal Burghs Volume 2* (Patterson: Edinburgh 1866), p. 162. Translates as "craving support of the burghs for the repair of their haven and shore."
[14] Marwick J.D. (ed.), *Records of the Convention of Royal Burghs Volume 2* (Patterson: Edinburgh 1866), p. 201. Translates as "great anchorages and shore duties granted to them by the burghs which ….. may uphold and maintain their shores and harbour."

reparation of thair herberie."[15] The harbour could obviously facilitate vessels of varying size - from ocean-going 'great boats' to coastal 'small boats'.

In 1625 a great storm "put a stop for several years to the extensive coal and salt trade then carrying on at Culross."[16] Presumably, the harbour also suffered at the hands of such a violent natural disaster for, in 1629, the commissioners to the Convention of Royal Burghs granted Culross "500 merks for the reparation of their harbour"[17] without any quibble. By the use of some crude calculations, if a Merk was roughly the equivalent of 13d Sterling then the amount granted to Culross was in the region of £27 1s 8d. In today's terms, this sum equates to £4,660 worth of purchasing power. However, if this sum of £27 1s 3d is applied as a project cost - for instance, the "reparation" of the harbour - then the economic cost, or the importance of the project to society as a whole, equates to £1,456,000 and represents a more inclusive measure of the value of the original sum.[18] Even in today's economic climate the amount of approximately £1.5 million represents a substantial opportunity cost for the economy of Culross and may reflect the important position in the Scottish economy that the burgh had achieved in the eyes of the Convention of Royal Burghs.

The use and repair of the harbour appears several times in the records of Culross Burgh Council, although the use of the harbour declined rapidly from a trading port to one of primarily local use. In 1656 Thomas Tucker's Report upon the Settlement of the Revenues of Excise and Customs in Scotland noted that "there were lately some five vessels belonging to Culrosse, but lost and taken all except two of the best, which still remayne."[19] In the same report Tucker also found that Culross shared a "wayter," or customs officer, with Kincardine and Torryburn, the latter being considered to be "the chief place for shipping out small coales." A century later the Burgh Council was still striving to maintain the harbour recording in August 1765 that "the pier is absolutely ruinous and must be repaired before the winter." The repairs were partially completed by October the same year, but the purpose of the repairs would appear to be to facilitate the docking of the ferry to Bo'ness, which was only capable of "carrying two or three horses at a time."[20] By 1768 the council deemed that as the "the profits arising from the passage boat are so inconsiderable that they are scarce sufficient for upholding and maintaining her" and the vessel was leased for five years to Robert Cowie and Finan

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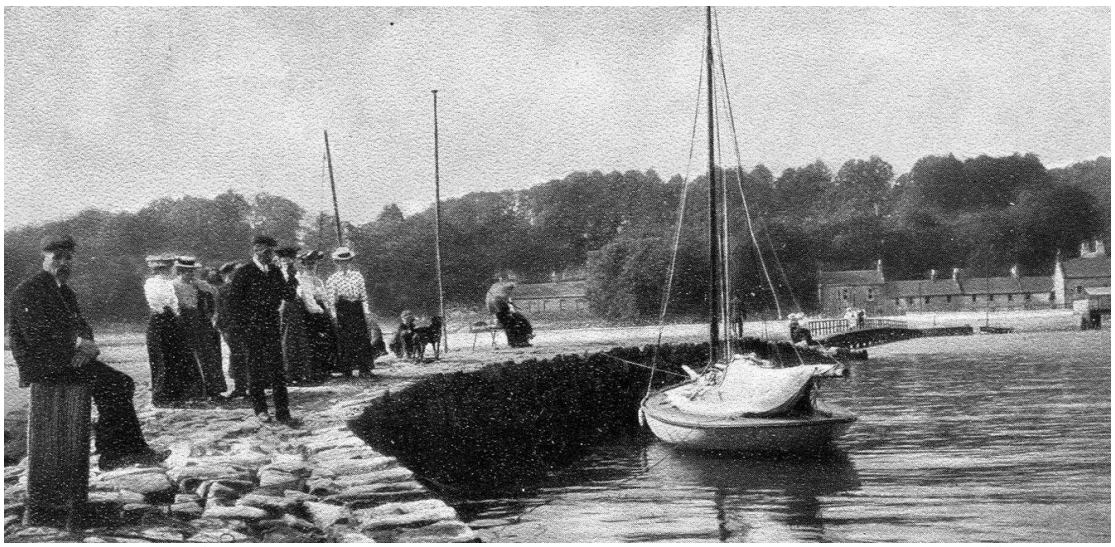
[15] Marwick J.D. (ed.), *Records of the Convention of Royal Burghs Volume 2* (Patterson: Edinburgh 1866), p. 418. Translates as "take and uplift of each ship….small trading vessel…..great boat … small boat….coming within their haven and harbour, to be used by them on the repair of their harbour."
[16] Cochrane A., 9th Earl of Dundonald, *Description of the Estate and Abbey of Culross* (Dundonald: Edinburgh 1793), p. 10-11.
[17] Marwick J.D. (ed.), *Records of the Convention of Royal Burghs Volume 3* (Patterson: Edinburgh 1866), p. 296.
[18] Officer L.H. and Williamson S.H, "Five Ways ro Compute the Relative Value of a UK Pound Amount, 1270 to Present" at *www.measuringworth.com/compare* accessed on 4 December 2016.
[19] Tucker T., "Report upon the Settlement of the Revenues of the Excise and Customs in Scotland" in Marwick J.D., *Miscellany of the Scottish Burgh Records Society* (Scottish Burgh Records Society: Edinburgh 1881).
[20] *Culross Burgh Council Minutes 1588-1975* Fife Council Archives Ref. No. Reference Number B/Cul.

Anderson for the sum of £3:5s a year. In 1775 the ferry boat was "dashed to pieces at the pier by the violence of the wind" and was rendered useless. A replacement new vessel was requisitioned from John Marshall of Kincardine.[21]

The final death knell for the harbour as a viable enterprise was sounded by the financial failure of the 9th Earl of Dundonald's ill-fated attempt to distil and export coal tar[22] and the silting up of the anchorage by peat washed down from working further upstream.

Several photographs exist showing the pier in more recent times. However, the pier was used for the leisurely pursuits of promenading and boating, rather than trade. Illustration 5 is an undated photograph taken from the Old Pier looking back to shore with the wooden jetty clearly visible. The only vessel fully visible appears to be a leisure sailing craft.

Illustration 5 - Culross Pier



Original copied from http://tour-scotland-photographs.blogspot.co.uk/2014/10/old-photograph-pier-culross-fife.html

[21] *Culross Burgh Council Minutes 1588-1975* Fife Council Archives Ref. No. Reference Number B/Cul.

[22] Graham A., "Archaeological Notes on Some Harbours in Eastern Scotland" *Proceedings of the Society of the Antiquaries of Scotland Volume 101* (1968-1969), p. 231.

2

THE EARLY YEARS

Culross "stands on the north bank of the Forth, rising with a gentle inclination to a considerable eminence fronting the south-west"[23] and lies between Kincardine to the west and Torryburn to the east. The foreshore is contained in a slightly indented bay of the Firth. Culross parish extends inland and encompasses the contemporary communities of Oakley, Blairhall and Carnock and is within the modern administrative region of Fife.

The early history of Culross is lost in the mist of time. Some speculation exists that in 140 A.D. the Roman General Agricola sailed his legions across the Forth from the eastern end of the Antonine Wall at Inveravon, near to Borrowstouness (Bo'ness), and landed them directly across the Forth at Culross in preparation for their march north to the Firth of Tay.[24] This concept is not too far fetched. As discussed in Chapter 1, Angus Graham has shown that Culross possessed a natural tidal anchorage protected in part to the south-east by the Ailie Rocks and extending inshore 200 feet.[25] It is feasible to imagine that Culross' first use as a harbour and port was to facilitate the transfer of Roman legions and all their paraphernalia from the south side of the Forth and thereafter establish a bridgehead to act as a transport hub keeping the supply lines open for Agricola's army as it marched north. It is also possible that salt was one of the commodities shipped north across the Forth by the Romans. Geoff Bailey has extrapolated Eric Birley's argument that the Roman's produced salt on the frontier zone of their Empire by illustrating archaeological factors linking salt production to Auchendavy - a frontier defence fort on the Antonine Wall - near to present day Kirkintilloch.[26] Again, it is easy to speculate that salt and salt-preserved meat and fish was carried across the Forth in Agricola's supply chain.

Culross is also shrouded in Shakespearian myth. During the early 11th century Duncan, King of Scotland, the 'gracious Duncan' of Shakespeare's *Macbeth*, responded to a Danish invasion of Fife and placed an army under the command of Macbeth and Banquo at the estate of Blair Castle, some three miles from Culross.[27] The Scots were defeated and retreated to Perth. The Standard Stone, where the Scots army reputedly placed their standards, can still be clearly seen today on the way-marked Red Squirrel Trail in Forestry Commission Scotland's Devilla Forest. Moreover, the Standard Stone is on an IFLI Nature Recording transect whereby volunteers note and

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[23] Campbell A., "Journey from Edinburgh though parts of Northern Britain: Containing Remarks on Scottish Landscape" (London: Strahan 1802), p. 304.
[24] Cunningham A.S., *Romantic Culross, Torryburn, Carnock, Cairneyhill, Saline and Pifirrane* (Clark and Son; Edinburgh 1902), p. 13.
[25] Graham A., "Archaeological Notes on Some Harbours in Eastern Scotland" *Proceedings of the Society of the Antiquaries of Scotland Volume 101* (1968-1969), p. 230.
[26] For a detailed discussion see Bailey G. B., *Early Salt Production in the Falkirk District* (unpublished) and Birley E., "Marcus Cocceius Firmus: an epigraphic study" *Proceedings of the Society of the Antiquaries of Scotland* Volume *70* (1935-1936), p. 363-377.
[27] Cunningham A.S., *Romantic Culross, Torryburn, Carnock, Cairneyhill, Saline and Pifirrane* (Clark and Son: Edinburgh 1902), p. 18.

record the area's flora and fauna, thereby promoting an understanding of both the manmade and natural world of the Inner Forth.

Setting aside speculation about a Roman crossing point and Shakespearean tragedy, it is as a religious settlement that Culross can initially trace its seafaring heritage. In 1217 Malcolm, 7th Earl of Fife, founded a Cistercian Abbey in Culross, part of which would become the parish church following the Scottish Reformation and has survived as one of the best examples of a Cistercian planned religious building.[28] The Cistercian monks who inhabited the Abbey tanned hides, sent cattle across the Forth to Bo'ness (possibly by swimming them across) and initiated coalmining at Culross.[29] Up until the Scottish Reformation during the decades of the 1560s and 1570s the Abbot of Culross was both the spiritual and temporal lord of Culross and the surrounding area.[30] It is unclear whether the Cistercian monks mined the coal themselves or if it was extracted by colliers on their behalf. In any case, the monks were responsible for mining the so-called 'Janet Peat' or 'Jenny Pate' coal seam, close to where Dunimarle Castle now stands, to a depth of some five fathoms.[31] There is also evidence that outcrops of coal on the surface were initially quarried before the seams were followed underground in a drift mine or 'ingaunee' (ingoing eye) in the Scots language.[32] There is no available historical evidence to quantify the amount of coal mined, however it is likely to have been small and non-profitable. A similar concession of coal granted to the monks of nearby Dunfermline Abbey stipulated that coal should be used for their own use only.[33] It is likely that the concession of coalmining granted to the monks at Culross came with a similar restrictive clause and coal was not therefore regarded as a trading commodity. The Reformation led to the coal mine being abandoned and by 1570 it had been out of commission and in a state of disrepair for several years.[34] Nevertheless, the monks laid the groundwork, both literally and metaphorically, for the later development of coalmining as a fundamental pillar in the development of Culross' mercantile trade.

If the Cistercian monks prepared the groundwork, then the machinations of the Colville extended family laid the foundations for the growth of Culross. In the early 1540s the Abbot of Culross was John Colville and the Commendator, whose function was to administer the property and daily factoring of the Abbey and its lands, was William Colville. It is probable that they were siblings of the head of the family - Sir James Colville of Ochiltree,

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[28] Dove D., "Pilgrimage Sites" in D. Ormand (ed.), *The Fife Book* (Birlinn : Edinburgh 2000), p. 130.
[29] Little C.A., "The Causeways of Culross" in *Scottish Field* (September 1971). Unfortunately the secondary source does not reference a primary source or describe whether the cattle were shipped or swam across the Forth.
[30] Little C.A., "The Causeways of Culross" in *Scottish Field* (September 1971).
[31] Bowman A.I., "Culross Colliery: a Sixteenth-Century Mine" *Industrial Archaeology* (November 1970), p. 356.
[32] Adamson D., "A Coal Mine in the Sea: Culross and the Moat Pit" *Scottish Archaeological Journal Volume 30 No. 1/2* (2008), p. 170.
[33] Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983), p. 87.
[34] Bowman A.I., "Culross Colliery: a Sixteenth-Century Mine" *Industrial Archaeology* (November 1970), p. 356.

who was Comptroller of the Household to James V. They were therefore an important political and landed family. The Abbey began to lease land to various members of the Colville family. For instance, in 1540 William Colville granted his "brother-german Robert Colville …a salt pan and the land on which it is erected … with the licence to dig coals from the granters' coalheughs …also of digging new coalheughs within the bounds of Culros."[35] Sir James Colville's brother-in-law was Edward Bruce, who also began acquiring land from Culross Abbey.[36] Following the Scottish Reformation, Sir James Colville's son, Alexander, became Commendator of the Abbey and he granted the lease to mine coal in Culross in 1575 to Sir George Bruce - his cousin. The lease was granted to Bruce on the basis of him being

> "our worthy friend and cousin… for the great regard we bear to him … for his great knowledge and skill in machinery, such like as no other man has in these days; for his being the likeliest person to re-establish again the Colliery of Culross, which has been long in desuetude."[37]

The Colville's patronage of Bruce in granting him the coal lease demonstrates how much the family held him in high regard and his technological skills must have been clear to them. It is unclear where Bruce obtained his technical expertise, but Ian Bowman suggests that it was from Continental literature, particularly German, where techniques were more advanced than in Scotland or England.[38] Combined with a high level of business acumen, Culross was set for a rapid expansion under the practical direction of Sir George Bruce.

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[35] Anderson J. (ed.), *Calendar of the Laing Charters A.D. 854-1837* (James Thin: Edinburgh 1899), paragraph 142.
[36] Adamson D., "A Coal Mine in the Sea: Culross and the Moat Pit" *Scottish Archaeological Journal Volume 30 No. 1/2* (2008), p. 168.
[37] Preamble to Colville grant to Bruce quoted in Cochrane A., 9th Earl of Dundonald, *Description of the Estate and Abbey of Culross* (Dundonald: Edinburgh 1793), p. 9.
[38] Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7 (1982-1983*, p. 89.

3

THE BOOM YEARS

Coal

Bruce's attributes were not confined to his technical expertise and business acumen. He became a member of the Scottish Parliament in 1593; he was a Commissioner involved with the details surrounding the Union of Crowns in 1603 between Scotland and England and was a member of several Commissions relating to trade and weights and measures. He was appointed as Overseer of the Royal Mines and was knighted in 1610, taking the title of Sir George Bruce of Carnock.[39] He also either possessed a visionary presence of foresight in foreseeing the boom in demand for Scottish coal and salt or else was fortunate in the coincidental timing of his enormous investment in developing these industries, estimated at being several thousand pounds Sterling,[40] with a series of political and economic upheavals in European trade.

When Bruce was granted the lease of Culross' mining rights in 1575 the Castlehill colliery had lain redundant for several years. However, within a relatively short period of time "the town soon throve …. and a necklace of coal-using industries ringed the colliery, including salt-boiling, glass-making and iron-working."[41] In 1580 Culross paid its first recorded customs dues to the Royal Exchequer on exported goods for the previous year, although Martin Rorke is of the opinion that returns for the Inner Forth burghs may have been included in Edinburgh's accounts prior to 1579.[42] In the space of four years between 1575 and 1579 Castlehill colliery had not only been re-commissioned but was exporting both coal and producing sufficient coal to produce large quantities of salt by coal-fired sea-water evaporation methods, together with presumably supplying both products for the domestic markets.

The Custumar Account for Culross in the Exchequer Rolls of Scotland record that the burgh paid customs dues on "446 chalders 8 bolls salt, 5 score and 6 chalders coal, 32 chalders 4 bolls peas and beans."[43] The unit of measurement of coal - a chalder - consisted of 16 bolls. However, it was not a standardised measure and varied from place to place and also by commodity. The coal chalder measurement varied from 2 tons to 5 tons, with the Culross chalder weighing the equivalent of approximately 2 tons. In 1663 the Culross chalder was accepted as the standard measure for coal. The salt chalder measurement is similarly problematic with three different measures in

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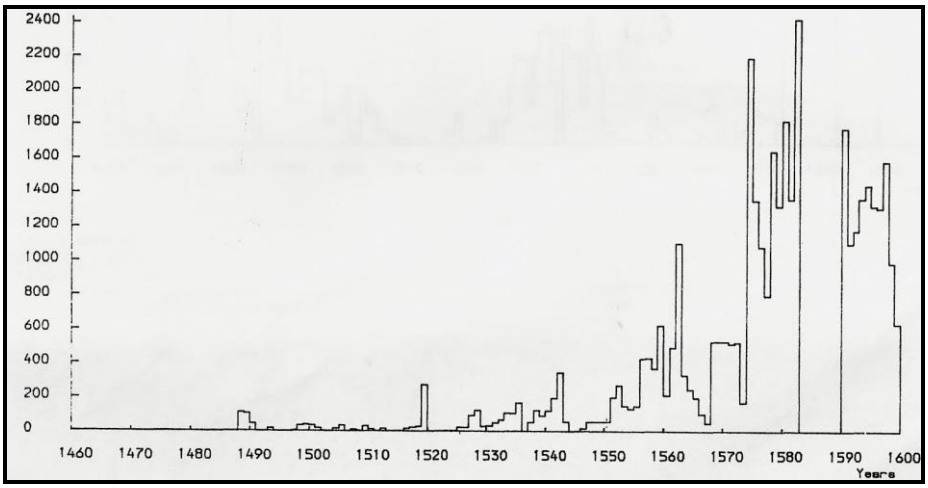
[39] Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume* 7 (1982-1983), p. 86.
[40] Nef J.U., *The Rise of the British Coal Industry* (Routledge: London 1932), p. 43.
[41] Hatcher J., *The History of the British Coal Industry Before 1700: Towards the Age of Coal Volume 1* (Clarendon: Oxford 1993), p. 99.
[42] Rorke M., "Scottish Overseas Trade 1275-1597" unpublished Ph. D. Thesis at *http://www.bris.ac.uk/Depts/History/Maritime/Sources/2001phdrorke2.pdf Appendix A1-9* accessed on 11 December 2016.
[43] McNeill G.P. (ed.), *The Exchequer Rolls of Scotland Volume XXI 1580-1588* (Register House: Edinburgh), p. 3.

place around the Firth of Forth. Salt-works in the vicinity of Culross and upstream from Queensferry were bound by the Culross chalder, which comprised of 21 bolls of four firlots of 29 pints equivalent to 2, 436 pints and was almost twice as much as the chalder measurement used on the outer reaches of the Firth around Weymss.[44] Given that it took 6 tons of coal to produce one ton of salt,[45] Culross was extracting more coal for the production of salt than was being exported. Professor Nef has estimated that between 1591-1600 Scotland was exporting 7,000 tons of coal.[46] By the decade of the 1580s Culross was producing sufficient salt and coal to rank it first and second amongst the coal-producing burghs.[47]

The construction of the Moat Pit is thought to have commenced in 1590 and been completed by 1595. If Isabel Guy's calculations are correct placing Culross in second place of the ranks of coal producing burghs then Culross was an eminently important coal burgh prior to bringing the Moat Pit into production. This places Donald Adamson's assertion that the Moat Pit was at the very core of Culross' development in some doubt as the surge in coal production took place before the Moat pit shaft was functioning and lends credibility to Professor Nef's argument that burghs such as Culross owed their existence to an earlier development of the coal trade dating from 1550.[48] Illustration 6 is a diagram of Scottish coal exports in chalders from 1460 to 1599 and confirms a general spike in coal exports in the early 1580s.

Illustration 6 - Scottish Coal exports from 1460-1599



Reproduced from Guy I., "The Scottish Export Trade, 1460-1599" in Smout T.C. (ed.), *Scotland and Europe 1200-1850* (John Donald: Edinburgh 1986), p. 80.

[44] Whatley C.A., "The Scottish Salt Industry 1570-1850" (Aberdeen University Press: Aberdeen 1987), p. 131-132.
[45] Whatley C.A.," The Salt Industry and its Trade in Fife and Tayside 1570-1850 " *Abertay Historical Society Number 22* (1984), p. 10.
[46] Lythe S.G.E., *The Economy of Scotland in its European Setting 1550-1625* (Oliver and Reed: Edinburgh, 1960), p. 48.
[47] Guy. I., "The Scottish Export Trade, 1460-1599" in Smout T.C. (ed.), *Scotland and Europe 1200-1850* (John Donald: Edinburgh 1986), p. 66.
[48] Nef J.U., *The Rise of the British Coal Industry* (Routledge: London 1932), p. 44.

The engineering technicalities of the Moat Pit are discussed in detail elsewhere.[49] Nevertheless, it would be remiss not to give a brief description of the pit's workings in this paper. This "unfellowed and unmatchable worke,"[50] as the pit was described by John Taylor in 1618, consisted of two entrances - one from the mainland and one constructed on an artificial island in the Firth of Forth, together with a separate drainage shaft. The artificial island constructed in the Forth is sometimes erroneously referred to as Preston Island,[51] which was another artificial island to the east of Culross. John Taylor describes the construction of the Moat Pit when at low tide the

> "master of this great worke build a round circular frame of stone, very thick, strong and joined together with glutinous or bitumous matter. Within this round frame he did set workmen to digg with mattakes, pickaxes and other instruments fit for such purpose. They did dig forty feet downe right into and through a rocke. At last they found that which they expected, which was sea-cole."[52]

This method of building a wall, or caisson, to hold back the sea and create a dry area for construction has continued to be used throughout the centuries. Indeed, the construction of the recently built Queensferry Crossing across the Firth of Forth downstream from Culross used massive steel tubes sunk to the sea bed to provide caissons, which were filled with concrete to create the foundations for the bridge's pillars.[53]

Bruce's equally impressive second innovation was the construction of an 'Egyptian Wheel' on the foreshore to drain the pit shafts. John Taylor commented on the Egyptian Wheel that

> "the sea at certain places doth leake into the mine, which, by the industry of Sir George Bruce, is all conveyed to one neare the land, where he hath a device like a horse-mill, that with three horses and a great chain of iron, going down many fathoms, with thirty-six buckets fastened to the chaine, of which eighteene go down still to be filled and eighteene ascend up to be emptied ….by which means he saves the mine, which otherwise would be destroyed by the sea."[54]

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[49] See Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983)*;* Bowman A.I., "Culross Colliery: a Sixteenth Century Mine," *Industrial Archaeology* (November 1970); Adamson D., "A Coal Mine in the Sea: Culross and the Moat Pit" *Scottish Archaeological Journal Volume 30 No. 1/2* (2008).

[50] John Taylor, the King's Water Poet, quoted in Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983).

[51] Professor Oram makes this understandable error in Oram R., "From the Union of the Crowns to the Union of the Parliaments: Fife 1603-1707" in Omand D. (ed.), *The Fife Book* (Birlinn: Edinburgh 2000), p. 79.

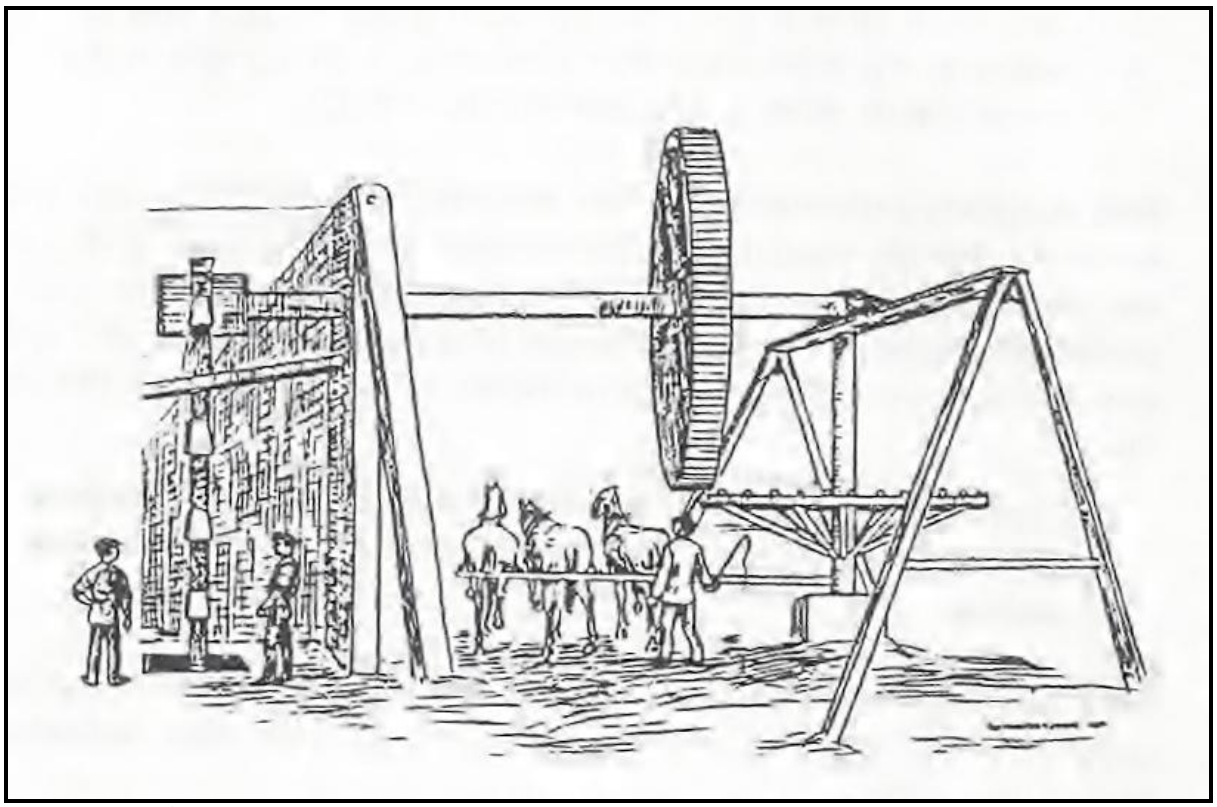
[52] John Taylor quoted in Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983), p.101.

[53] *http://forth-bridges.co.uk/queensferry-crossing/history-queensferry/construction-development.html* accessed on 12 December 2016.

[54] John Taylor quoted in Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983), p.96.

Illustration 7 is a depiction of Bruce's Egyptian wheel.

Illustration 7 - Bruce's Egyptian Wheel



Reproduced from Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983), p.95.

During John Taylor's visit to the Moat Pit in 1618 he remarked that many "poor people are there set to work, which otherwise through want of employment would perish."[55] This may not be as philanthropic as it appears. By the time of Taylor's visit a system of serfdom had been established over colliers and salters from 1606, which effectively tied a collier or salter to his employer unless the master provided a testimonial releasing him from service. Furthermore, colliers and salters were prohibited by a 1647 Act of Parliament from observing Yule and other 'superstitious days.'[56] Bruce did however appear to have an altruistic side to his hard-headed business shrewdness and he appears to have demonstrated a genuine interest in the well-being of his colliers and their families.

[55] John Taylor quoted in Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983), p.93.
[56] Whatley C.A., *The Scottish Salt Industry 1570-1850* (Aberdeen: Aberdeen University Press 1987), p. 98.

In 1607 Bruce submitted a plea to the Privy Council about damage to his complex and implied that he was protecting

> "an infinite number of puir creatures quhois onlie moyane and maintenance dependis upoun the saidis workis, and without the quhikis they would have no meanis to sustene and interteny themselfis."[57]

Archibald Cochrane, 9th Earl of Dundonald, goes some way to confirming the manner in which Bruce treated his colliers "in contradistinction to other colliers, were in general steady, sober and men of principle." He gives the reasons for the difference to other colliers as being that their wives were not used as coal bearers as they were elsewhere in Fife, no strangers were employed and a portion of their pay was held in arrears as a form of saving to be paid to them every three or four months.[58]

Nevertheless, conditions in the pit must have been grim working in dark, wet and cramped conditions. Perhaps mindful of the risk to life that the colliers faced on a daily basis, Bruce set aside "a house in Culross for the mentinance of six poor widows of coalziers and salters within the parish of Culross."[59] Mining and transport of coal had its share of tragedy and death. For instance, in 1635 a coal carter by the name of John Clarke "came by the foot of the staire with a horse loadned with coalls within a great coalle cairt" one wheel of which ran over and killed a small child playing at the foot of the steps. Clarke was exonerated at court but the folk of Culross refused to let the matter rest and he was later banished from the burgh and forbidden to return on pain of death.[60]

The mining complex at Culross became an attraction in its own right, drawing visitors including King James VI. The monarch reputedly visited Culross in 1617 and travelled underground from the shore to exit at the Moat Pit

> "being conducted , by his own desire, to see the works below ground …. having ascended from the coal-pit and seeing himself surrounded by the sea, he was seized by an immediate apprehension of some plot against his liberty or life, and called out, Treason"[61]

having seemingly been seized by paranoia, as he was prone so to do following the 'Gunpowder Plot' assassination attempt on his life in 1605, that some ill was about to become him.

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[57] Records of the Privy Council of Scotland quoted in Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983), p.93. A rough translation is "an infinite number of poor creatures whose only means and maintenance depends upon the said works and without which they would have no means to sustain and maintain themselves."

[58] Cochrane A., 9th Earl of Dundonald, "Description of the Estate and Abbey of Culross particularly of the Mineral and Coal Property" (Dundonald, Edinburgh 1793).

[59] *Contract of Excambion betwixt Mr. Charles Cochrane and Mr John Erskine 11 October 1743* National Records of Scotland Reference Number GD/945/15. 'Excambion' is an exchange of land.

[60] Hume Brown P. (ed.), *Records of the Privy Council of Scotland 1633 - 1635 Volume V* (Register House: Edinburgh 1904), p. 456.

[61] Rolland R. and McAlpine W., "Parish of Culross" in Sinclair J., *The Statistical Account of Scotland First Volume* (William Creech: Edinburgh 1791), p. 144.

Appendix 2 contains a list of goods exported from Culross for which customs dues were paid from 1579 to 1599. There are no figures available in the records between 1583 and 1589 as the realm's customs were rented by the burghs under the guidance of the Convention of Royal Burghs, for an annual fee of £4,000 and 30 tuns of Bordeaux wine a year . The supposed reason for the burgh's lease being to stop complaints about merchants defrauding the customs, and, presumably more importantly, to limit the activities of royal officials who had been taking wine from merchants without payment.[62] Column 1 defines the particular year, Column 2 shows figures gleaned from the customs returns made by the Custumar of Culross contained within the Exchequer Rolls of Scotland, whilst Column 3 lists adjusted figures produced in an unpublished Ph. D. thesis by Martin Rorke. The figures were adjusted by Rorke after taking into account discrepancies by supplementing the customs returns in the Exchequer Rolls with the particular accounts, for example the original customs dockets, recording and accounting errors and known cases of smuggling. An illustration of this can be seen in the accounts for the year 1580-1581. The entry in the Exchequer Rolls make no mention of the 416 chalders of smiddy coal listed in Column 3. Rorke explains this by way of a careless omission, perhaps on the part of the clerk involved. The total amount of the goods customed was £83 4s too little - a figure which amounts to the customs paid on 416 chalders of smiddy coal.

Scottish coal was divided into two categories - great coal, or burnecoll, which was the coal of preference for European markets, and small coals, variously called smiddy, smydie or smithie , in modern colloquialism known as dross. These small coals were used for smiths' furnaces and for fuelling fires to evaporate seawater in the salt production process. Using Rorke's adjusted figures, in the four years between 1591 and 1594, therefore prior to the opening of the Moat Pit, Culross exported 223.4 chalders of small coals and 62.7 chalders of great coal on average per annum. In the four years between 1595 and 1599 following the opening of the Moat Pit in 1595, Culross exported 262.4 chalders of small coal and 47.6 chalders of great coal on average per annum. This represents a 14.86% rise in small coals and a 31.72% decline in the export of great coals over the period prior to and after the opening of the pit. The quantities of coal exported do not therefore dogmatically support the theory that the Moat Pit was the pivotal cause for the expansion of Culross. Similar figures relating to the export of salt produced by coal-fired salt-water evaporation methods may provide other evidence and will be discussed hereafter.

There are some large discrepancies between Column 2 and Column 3 as explained by Rorke. There is one other possible reason for the discrepancies, perhaps more deliberate than accidental omissions and errors. Sir George Bruce was also the Custumar for Culross over at least part of the period in Appendix 2 and was responsible for collecting and submitting customs dues to the Exchequer. At the very least his twin roles of Custumar and a leading man of commerce was a conflict of interests. At its worst, it was a situation

[62] Rorke M., "Scottish Overseas Trade 1275-1597" unpublished Ph. D. Thesis at *http://www.bris.ac.uk/Depts/History/Maritime/Sources/2001phdrorke2.pdf* p.796 accessed on 11 December 2016.

that was open to gross abuse. There is no evidence to suggest that this was the case and it appears to be unlikely given the high esteem that Bruce was held in by his contemporaries. Nevertheless, it does ask the question - was Bruce manipulating the customs returns and, if so, was Culross producing more customed commodities than was being declared? Indeed, the coal-masters of the Inner Forth appear to have been a law unto themselves and were operating a system vaguely resembling a price-fixing cartel. In 1621 the Privy Council of Scotland issued a

> "remedy of the sufferings of the lieges from the recent extreme scarcity of coal ordaining that owners of coalheughs on both sides of the Water of Forth shall let the lieges be first served with coal before the foreign dealers frequenting the Forth" …… "with sometyme fiftie or threescoir sail." [63]

Similarly, the "owneris of the coalheughis upoun the Watter of Forth to prefer and furneis the country people with coillis befoir any strangearis upon the same pryceis."[64] The coal-masters were therefore favouring supplying the foreign vessels with coal - mainly Dutch vessels - before supplying the local population at a different, apparently inflated, price.

The controlling influence of the coal barons was once again challenged in December 1627 during the reign of King Charles I when Sir George Bruce's heir, also named George, was summoned along with others by the Privy Council "on pain of rebellion, to compear before the council …. and account for their diligence in uplifting" a previously imposed tax on coal and salt " to defray the expense of building forts and block houses on the Forth."[65] The coal mine owners of the Inner Forth appear to have continually pushed acceptable boundaries in search of financial gain.

On 30 March 1625 a violent storm caused the sea to inundate the Moat Pit and the drainage shaft rendering both of them useless as there were no available means to pump the vast amounts of sea water from the west end of the Jenny Pate coal seam. A couple of months later, in May 1625, Sir George Bruce died. His son, George, appears to have inherited his father's technical acumen as he is credited with opening up the east aspect of the Jenny Pate seam where the coal was nearer to the surface.[66] These access shafts are referred to in Illustration 2 as St. Mungoe's Pit, Nun's Pit, Mary's Pit and Barclay's Pit. St. Mungoe's Pit was of similar construction to the Moat Pit in that it was accessed by a shaft on an artificial island, drained by horse-mills, and is still visible today surrounded by playing fields to the east of Culross

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[63] Paton H. (ed.), *Register of the Privy Council of Scotland Volume XII 1619-1622* (Register House: Edinburgh 1877), p. 605. Translates as "with sometime fifty or three score (sixty) sail."
[64] Paton H. (ed.), *Register of the Privy Council of Scotland Volume XII 1619-1622* (Register House: Edinburgh 1877), p. 645. Translates as "owners of the coalheughs upon the Water of Forth to prefer and furnish the country people with coals before any strangers upon the same prices."
[65] Hume Brown P. (ed.), *Records of the Privy Council of Scotland 1627-28 Volume II* (Register House: Edinburgh 1904), p. 561.
[66] Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983), p.115.

village.[67] These pits appear to have produced coal well into the 17th century, possibly ceasing production in 1676 according to Gemmell's Geological Survey of Scotland.[68] George Bruce went on to marry Mary Preston of Valleyfield and the Preston family developed pit shafts on artificial islands along the coast towards Valleyfield during the 18th century and is seems reasonable to assume that the influence of the Bruce's extended into the Preston families coal mining techniques.

Coal was still apparently being exported from Culross later than the supposed closure of the pits to the east of Culross in 1676. For instance, on 11 June 1681 Edward Harrison, a shipmaster registered in London, was recorded paying customs fees to the King of Denmark at the customs point at Elsinore on a voyage from Culross to Riga, in modern day Latvia. Harrison was listed as carrying coal as ballast.[69] Whether the coal was mined at Culross, or possibly new ventures closer to Valleyfield, is a mute point. Nevertheless, it demonstrates that coal was still available to be shipped from Culross following the suspected demise of viable local mining. In 1793 Archibald Cochrane, 9th Earl of Dundonald, noted one colliery was operational on his Culross estate, but lamented that it produced "only to the extent of 12,000 Newcastle chaldrons annually" with a marginal profit.[70] To all intents mining in Culross as an economic concern ceased in the late seventeenth century.

Donald Adamson has heavily criticised the National Trust for Scotland for failing to adequately present to the public the value of the Moat Pit in the Trust's guides to Culross, particularly in their 2008 publication when the pamphlet suggested that there is little evidence of Sir George Bruce's mining activities. In Adamson's view, the Trust relegated the importance of interpreting the Moat Pit to visitors and concentrated instead on projects such as renovating Culross Palace, thereby losing site of the importance of Culross as an early industrial complex.[71]

In March 2009 Fife Council commissioned Rathmell Archaeology Ltd., Kilwinning, Ayrshire to carry out a detailed survey of the remains of Sir George Bruce's Moat Pit. Rathmell's survey concluded that there was the potential for a greater understanding of the site by more intensive archaeological examination of the remains.[72] It does not appear that Fife Council has acted on the report's conclusion that the Moat Pit presents an opportunity for further archaeological examination.

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[67] Adamson D., "A Coal Mine in the Sea: Culross and the Moat Pit" *Scottish Archaeological Journal Volume 30 No. 1/2* (2008) p.171.
[68] Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983), p.112.
[69] "Soundtoll Registers Online" at *www. soundtoll.nl* accessed on 2 February 2017.
[70] Cochrane A., 9th Earl of Dundonald, "Description of the Estate and Abbey of Culross particularly of the Mineral and Coal Property" (Dundonald, Edinburgh 1793), p. 22.
[71] Adamson D., "A Coal Mine in the Sea: Culross and the Moat Pit" *Scottish Archaeological Journal Volume 30 No. 1/2* (2008), 167-168.
[72] Mathews A. and Williamson C., "Moat Pit, Culross, Fife: Archaeological Survey" at *http://archaeologydataservice.ac.uk/archiveDS/archiveDownload?t=arch-706-1/dissemination/pdf/rathmell1-62937_1.pdf* accessed on 8 February 2017.

IFLI events such as "Telling the Inner Forth story," "Culross Heritage Walks," and collaboration with the National Trust for Scotland's "Little Houses Improvement Scheme" at Bennet House in Culross, together with Fife Council's recognition of the archaeological significance of Culross' Moat Pit, albeit unfulfilled, may go some way to assuaging Adamson's concerns by presenting a more balanced interpretation of the Moat Pit to the community and its visitors.

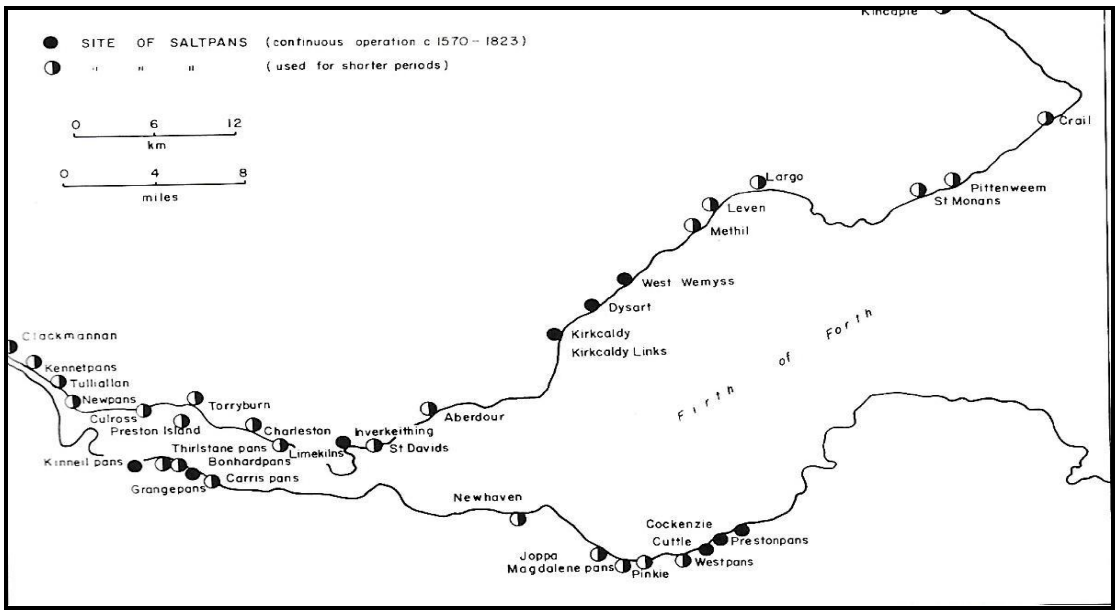
4

THE BOOM YEARS

Salt

Until the nineteenth century salt, 'that important and necessary article,' was the only means of preserving large quantities of food in Scotland. The Firth of Forth was eminently placed to produce salt from both sleeching and salt water evaporation techniques, which supported both a home retail market and a foreign trade. Culross' home retail market extended well outside of the burgh's hinterland. For instance, during the 1700s John Marshall from Menstrie purchased several bushels of salt at a time from Culross saltpans and sold it from horseback in Doune, Callander and Lochearnhead.[73] However, the boom in foreign trade is most significant - in the 1550s less that £18 Scots was collected in customs dues on Scottish salt exports. However, by the 1570s revenue from exported salt had reached £1,195 Scots.[74]

Illustration 8 - Forth Saltpans



Reproduced from Whatley C.A. *The Scottish Salt Industry 1570-1850* p. 12.

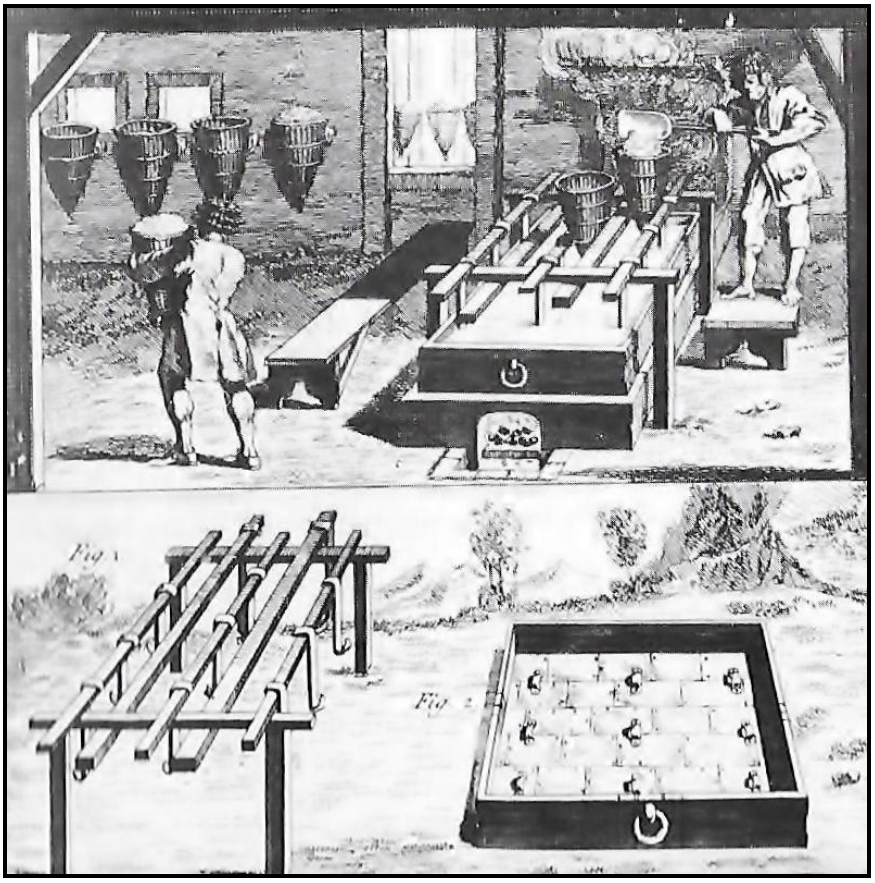
Illustration 8 shows salt manufacturing locations on the Firth of Forth with Culross, and nearby Preston Island, being operational for periods between 1570 and 1850.[75] Salt production on the Inner Forth was traditionally produced by sleeching or by the direct boiling of sea-water. Sleeching is a method of extracting salt from inter-tidal silts by repeated rinsing and the

[73] Whatley C. A., " 'That Important and Necessary Article' The Salt Industry and its Trade in Fife and Tayside" *Abertay Historical Society Number 22* (Abertay: Dundee 1984), p. 33.
[74] Hatcher J., *The History of the British Coal Industry Volume 1 Before 1700: Towards the Age of Coal* (Clarendon: Oxford 1993), p. 434.
[75] The circles on the illustration with a complete black infill were in continuous use between c1570-1823. Those circles with both semi-circular black and white infill were in use at various times during this period. Culross and Preston Island both fall into the latter category.

process is more suitable to locations with muddy or silty estuaries.[76] For instance, sleeching was utilised on the tidal flats on the south shore of the Inner Forth where the River Avon entered the Forth.[77] Direct boiling of sea-water was preferred on the north shore of the Inner Forth, particularly around Culross where firstly peat and then coal were readily available fuels.

The direct boiling method involved carrying sea-water from either natural rock pools or man-made dams to a pan-house or boiling-house above the high water mark where the sea-water was evaporated in large iron pans with coal fires beneath. Illustration 9 depicts a scene from a pan-house.

Illustration 9 - Depiction of a pan-house



Original from Brownrigg W., "The Art of Making Common Salt" reproduced in Whatley C.A. *The Scottish Salt Industry 1570-1850* p. 14.

The pan was suspended from hooks on a wooden pan-stand and coal-fired furnace was lit below. Once the sea-water had evaporated the salt was scraped from the pan into baskets. What the illustration fails to show is the conditions that the salters worked in, with searing temperatures, steam and high humidity levels all in an unlit, cramped environment. Even as late as 1765, a visitor to a saltpan in Bo'ness, on the opposite shore of the Firth from

[76] Oram R., "The Sea-salt Industry in Medieval Scotland" (unpublished). Thanks to Professor Oram for a copy of his unpublished paper.
[77] Bailey G.B., "Early Salt Production in the Falkirk District" (unpublished). Thanks to Geoff Bailey for a copy of his unpublished paper.

Culross, commented that, "Nothing ever Exhibited Such an Idea of the Infernall Regions as this Horrid furnace and the Poor Miserable Naked Wretches attending it."[78] Working in saltpans was a hereditary occupation passed between the generations and there was a distinct hierarchy in the different tasks carried out in salt production. Owners were keen to employ salters who were skilled, physically fit and had stamina. Moreover they had to be sufficiently reliable so as not to damage the saltpans and thereby diminish the owner's substantial investment. In the hierarchical structure beneath the owner was a grieve or factor whose responsibility was the management of the owner's business. Next the grieve came the master salter who operated a saltpan making salt. Presumably Culross had several master salters given the high number of pans. Then came a salter's assistant who carried out the labour intensive tasks including keeping the fire going, removing ash and carrying sea-water to the pans. Casual labourers were also employed to carry out further menial tasks such as washing the sacks that salt was carried in to the storage houses and ships or carrying coal from the pit to the pan-house. Other temporary workers included artisan craftsmen to maintain the fabric of the pan-houses. Salt making was therefore both a labour intensive operation and a complex social system.[79] In Culross, salters were accommodated in rows of houses situated away from the pans. Some houses are recorded as being single storey houses eight feet high and another row of larger buildings was 18 feet high[80] and would imply that Culross' saltpan owners were keen have a stable workforce, albeit in virtual serfdom. A salter who broke the terms of his serfdom could expect the law to be enforced. For example, in 1636 a salter from nearby Tulliallan was forcibly returned and detained at Tulliallan by the Laird after he absconded to work for another saltpan owner. In its heyday Culross must have been both a bustling industrial burgh with a strong social element at its core.

The saltpans of the Inner Forth produced salt with small crystals, which was considered to be inferior to the larger salt crystals formed by salt manufacture in the Bay of Biscay and later from Cheshire rock salt. Certainly, salt produced by local sea-water boiling methods was not the preserving material of choice used in the fishing, particularly herring, industry. Inner Forth salt crystals dissolved too quickly in the fish barrels, leeched to the bottom of the barrels causing the product in the top portion to rapidly decay and imparted a bitter taste to fish that was still edible. Fish merchants therefore preferred superior grade salt imported from the French Atlantic coast around the Bay of Biscay. Where Inner Forth salt found a niche market was in the processing of meat and hides where the size of the crystal was of less importance.[81] However, the catalyst for the boom in salt production on the Inner Forth was

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[78] Whatley C.A., *The Scottish Salt Industry 1570-1850* (Aberdeen: Aberdeen University Press 1987), p. 99.

[79] Whatley C.A., *The Scottish Salt Industry 1570-1850* (Aberdeen: Aberdeen University Press 1987), p. 98 - 125. Most of the information in this paragraph was gleaned from the Chapter entitled 'Salters, Serfdom and Status.'

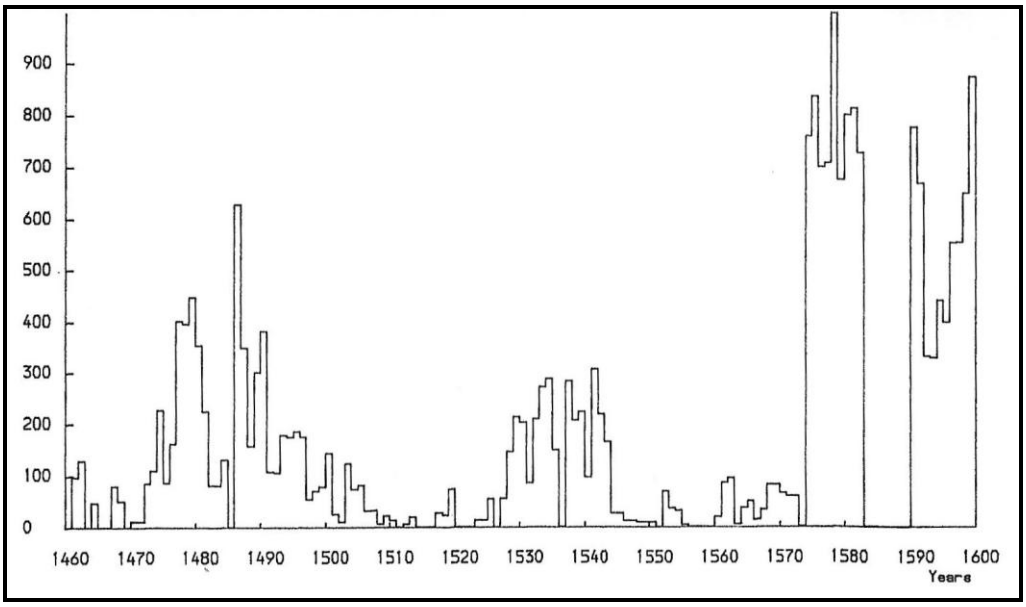
[80] Whatley C.A., *The Scottish Salt Industry 1570-1850* (Aberdeen: Aberdeen University Press 1987), p. 103.

[81] Oram R., *The Sea-salt Industry in Medieval Scotland* (unpublished), p. 4. For a fuller discussion on the drawbacks of Scottish produced salt see Grant I.F., *The Social and Economic Development of Scotland Before 1603* (Edinburgh, 1930), p. 316.

the political dislocation of French salt from their Scottish markets, of which the Scottish salt-masters took full advantage.

During the early 1570s Culross had seven salt pans.[82] By 1625 the burgh boasted 44 pans.[83] Illustration 10 highlights the rapid expansion of Scottish salt exports in chalders from the mid-1570s to 1600.

Illustration 10 - Scottish Salt Exports 1460 -1599



Reproduced from Guy. I., "The Scottish Export Trade, 1460-1599" in Smout T.C. (ed.), *Scotland and Europe 1200-1850*

Culross' prominence over the period from 1570 to 1600 rose from a being a minor salt producer to become the first ranked salt exporting burgh in Scotland.[84] Culross was in a favourable position to take advantage of several factors. Scotland imported the majority of its salt from France where religious and political turbulence exposed Scotland's over-reliance on a single import market. Disturbances to the French market were exacerbated in the mid-sixteenth century by a colonial conflict between Spain and the Low Countries. The Dutch were the principle transporters of French Atlantic sourced salt imported to Scotland and Spanish retribution for the conflict involved the serious disruption of Dutch maritime trade. Spain waged economic warfare periodically on the Dutch until 1648,[85] which was devastating to an economy that relied on maritime trade. The impact on the Low Countries was of

[82] Masson D., "Register of the Privy Council of Scotland First Series Volume II" (Register House: Edinburgh 1878) p. 265-166; Whatley C.A., " 'That Important and Necessary Article' The Salt Industry and its Trade in Fife and Tayside c1570-1850" *Abertay Historical Society Number 22* (Abertay: Dundee 1984), p. 24.
[83] Cochrane A., 9th Earl of Dundonald, *Description of the Estate and Abbey of Culross* (Dundonald: Edinburgh 1793), p. 15.
[84] Guy. I., "The Scottish Export Trade, 1460-1599" in Smout T.C. (ed.), *Scotland and Europe 1200-1850* (John Donald: Edinburgh 1986), p. 66.
[85] Whatley C.A., *The Scottish Salt Industry 1570-1850* (Aberdeen: Aberdeen University Press 1987), p. 34 -35.

concern to the Convention of Royal Burghs who recorded in 1570 that "the troubilism estait in Flanders" was causing the Scottish trading base to be "removit to syndrie places…throwe the occasion of the civill tumultis, quhair wyth the maist pairte off Flanders hes bene ….. occupiet to the hurt of mony."[86] So concerned was the Convention of Royal Burghs about the conflict in the Low Countries that it considered removing its trading base in Flanders to Calais.[87]

Royal intervention failed to stimulate the Scottish salt industry by attempting to introduce foreign salt producing methods. For instance, in 1564 Mary, Queen of Scots, brought salt maker Angelo Manelio from Italy. However, his endeavours, along with similar exploits, failed.[88] The boost to Scottish salt producing was created by landed and merchant individuals taking advantage of a market opportunity caused by increasing prices for Biscay salt, having the capital to develop saltpans and access to a readily available supply of coal as fuel. All of these applied to Culross' development as the leading salt exporter in Scotland where the "conveniency of coals gives greatest encouragement to the erection and pursuit of these (salt) works."[89] To boost the number of saltpans from seven to 44 required both significant financial investment and manpower to operate the pans - salters, iron-workers and carpenters. In 1628 a pan and pan-house built on the outer reaches of the Firth of Forth at Weymss cost £2,500 Scots; two years later an additional pan cost 3,000 merks "in all things stone work, timber, iron, lime and workmen."[90] If Culross was building similar sized pan-houses then the financial investment was substantial. Whatley is of the opinion that the major outlay in the construction of pan-houses was for imported high-grade Swedish iron.[91] There are several records of Culross vessels importing Swedish iron, presumably for the very purpose of constructing pans along the burgh's shore. By way of illustration, in August 1600 David Primrose, a shipmaster from Culross, departed from Danzig, in modern day Poland, with a cargo of Swedish iron and iron staves. Similarly, in August 1607 Archibald Halliday, another Culross shipmaster, completed a journey from Danzig with a cargo including Swedish iron, iron rods, clapboard for making barrels, fine pitch and rough tar.[92] It is evident therefore that at the beginning of the seventeenth century saltpans were being manufactured at Culross with the best available materials.

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[86] "Convention of the Records of the Royal Burghs" quoted in Lythe S.G.E., *The Economy of Scotland in its European Setting 1550-1625* (Oliver and Boyd: Edinburgh 1960), p. 234. A rough translation is 'the troublesome state in Flanders…(The Scottish Trading base had) been removed to sundry places…through the occasion of the civil tumult…where with most of Flanders has been… occupied to the hurt of many.'

[87] Lythe S.G.E., *The Economy of Scotland in its European Setting 1550-1625* (Oliver and Boyd: Edinburgh 1960), p. 234.

[88] Whatley C.A., *The Scottish Salt Industry 1570-1850* (Aberdeen: Aberdeen University Press 1987), p. 34.

[89] Brereton W., *Travels in Holland, The United Provinces, England, Scotland and Ireland* (Chetham Society: Manchester 1844), p. 112.

[90] Diary of Earl David of Weymss, Weymss Castle MSS, quoted in Whatley C.A., *The Scottish Salt Industry 1570-1850* (Aberdeen: Aberdeen University Press 1987), p. 70.

[91] Whatley C.A., *The Scottish Salt Industry 1570-1850* (Aberdeen: Aberdeen University Press 1987), p. 148, Footnote 53.

[92] "Soundtoll Registers Online" at *www. soundtoll.nl* accessed on 2 February 2017.

By the 1590s Culross was responsible for producing 89% of Scottish salt exported.[93] During John Taylor's visit to Culross in 1618 he estimated that Culross' saltpans were producing between 90 to 100 tons of salt a week "some parts he (Sir George Bruce) sends to England and very much into Germany,"[94] together with supplying the domestic market. However, it is generally accepted that Taylor's estimate of exported salt was a gross over-estimate. In order to produce 100 tons of salt a week, Culross would be required to mine at least 600 tons of coal a week, or acquire coal from elsewhere, given the ratio of at least six tons coal being required to produce one ton of salt. If Taylor's estimate is correct then Culross would need to obtain at least 31,200 tons of small coal a year to fuel the saltpans alone. Modern calculations using the known measurements of the Jenny Pate coal seam suggest that the Moat Pit was capable of producing 4,000 tonnes per annum or 80 tonnes of coal per week.[95] Even given the slight variation in the weight of an imperial ton against a metric tonne, Taylor's estimate on salt production is either wildly inaccurate or he erroneously mistook salt production amounts for actual coal mined.

Nevertheless, Culross' saltpans were producing prodigious amounts of salt for export taking advantage of high prices and volume sales.[96] By again referring to Appendix 2 and using the same formula for comparing coal production in the previous chapter in the years before and after the opening of the Moat Pit in 1595 there was a marked increase in the production and export of salt. Using Rorke's amended figures, between 1591 and 1594 exported salt amounted to1284 chalders with an annual average of 321 chalders. Between 1595 and 1599 the total exports were 57.94% higher at 2028 chalders with an annual average of 507 chalders. These figures tend to lend credibility to Adamson's contention that the Moat Pit was the integral factor in Culross' expansion. However, this should not be viewed in isolation as it was the ability of Culross to take advantage of changing salt markets that was equally as important. Indeed, had it not been for the dislocation of French Atlantic salt exports caused by political circumstances in France, Spain and Holland and the Scottish salt-masters seizing upon the trading vacuum then the Moat Pit may have conceivably turned into a financial millstone. As shall be developed hereunder, later entrepreneurial ventures by Archibald Cochrane, 9th Earl of Dundonald, and Robert Preston were financial failures and Bruce's Moat Pit could have fallen into the same category had there not been favourable market forces of supply and demand.

The storm of 1625 only appears to have had a short-term effect on salt making and exports, without the same devastating effect that it had on the Moat Pit. In a visit to the Forth in 1630 Sir William Brereton found all "along

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[93] Dennison P.E., "Medieval Burghs" in Omand D. (ed.), *The Fife Book* (Birlinn: Edinburgh 2000), p. 140.
[94] John Taylor quoted in Hatcher J., *The History of the British Coal Industry Before 1700 Volume 1: Towards the Age of Coal* (Clarendon: Oxford 1993), p. 434.
[95] Adamson D., "A Coal Mine in the Sea: Culross and the Moat Pit" *Scottish Archaeological Journal Volume 30 No. 1/2* (2008), p184-185.
[96] Whatley C. A., " 'That Important and Necessary Article' The Salt Industry and its Trade in Fife and Tayside" *Abertay Historical Society Number 22* (Abertay: Dundee 1984), p. 24-28.

the shore of the Frithe are placed …. salt-pans… which cannot be estimated and guessed, because the works are not easily to be numbered."[97] By 1663 the number of saltpans in Culross had risen from 44 before the storm to 50 pans contained in a concentrated area.[98] Such was the relentless demand for salt the Culross' salters, who were supposed to extinguish their saltpan fires on a Saturday evening to observe the Sabbath on Sunday,[99] incurred the wrath of the Synod of Dunblane in 1663 when it instructed the ministers of Culross and Tulliallan to ascertain from "the salters what is the reason they keip their saltpanes ganging so long upon the Lord's day."[100]

Adam Smith, the Scottish political economist, once wrote "people of the same trade seldom meet together ….. but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices"[101] and this is certainly true of the saltpan owners. Similar to the trade in coal, salt producers preferred foreign trade to local supply. In 1573 some panmasters on the Forth were selling salt "upoun grit and exorbitant prices, in manifest hurt and prejudice to the common weill."[102] It seems that even State intervention failed to bring the saltmasters to heel by the imposition of an export duty on salt. Despite the export tax the Privy Council continued to hear complaints during the early seventeenth century about the 'verie grite' abuse of fiscal regulations by masters of saltpans above Queensferry. Saltmasters were therefore something of a law unto themselves and displayed a common interest in keeping salt prices inflated during the second half of the sixteenth century and the early seventeenth century.

By the middle decades of the seventeenth century the Dutch had regained control of the Atlantic salt trade and Scottish salt exports decreased with owners turning to rely on the domestic trade and developing a protectionist policy as the positive impact of favourable market sources evaporated. The decline in the importance of foreign trade can be seen by the increasing sales of domestic salt - in 1670 Scots consumed 40% of Scottish salt, by 1706 Scots were consuming 69% and by the early 1800s this had risen to 76%.

Despite the loss of the main overseas trade to the Dutch, Fife salt continued to be exported to the Baltic states and to England from Culross into the eighteenth century. For instance, in July 1706 Eleesar Christensen, a shipmaster from Bergen in Norway, carried a full cargo of salt from Culross to Danzig .[103] Foreign ships from also carried salt from Culross to Danzig in the 1690s and it is significant that a foreign vessels, rather than a Culross based ships, were being utilised to transport salt. As Thomas Tucker's report

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[97] Brereton W., *Travels in Holland, The United Provinces, England, Scotland and Ireland* (Chetham Society: Manchester 1844), p. 112.
[98] Nef J.U., *The Rise of the British Coal Industry* (Routledge: London 1932), p. 178.
[99] Little C.A., "The Causeways of Culross" *Scottish Field* (September, 1971).
[100] Wilson J. (ed.), *Register of the Diocesan Synod of Dunblane 1662-1688* (Blackwood and Sons: Edinburgh 1877), p. 118.
[101] Smith A., *An Enquiry into the Nature and Causes of the Wealth of Nations* (1960) p. 117; Whatley C.A., *The Scottish Salt Industry 1570-1850* (Aberdeen: Aberdeen University Press 1987), p. 77.
[102] Unknown source quoted in *The Scottish Salt Industry 1570-1850* (Aberdeen: Aberdeen University Press 1987), p. 78.
[103] "Soundtoll Registers Online" at *www. soundtoll.nl* accessed on 2 February 2017.

indicated, by 1656 Culross only had two vessels "that still remayne" - by the mid to late 17th century the halcyon days of salt making and export from Culross were over.

Although salt making in Culross was over, the saltpans, pan-houses, girnals (warehouses) survived at least well into the eighteenth century. An inheritance claim on behalf of the Reverend Dr. John Erskine of Carnock heard that his grandfather, the late Colonel John Erskine of Carnock, had "died seised (in possession) of the following saltpans." The Burgh Council minutes go on to describe 34 properties with saltpans, pan-houses, girnals, houses and other buildings associated with salt production, which were listed in Colonel Erskine's sasine (possession of feudal property) dated 1707. How Erskine came to hold the feudal rights to these properties is unclear - many of the entries in the minutes record previous ownership by Sir George Bruce - but the properties obviously retained some capital value.[104]

[104] *Culross Burgh Council Minutes 1588-1975* Fife Council Archives Ref. No. Reference Number B/Cul.

5

THE BOOM YEARS

Girdle Pans

"If ye dinna behave yoursel, I'll gar (make) yer lugs ring like a Culross girdle" was supposedly a commonly used parental warning to errant children in Culross' boom years.[105] But the girdle pans were more significant to the development of Culross than simply a warning to children, with "Culross girdles …. at one time as famous as the coals and the salt of the ancient burgh."[106]

A girdle pan was the traditional implement for the cooking of Scottish staple foods including oatcakes and bannocks. The girdle consisted of an iron pan with four legs that enabled it to be placed over a fire. The girdle-smiths who manufactured the pans, by repetitive beating with hammers over an anvil until the ideal thickness for cooking was achieved, considered themselves superior artisans to other smiths. Girdle makers formed the upper echelon of the Incorporation of Hammermen and only they had the right to form a separate class within the Incorporation.[107] Other hammermen iron workers were forbidden from making girdles and girdle-smiths were forbidden from making other iron products. They zealously protected the quality, and therefore the price, of their product. An early record from 1549 indicates that the craft guild of girdle-smiths decreed that no person erect a forge " til he be judged qualified by the Incorporation to carry out the trade, and that he shall have sufficient means of his own without being necessitated to borrow on credit."[108] In November 1599 King James VI granted the monopoly for the manufacture of girdle-pans to the smiths of Culross - a decision later ratified by his grandson, King Charles II, in December 1669 granting that "in all time coming, the sole and only liberty and privilege of making of girdles of all sizes within his majesty's said burgh of Culross"[109] The need to ratify the monopoly was caused by a claim from 'pretend smiths' in nearby Valleyfield contesting Culross' right to exercise the monopoly, which led the "monopolists of Culross to engage in legal warfare"[110] to protect their rights. Culross girdle-smiths were forced to bow to the inevitable as girdle manufacture spread to other burghs and the cost of pursuing legal cases became prohibitive, with the Court of Session finally refusing to uphold the burgh's monopoly in 1725.[111] In 1760 Carron Ironworks began to produce cast-iron girdle pans at a fraction of

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[105] Gordon A., "The Girdle-makers of Culross" in *Scots Magazine* (March 1998).
[106] Cunningham A.S., *Romantic Culross, Torryburn, Carnock, Cairneyhill, Saline and Pifirrane*, (Clark and Son; Edinburgh 1902), p. 41.
[107] Gordon A., "The Girdle-makers of Culross" in *Scots Magazine* (March 1998).
[108] Incorporation of Hammermen quoted in "Monopoly of the Olden Times" *The Dunfermline Journal, Saturday, July 3rd, 1887."*
[109] Brown K.M.(ed.), "The Records of the Parliaments of Scotland to 1707" at *http://www.rps.ac.uk/search.php?action=print&id=38626&filename=charlesii_trans&type=transdate* accessed on 19 February 2017.
[110] "Monopoly of the Olden Times" *The Dunfermline Journal, Saturday, July 3rd, 1887.*
[111] Cunningham A.S., *Romantic Culross, Torryburn, Carnock, Cairneyhill, Saline and Pifirrane*, (Clark and Son; Edinburgh 1902), p. 42.

the cost and Culross could no longer compete with both the price and mass production.

The regulations of the Incorporation of Hammermen relating to girdle-smiths were protectionist, inflexible and severe on those who chose to break the rules. A girdle-smith's apprenticeship lasted five years with another three years as a Journeyman before he could become a Master-smith. Before someone was accepted into the Incorporation of Hammermen he had to demonstrate his skill by making a girdle-pan before members of the Incorporation and cement his application by buying the entire membership a 'speaking pitcher' of ale before being permitted to 'kindell his fyre.'[112]

Girdles had to be examined and approved before being officially stamped thereby providing quality assurance. Prices were kept high by ensuring that supply equalled demand preventing a glut of girdles on the market. The girdle-smiths were restricted to the number of girdles they could make in one day and they were fined if they began work earlier than 4 o'clock in the morning.[113] Penalties for breaching the regulations were severe and reflect the protectionist policy of the Incorporation. As well being fined and having their forge disabled, breaking the strictly enforced rules could lead to a first offender being reduced from a Master to a servant for one year; a second offence led to the offender was barred from being a Master for three years; and after a third offence the member was expelled from the Incorporation.[114] It is probably fair to say that the girdle-smiths within the Incorporation of Hammermen were ranked in importance in the burgh only behind the Town Council and the Kirk when it came to demonstrating authority over its members. They even attempted to exert their authority outside the burgh. In the early 1700s a Culross girdle-smith had the temerity (at least in the eyes of the Incorporation) to leave the burgh and establish a forge in Kilmarnock. The Incorporation of Hammermen attempted unsuccessfully to have the Kirk Session of Kilmarnock punish the miscreant girdle-smith. The importance of the girdle-smiths can also be gauged by the fact that in June 1634 they were given the distinction by the Kirk Session to build at their own expense “ane loft at the west end of the kirk, to belong to the said craft and their successors, as craft seat proper, and belonging to them in all time coming.”[115]

In the mid-seventeenth century there were as many as sixteen Master girdle-smiths in Culross.[116] Between January 1674 and May 1675 at least 4,219 girdle-pans were manufactured in the burgh with one smith, Robert Blaw making 850, all of which were authenticated and stamped with the with the hammermens' symbol of a hammer, anvil and the name 'Culross'.[117] Trade in the girdle-pans appears to be mostly domestic. King James VI supposedly

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[112] Gordon A., "The Girdle-makers of Culross" in *Scots Magazine* (March 1998).
[113] "Monopoly of the Olden Times" *The Dunfermline Journal, Saturday, July 3rd, 1887.*
[114] "Monopoly of the Olden Times" *The Dunfermline Journal, Saturday, July 3rd, 1887.*
[115] Culross Kirk Session Record Book quoted in Beveridge D., *Culross and Tulliallan or Perthshire on Forth Volume II*(Blackwood and Sons: Edinburgh 1885), p. 152.
[116] Cunningham A.S., *Romantic Culross, Torryburn, Carnock, Cairneyhill, Saline and Pifirrane*, (Clark and Son; Edinburgh 1902), p. 42.
[117] Beveridge D., *Culross and Tulliallan or Perthshire on Forth Volume II*(Blackwood and Sons: Edinburgh 1885), p. 164.

decreed that Scottish soldiers should carry oatmeal and Culross girdle-pans. The Royal troops garrisoned in Culross from Blackness Castle during the Jacobite uprising of 1715, to the grievance of the burgh's inhabitants,[118] were doubtlessly catered for by the use of girdle-pans. In November 1668 John Christie, on behalf of Culross' girdle makers, signed an agreement with Perth's Dean of Guild for a supply of girdles "well footed and dressed …approved and have the stamp put on them."[119] A similar deal was made to supply girdles to Glasgow in 1668.[120]

Together with imported iron being used for saltpan production it also seems feasible for girdle-smiths to use the best available materials given their protectionist ideology and attention to detail. Perhaps a shipment of iron in August 1645 from Elblag in Poland and the iron rods, iron staves and pipes mentioned in the cargo manifests of other vessels bound for Culross was destined for the girdle forges as well as the saltpans?[121] It is also possible that girdle-pans were exported to the Scottish contingents at the Dutch staple ports such as Campveere and in the Hanseatic ports such as Greifswald. In June 1607, a shipmaster from Eckernfjörde in modern Germany, departed from Culross with what is only described in the customs account as 'Scots goods'[122] - girdle-pans could certainly come within this description.

The manufacture of girdle-pans was an important contributor to the overall development of Culross as a prominent trading burgh, albeit predominantly serving a domestic trade.

[118] Little C.A., "The Causeways of Culross" in *Scottish Field* (September 1971).
[119] Agreement between John Christie and John Wilson, Dean of Guild of Perth quoted in Gordon A., "The Girdle-makers of Culross" in *Scots Magazine* (March 1998).
[120] Beveridge D., *Culross and Tulliallan or Perthshire on Forth Volume II* (Blackwood and Sons: Edinburgh 1885), p. 162.
[121] "Soundtoll Registers Online" at *www. soundtoll.nl* accessed on 2 February 2017.
[122] "Soundtoll Registers Online" at *www. soundtoll.nl* accessed on 2 February 2017.

6

TRADE ROUTES

The importance of trade to the burghs of the Inner Forth can be gauged by the sea-going traders erecting "markes and beacons on all the crages and blind rockes upone ther auen charges."[123] Sir George Bruce was one of the Commissioners responsible for the positioning of the beacons.[124] The gesture of placing warning markers on hazards to shipping at their own expense was unlike measures taken to mark the passage for vessels through the Sound of Denmark at Elsinore, where vessels where charged 'Fyrpenge,' or 'Fire-money,' to maintain the beacons that marked the route, irrespective of whether they were carrying cargo or not.

Appendix 3 (i) provides a list of place names visited by vessels with a connection to Culross, together with the modern day place name and country. Appendix 3 (ii) is a chronological list of voyages made by vessels that either belonged to the burgh or was their departure or destination port.

The main trading routes favoured by Culross merchants were with England, the Low Countries and states on the Baltic Sea with both an import and export business being conducted from the burgh's harbour. Furthermore, shipmasters carried out triangular trade between three ports, uplifting cargo from a foreign port to be unloaded at a second foreign port before returning to Culross with a different cargo. Letters written by Edward Kennewie to his brother James in Culross during the 1670s indicate that a three-way trade existed between Britain, Sweden and Prussia.[125] Kennewie's letters were written in various ports including Konigsberg, Danzig, London and Elsinore.[126] The most favourable time for voyages was from May to November thereby avoiding the worst of the winter storms. Journeys lasted for several weeks. For instance, between 1618 and 1628 return journeys from Culross to Danzig took between 29 and 51 days.[127] Lythe has calculated that vessels undertook three round trips on average per annum.[128] This was certainly the case in 1602 when David Primrose, a Culross shipmaster, made voyages to the Baltic in April, May and July carrying cargoes of animal skins, rye, hemp, tar and

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[123] Sir James Balfour quoted in Lythe S.G.E., *The Economy of Scotland 1550-1625* (Oliver and Boyd: Edinburgh 1960), p. 48; Hume Brown P. (ed.), *Records of the Privy Council of Scotland Volume VII* (Register House: Edinburgh 1904), p 278-279.
[124] Bowman I., "Coal Mining at Culross: 16-17th Centuries" *Forth Naturalist and Historian Volume 7* (1982-1983), p. 86.
[125] Riis T., "Long Distance Trade or Tramping: Scottish Ships in the Baltic, Sixteenth and Seventeenth Centuries" in Smout T.C. (ed.), *Scotland and the Sea* (John Donald: Edinburgh 1992), p. 70.
[126] *Letters from Edward Kennewie to his brother James* National Records of Scotland Reference Number GD29/1959.
[127] Riis T., "Long Distance Trade or Tramping: Scottish Ships in the Baltic, Sixteenth and Seventeenth Centuries" in Smout T.C. (ed.), *Scotland and the Sea* (John Donald: Edinburgh 1992), p. 68. This information refers specifically to Bo'ness but it is reasonable that Culross vessels took the same time given the proximity of the two ports.
[128] Lythe S.G.E., *The Economy of Scotland 1550-1625* (Oliver and Boyd: Edinburgh 1960), p. 135.

salt.[129] Unfortunately, the records in these instances do not record either the departure or destination ports.

Sir George Bruce's trade in salt and coal with England was also carried out from Bo'ness, and possibly Airth, as well as from Culross. Some of his vessels fell victim to mishaps. In 1583 two of his vessels named *Falcon* and *Jesus* were plundered whilst waiting in the sea roads off Lowestoft on the east coast of England;[130] another vessel had its cargo of salt damaged in 1593 by an Englishman by the name of John Keler.[131] Similarly, Cornish pirates disrupted Atlantic trade when in 1598 Bruce's ship named 'Bruce' was attacked by the 'Julien' and its cargo of wine from Portugal was destroyed.[132] Such instances were perhaps the exception rather than the rule but demonstrate the hazards of trading in a era of political upheaval. Such incidents must have resulted in significant financial losses to Bruce and his fellow traders.

In November 2014 *The Scotsman* newspaper published a brief article entitled 'Scottish Fact of the Day - Pantile roofing'[133] that told of pantiles being used as ballast on return journeys to Culross from foreign ports from the late sixteenth century. The red roofs created by the pantiles has helped to create a lasting memory for visitors to the burgh ever since. Appendix 3(ii) is a list of all voyages to and from Culross, together with cargos, that have been noted during the course of the research for this paper. Pantiles are not listed on any voyage. However, this does not dismiss the Scotsman newspaper's story as being without foundation. If the pantiles were simply carried as ships' ballast then their presence may not have been recorded by the customs authorities. For instance, in 1601 two vessels from Anklam and Stralsund passing through the Danish Sound were simply recorded as being in ballast. Although pantiles on the roofs of Culross buildings, and other burghs on the Forth such as Crail and Dysart, give them their distinctive character, they were regarded as being an inferior product. The more expensive Welsh slate was the preferred roofing material and pantiles were considered a cheap alternative.

It is generally thought that pantiles were brought from the Netherlands, which was a principle trading nation with Scotland. The fixed, or 'Staple', port in the Netherlands canalised Scottish trade through one port and towns such as Middelburg, Antwerp and Campveere competed for the right to service Scottish trade. Campveere held the monopoly for Scottish trading rights for nearly 250 years, apart from some brief intermissions by ports such as Dort the responsibility of the Convention of Royal Burghs, of which Culross was a prominent member, and provided a relatively simple conduit for the Convention to collect customs dues. The administration of the Scottish Staple

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[129] "Soundtoll Registers Online" at *www. soundtoll.nl* accessed on 2 February 2017
[130] Boyd W.K. (ed.), *Calendar of State Papers, Scotland: Volume VI* (HMSO: London), p.431-432
[131] Cameron A.I. (ed.), *Calendar of State Papers, Scotland: Volume XI* (Register House: Edinburgh 1936) p. 156.
[132] Cameron A.I. (ed.), *Calendar of State Papers, Scotland: Volume XIII* (Register House: Edinburgh 1936) p. 270.
[133] "Scottish Fact of the Day - Pantile roofing" at *http://www.scotsman.com/heritage/people-places/scottish-fact-of-the-day-pantile-roofing-1-3611685* accessed on 17 March 2017.

was carried out by a Conservator, men such as Andrew Halyburton who held the position between 1492 and 1503 and James Hacket who administered Scottish interests in the port from 1570 to 1619.

In 1598 Fynes Morrison, a traveller and social observer, listed "Camphire in Zetland" as the primary port with which Scots had their "cheefe trafficke …. they carry salt, the skinnes of weathers (sheep), otters, badgers and martens."[134] Notably, salt is given first priority by Moynes and the products of Scottish extractive industries were prominently mentioned in the Conservator's ledgers during the early years of the seventeenth century.[135] Given the prominence of Culross during this period as both a coal and salt producer it is reasonable to suggest that the burgh had a substantial trade with Campveere. During the mid 1620s, fifty ships carrying coal unloaded at Campveere.[136] In 1658 Scotland's coal masters met at Culross and decided that coal exports to destinations other than Campveere were forbidden, with the proviso that traders in the Staple would pay a fixed price for coal for a period of five years, presumably at a beneficial rate to the coal owners as initial resistance to the Staple's monopoly was overcome by the promise of predetermined prices.[137] A further attraction in dealing with the Scottish entrepôt in the Netherlands was that the Dutch readily paid in hard cash - a foreign currency that could be used in other forms of overseas trade.[138] As late as 1734 Culross merchants were still dealing with the Scottish Staple at Campveere. For example, James Johnstone, a Culross merchant, contracted James Drummond, the master of the *Diligence of Borrowstouness,* to carry tobacco from Campveere to Clove in Norway and thereafter transport a cargo of timber from Clove to Culross.[139] The records of Campveere retained in the Netherlands warrant further inspection with specific regard to Culross, but is unfortunately outside the scope of this paper.

Another important outlet for trade from Culross was destinations around the Baltic Sea, particularly those of the old Hanseatic League. Although the influence that the confederation of cities that the League represented had weakened by the mid-sixteenth century, the individual cities retained their commercial importance and became more accessible to trade from outside - most notably by the Dutch, but also from Scottish vessels. Between 1574 and 1640 the average of Dutch shipping entering the Baltic was 70%, whilst Scots shipping represented only 3% of the total vessels entering the Baltic.[140] Culross vessels carried out bilateral trade with Baltic ports. Vessels from Culross carried predominantly salt to the Baltic where the virtually land-locked sea had a low salinity level and was incapable of producing sufficient

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[134] Fynes Morrison quoted in Lythe S.G.E., *The Economy of Scotland 1550-1625* (Oliver and Boyd: Edinburgh 1960), p. 237.
[135] Lythe S.G.E., *The Economy of Scotland 1550-1625* (Oliver and Boyd: Edinburgh 1960), p. 237.
[136] Rooseboom M.P., *The Scottish Staple in the Netherlands* (Martinus Nijhoff: The Hague 1910), p. 119.
[137] Rooseboom M.P., *The Scottish Staple in the Netherlands* (Martinus Nijhoff: The Hague 1910), p. 192.
[138] Lythe S.G.E., *The Economy of Scotland 1550-1625* (Oliver and Boyd: Edinburgh 1960), p. 245-6.
[139] *Contract between James Johnstone and James Drummond* National Records of Scotland Reference Number GD300/38.
[140] Lythe S.G.E., *The Economy of Scotland 1550-1625* (Oliver and Boyd: Edinburgh 1960), p. 153.

quantities of salt. Salt was shipped to cities including Danzig and Gribswald. Foreign vessels also plied a trade with Culross with vessels from Bremen collecting both coal and salt from the burgh.[141] Bremen was an important outlet for Culross produced salt. In 1634 Archibald Mercer, the factor to George Bruce, negotiated a deal with the municipal council of the city for the supply of salt with the financial transactions concluded in Amsterdam.[142] Shipmasters from Bremen are recorded in 1643 and 1646 collecting cargos of salt from Culross.[143]

Vessels entering and leaving the Baltic Sea took one of two routes. Vessels either took the route along the west coast of Sweden through the Sound or the route through the Great Belt along the east coast of Jutland. Vessels navigating from Scotland avoided the reefs south of Norway and were therefore forced into the eastern route through the Sound. Between 1618 and 1628 an estimated 82.2% of Scottish vessels preferred the Sound route whilst the remainder preferred the route through the Great Belt.[144] Vessels using the Sound route were required to declare their cargos and pay customs at the King of Denmark's customs point at Elsinore. Illustration 11 is an early image of vessels approaching the customs house and demonstrates that it would have been well nigh impossible to avoid the heavily fortified channel to bypass the customs house.

Illustration 11 - Elsinore

Early Depiction of Elsinore Customs taken from *http://soundtoll.nl*

As can be seen in Appendix 3(ii) vessels from Culross made numerous trips to Baltic ports throughout the seventeenth century. Some shipmasters appear

[141] Lythe has calculated from the Sound Toll registers that one in three vessels in the Scotland-Baltic trade were foreign. Lythe S.G.E., *The Economy of Scotland 1550-1625* (Oliver and Boyd: Edinburgh 1960), p. 154.

[142]"Archibald Mercer also known as Balthasar Mercer" at *http://www.mercermillions.info/mercers-of-perth/generation-11/11-balthasar-mercer/* accessed on 20 March 2017.

[143] Information on journeys and cargos has been taken from the Soundtoll Registers at *http://soundtoll.nl*

[144] Riis T., "Long Distance Trade or Tramping: Scottish Ships in the Baltic, Sixteenth and Seventeenth Centuries" in Smout T.C. (ed.), *Scotland and the Sea* (John Donald: Edinburgh 1992), p. 61.

to have been Baltic specialists. Skippers Archibald Halliday, David Primrose and George Bell are recorded several times passing though Elsinore between 1600 to 1644. Halliday exported cargos including salt, animal skins and cloth and imported goods including iron pitch, tar, flax and hemp from Danzig and Greifswald. Similarly George Bell from Culross carried salt, animal skins and textiles to Baltic ports including Danzig, Stralsund and Konigsberg. His return cargoes included high quality logs, flax and lead.

Towards the end of the seventeenth century and the start of the eighteenth there is a notable twofold change in the pattern of Baltic trade. Firstly, shipmasters from Culross appear to have been forced to look for business elsewhere. For instance, in 1710 and 1722 Culross vessels transported herring from Bo'ness to Copenhagen and from Inverness to Danzig respectfully. Shipmasters plying their trade from foreign ports also began to convey more exotic goods. In 1678 one such Culross ship's cargo included Spanish wine, Rhine wine, raisins and currents all exported from Amsterdam to Baltic Sea ports. Secondly, vessels with home ports other than Culross became more prevalent carriers from the burgh's harbour. Between 1681 and 1706 ships from London, Musselburgh, South Shields, Kristiansand, Whitby and Bergen are documented exporting salt, herring, leather and woollen goods to Riga, Danzig and Narva. These changes in trading patterns roughly coincide with the demise of coal and salt production in Culross during the decades of the 1670s and 1680s and corroborate Thomas Tucker's 1656 assessment that Culross could only boast two seaworthy vessels to the burgh's name.

Scandinavian countries also provided outlets for vessels trading from Culross. Scotland in general had a lack of easily accessible timber, whilst Norway had timber in abundance. Scottish-Norwegian trade revolved around the export of Scottish grain and cereal products to Norway and a reciprocation of Norwegian timber to Scotland. In 1619-1620 Scottish voyagers made 115 journeys to the Ryflyke area of Norway to purchase or barter for timber. Ships from Culross loaded with timber at Ryflyke in 1612, 1615, and annually from 1641 to 1646. Vessels from nearby Kincardine and Bo'ness made similar journeys, with Bo'ness registered ships making a total of 14 trips between 1643 and 1646.[145] Timber was therefore a highly sought after commodity on the upper reaches of the Firth of Forth.

Other notable exports from the burgh included building stone that was reputedly used in the construction of buildings including the Stadhouse in Amsterdam[146] and Greenwich Palace in London.

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[145] Lillehammer A., "The Scottish-Norwegian Timber Trade in the Stavanger Area in the Sixteenth and Seventeenth Centuries" in Smout T.C. (ed.), *Scotland and Europe 1200-1850* (John Donald: Edinburgh 1986), p 111.

[146] Lythe S.G.E., *The Economy of Scotland 1550-1625* (Oliver and Boyd: Edinburgh 1960), p. 239.

Illustration 12 - Hanseatic Harbour

Image copied fromhttp://peacehavens.co.uk/BSHANSEATIC.htm

Illustration 12 is a painting of a scene from a medieval harbour of one of the Hanseatic League ports. Illustration 13 depicts a scene from Aberlady Bay on the outer reaches of the Firth of Forth dated 1560. Both demonstrate the hustle and bustle of trading ports with quays stacked with a variety of goods, ships being loaded and unloaded and merchants making deals. It is not difficult to imagine similar scenes at Culross harbour during its heyday.

Illustration 13 - Aberlady Bay

Original copied from http://peacehavens.co.uk/BSHANSEATIC.htm

7

MARITIME PERSONALITIES

Culross also had its share of laudable maritime characters, although none quite as colourful as Walter Grosset, an Alloa customs collector in the era of the1745 Jacobite Rebellion, whose story is marvellously brought to life by IFLI volunteer Ian Middleton.[147] Appendix 4 is a list of seafarers with a Culross connection.

Mariners such as George Gellatly who served on board the *HMS Vanguard* - a 90 gun ship-of-the-line that fought at the Battle of Barfleur and La Hougue in 1692. Gellatly died on board the vessel in the same year, his death probably the result of enemy action. Other Culross mariners died in the cause of Scotland's disastrous attempt to establish a trading empire at Darien on the Isthmus of Panama. For example, William Somerville was a sailor onboard *The Saint Andrew* during the first expedition to Darien in 1698 and lost his life. Similarly, John Stevenson was the Quartermaster on *The Rising Sun* that sailed to Panama on the second expedition from Scotland and he experienced a similar fate.[148]

Perhaps the most intriguing story is that of Charles Hutton, who was a Culross burgess[149] and shipmaster. In 1782, during the Anglo-French war of 1778 to 1783, Hutton was returning to Culross from Rotterdam with a cargo of timber and iron when his vessel was attacked and seized by a French privateer - *The Fearnought of Dunkirk* - under the command of a Captain Margay. Hutton and his crew were taken prisoner and put on board *The Fearnought* and Magray placed his own skeleton crew onboard Hutton's ship in order to sail it to France. Magray continued on his sojourns with Hutton as his prisoner.

About 10 days later, Magray came upon another British ship named *The Peggie of Yarmouth* owned by a William Palmer. As he approached *The Peggie* her crew abandoned the ship and took off in her longboats. Once Magray boarded *The Peggie* he found that it was in ballast with no cargo and the ship was in a poor state of repair. Also, he had insufficient crew left aboard *The Fearnought* to sail both it and *The Peggie* back to France.

Magray had all but decided to scuttle *The Peggie* when a thought came to him about selling the ship to Hutton and therefore at least getting something for his efforts. Doubtless Hutton was desperate for his freedom and agreed to pay Magray 150 guineas for the ship. One of Hutton's crew 'volunteered' to remain as hostage until the sum was paid. Magray drew up a certificate of sale for *The Peggie* which was witnessed and signed by two of Hutton's crewmen prisoners.

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[147] Middleton I., "The Port of Alloa" p. 47 at *http://www.innerforthlandscape.co.uk/files/IFLI_ian_middleton_port_of_alloa_essay_20160815_FINAL.pdf* accessed on 6 March 2017.

[148] The information on the mariners was taken from Dobson D., *The Mariners of Kirkcaldy and West Fife 1600-1700* " (Willow Bend Books: Westminster 2000).

[149] *Culross Burgh Records 1588-1975* Fife Council Archives Reference Number B/Cul

Hutton sailed his new acquisition back to Culross where he brought the ship up to a more seaworthy condition and renamed her *The Peggie of Culross*. Thereafter he continued trading to Rotterdam with her.

On returning from one of his trading visits to Rotterdam *The Peggie* was arrested by Admiralty officers following a complaint from William Palmer that he was the rightful owner of the ship. The Lords of The Admiralty judged that Palmer was indeed the rightful owner of the ship and ordained that Hutton "ought and should be decerned and ordained to make payment to the pursuer, or his attorney, for his behoof, of the sum of L. 300 Sterling of profits and freights earned by him while he has been in the illegal possession of said brigantine, as also of the sum of L. 50 Sterling of expences of process,' &c."

A protracted legal case ensued with claim and counter-claim until the final decision was made in the Court of Session in Edinburgh that Hutton had in effect salvaged the ship from being destroyed and as such he was entitled to the legal salvage premium, together with the expense he had laid out on refurbishing the vessel. Palmer at least retained the ship. However, one can only speculate at his response to Hutton receiving salvage fees![150]

[150] Hutton's story was extracted from legal papers entitled *Information for Charles Hutton, shipmaster in Culross, suspender, against William Palmer of Great Yarmouth, in the county of Norfolk* and also *Information for William Palmer, of Great Yarmouth, in the county of Norfolk, and David McLaren, merchant in Leith, his attorney, chargers; against shipmaster in Culross, suspender* National Library of Scotland, Reference Number MF 134.

8

DECLINE AND DESTITUTION

As other areas of the Inner Forth developed and industrialised, Culross was unable to diversify from its traditional coal, salt and ironware production. Carron Ironworks near Falkirk was at the forefront of the industrial revolution making mass produced goods; Bo'ness became the main customs port on the Inner Forth after the Union of Parliaments in 1707[151] with Culross merely listed as a subsidiary creek of Bo'ness' jurisdiction; and textile and linen mills developed at Alloa and Dunfermline. As a result of these developments, Culross' fortunes waned.

Some attempts were made to resurrect the burgh's fortunes. Archibald Cochrane, 9th Earl of Dundonald, is regarded as the father of the British tar industry and was involved with some of the notable scientists of the Age of Enlightenment including the eminent chemist Joseph Black and John Loudon Macadam.[152] Cochrane also attempted to revive the salt industry in Culross by importing a saturated solution of rock salt from England. He calculated that it required upwards of 97 tons of sea water taken from the Forth to produce 2 tons 17 cwt. of salt. By contrast, a saturated solution of rock salt in sea water weighing 77 tons produced 23 tons of salt - eight times more than by evaporating sea water alone.[153] By 1786 Thomas Cochrane, Archibald's brother, had built a large scale salt purification plant at Culross to pre-empt a proposed new law requiring that all salt sold in Great Britain had to be purified.[154] Changes to the Salt Laws and resistance from Scottish saltpan owners to the threat to their businesses of imported English salt meant that Cochrane's plans were never realised.

In 1780 Cochrane discovered an easy method for extracting tar from coal and developed techniques for separating coal tar into its constituent parts such as benzene and xylene. As well as separating the individual elements he was able to identify their uses and potential markets. As a result he borrowed money from his wife and established 'The British Tar Company.' By 1783 the company was producing fifty-six barrels of tar a week from twenty tar kilns at Culross and exporting tar-based products to Norway and St. Petersburg in Russia.[155]

Cochrane invested heavily in new tar distillation plants in Shropshire and Ayrshire. However, by so doing the British Tar Company incurred debts of £42,000 in Shropshire alone and the Culross tar works were also in debt. He

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[151] Middleton I., "The Port of Alloa" p. 29 at *http://www.innerforthlandscape.co.uk/files/IFLI_ian_middleton_port_of_alloa_essay_20160815_FINAL.pdf* accessed on 2 March 2017

[152] Luter P., "Archibald Cochrane, 9th Earl of Dundonald (1748 - 1831): Father of the British Tar Industry" *Broseley Local Historical Society Journal No. 28* (2006) p. 2.

[153] Cochrane A., *The Present State of the Manufacture of Salt Explained* (Strahan: London 1785) p. 8.

[154] Luter P., "Archibald Cochrane, 9th Earl of Dundonald (1748 - 1831): Father of the British Tar Industry" *Broseley Local Historical Society Journal No. 28* (2006) p. 5.

[155] Luter P., "Archibald Cochrane, 9th Earl of Dundonald (1748 - 1831): Father of the British Tar Industry" *Broseley Local Historical Society Journal No. 28* (2006) p. 4-5.

did profit however from supplying Culross mined coal to Carron Ironworks. His financial woes continued to such an extent that he died in poverty in 1831 and his dreams of salt and tar production at Culross, together with other projects such as extracting gum from lichen and tree moss and making bread from potatoes, died with him.

Sir Robert Preston also attempted an industrial revival in the first decade of the nineteenth century by creating an artificial island on Craigmore rocks at the eastern end of Culross Bay.[156] Preston emulated the ideas of Sir George Bruce by building an island with sea defences and moorings for boats, from which he sank three shafts to extract coal. He also built accommodation for workers on the island and piped fresh water from the shore. The mine produced 141 tons of coal per fortnight, but incurred a loss of £4 19/- 1d every fortnight.[157] Despite these losses Preston regarded the island as a lasting monument to his achievements and, like Bruce and other coal-masters, utilised the coal to produce salt with of up to four pan-houses constructed from best quality stone on the island. An explosion caused by firedamp put a premature end to Preston's operations on the island in 1811 with an accumulative loss of £30,000.[158]

The island continued to be inhabited after the mine was rendered useless by the explosion and salt continued to be made - although it is unclear where the required coal for the pans was sourced. The pans were leased to various tacksmen over the years, who appear to have had undesirable characteristics - at least to the people of Culross. One such family had as "concomitant to their wild existence ….. a very dreadful circumstance - the fact that their children could not read."[159] Another tacksman "whose life, too, was a curious one" supplemented his income from the saltpans by running an unlicensed distillery on the island - "very gude whisky it was; and they would ne'er hae fund it oot had it no been for the difference in the reek."[160]

In 1966 planning permission was granted to the South of Scotland Electricity Board to build lagoons between Culross and Valleyfield to hold the 750,000 tons of ash waste from nearby Longannet coal-fired power station. As a result of the construction of the ash lagoons and their retaining walls, Preston Island became land-locked by the reclamation of land from the sea.

By the end of the eighteenth century Culross' overseas mercantile trade was well and truly finished. By 1791 only a ferry to Bo'ness "from which all the

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[156] Beveridge D., *Culross and Tulliallan or Perthshire on Forth Volume II* (Blackwood and Sons: Edinburgh 1885), p. 244.
[157] Ewart G., Stewart D., Dunn A., "Preston Island: archaeological research and excavations" *Tayside and Fife Archaeological Journal* Volume 2 (1996) p. 1.
[158] Beveridge D., *Culross and Tulliallan or Perthshire on Forth Volume II*(Blackwood and Sons: Edinburgh 1885), p. 245.
[159] Beveridge D., *Culross and Tulliallan or Perthshire on Forth Volume II*(Blackwood and Sons: Edinburgh 1885), p. 246.
[160] Hannah the saltwife quoted in Beveridge D., *Culross and Tulliallan or Perthshire on Forth Volume II*(Blackwood and Sons: Edinburgh 1885), p. 246.

different articles of merchandize, are conveyed"[161] regularly used the harbour, although an overland trade in salt carried on to the end of the century to towns including Dumbarton, Glasgow, Alloa, Clackmannan, Kinross and Stirling.[162] Despite the efforts of Archibald Cochrane and Robert Preston to resurrect Culross' prospects, and their own personal wealth, during the latter part of the eighteenth century and early nineteenth century, the burgh never recovered. its status as a primary exporting harbour on the inner reaches of the Forth. By the beginning of the nineteenth century a traveller to Culross was dismayed by "decay and poverty, particularly in the town itself." [163] Other ports on the Inner Forth flourished. Between 1868 and 1897 sixteen ships were recorded as having Bo'ness as their official port of registration[164] and other vessels were registered to owners from Inverkeithing, Queensferry, Charlestown and Limekilns.[165] Culross does not feature at all in the Shipping Registers for the same period. Nearby Charlestown was thriving. In October 1884 James Scott, who was responsible for customs collection at Charlestown, requested that the Superintendent of H.M. Customs as Bo'ness supplied him with "two established Boatmen to assist in the boarding and rummaging of vessels" as there had been 52 "vessels in cargo" from foreign ports during the previous year.[166]

Employment and work opportunities also changed over the centuries. Colliers, salters and mariners were no longer the predominant occupations in the burgh. Although there is the occasional mention of these occupations in the Cess Rolls of the Burgh Council records, the main focus changed towards small scale cottage-type manufacturing. Weavers, cordiners (shoemakers) and tailors are the most common livelihoods listed in the Cess Rolls of 1761.[167] The Statistical Account of Scotland indicates that shoemaking had also declined by 1791, blaming the American wars of independence for halting the foreign trade in shoes. The Statistical Account also eruditely sums up the reasons for Culross' decline with the loss of manufacturing to the industrialising towns of Falkirk, Dunfermline, Edinburgh and Glasgow whereby "young men of activity …. never think of settling at home, but look abroad to some other place for employment."[168]

Culross was no longer the trading hub of the Inner Forth, instead support was required with the poor being "well supplied in Culross" by "several charitable

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[161] Rolland R. and McAlpine W., "Parish of Culross" in Sinclair J., *The Statistical Account of Scotland First Volume* (William Creech: Edinburgh 1791), p. 136.
[162] Whatley C. A., " 'That Important and Necessary Article' The Salt Industry and its Trade in Fife and Tayside" *Abertay Historical Society Number 22* (Abertay: Dundee 1984), p. 34.
[163] Campbell A., "Journey from Edinburgh though parts of Northern Britain: Containing Remarks on Scottish Landscape" (London: Strahan 1802).
[164] *Registry of Ships - Port of Borrowstouness 1868 - 1897* Falkirk Council Archives Reference Number: CE58/4/2.
[165] *Register of Shipping 1855 - 1902* Falkirk Council Archives Reference Number: CE58/11/5.
[166] *Letter from James Scott in Letter Book, Collector to Board* Falkirk Council Archives Reference Number CE58/1/2.
[167] *Culross Burgh Records 1588-1975* Fife Council Archives Reference Number Reference Number B/Cul
[168] Rolland R. and McAlpine W., "Parish of Culross" in Sinclair J., *The Statistical Account of Scotland First Volume* (William Creech: Edinburgh 1791), p. 139.

foundations for decayed tradesmen."[169] Former Culross residents also took pity on their old home burgh. Doctor Robert Bill resided in the latter part of his life in Canterbury and bequeathed a legacy of £600 to the burgh, the income from which was to be used for support of decayed tradesmen and their widows, teaching of poor boys, and maintenance of one scholar at any college with the surplus being used for apprentice fees of poor boys.[170] It appears that by the end of the eighteenth century the people of Culross were no longer dependent on industrial innovation and burgeoning trade for their well-being. Instead they were forced to rely more and more on charitable philanthropy as the burgh's social fabric decayed.

[169] Campbell A., *Journey from Edinburgh though parts of Northern Britain: Containing Remarks on Scottish Landscape* (London: Strahan 1802), p. 305.
[170] *Extract of prerogative court of Canterbury of the will of Robert Bill* National Records of Scotland Reference Number GD300/99.

POSTSCRIPT

Illustration 14- Lapwing tumbling onto Grangemouth mudflats

Copyright - Darren Woodhead, IFLI Artist-in-residence
http://www.smithartgalleryandmuseum.co.uk/exhibition/painting-the-forth/

Perhaps Darren Woodhead, IFLI's Artist in Residence, encapsulates the diverse aspects of the industrial, human and natural landscape of the Inner Forth in paintings such as that shown in Illustration 14. The painting entitled 'Lapwing tumbling onto Grangemouth mudflat' depicts the vibrant autumn colours of bramble briars and rosebay willowherb with a flock of lapwings tumbling out of the sky set against the austere, grey background of Grangemouth's cooling towers. Lapwings are on the 'Red' conservation list, meaning that their numbers are in the United Kingdom are in serious decline

and the painting highlights that industrialised areas can provide havens for endangered species.

One wonders what the characters described in this paper would make of the Inner Forth landscape of the twentieth and twenty-first centuries. George Bruce, father and son, would both have been intrigued by the now decommissioned coal-fired electricity generating station at Longannet, with its miles of underground conveyor belts bringing coal from beneath the Forth and access shafts at Castlehill, Solsgirth and Castlebridge mines; Archibald Cochrane would have been in awe of the science behind Ineos' giant petrochemical plant at Grangemouth; Robert Preston would be dismayed that his home at Valleyfield House no longer existed and that his Sir Humphrey Repton designed landscaped garden was overgrown and barely recognisable as a garden, whilst the colliers, salters, mariners and smiths would be bemused by the photograph-snapping tourists searching for the inhabitants' long lost way of life. All of them were at the forefront of developing the industrial backcloth of Culross and the cultural heritage of the Inner Forth.

The legacies of these Culross characters has provided a lively social history, together with the development of both new and revitalised surroundings. The Bruce family's technological mining innovations were further developed with innumerable deep coal mines emerging along both banks of the Forth. IFLI's 'Memories of Mining' exhibitions and 'Digital Story-telling' project reflect on the mining heritage of the area with its inheritance of innovation by these early pioneers. The slag heaps and waste bings associated with the mines have been reclaimed by nature - IFLI's involvement at Fallin Bing has revealed a vibrant natural habitat thriving with a variety of wildlife. The grassy embankments of the ash lagoons that have surrounded the land-locked Preston Island have become a haven for skylarks and meadow pippits and sea buckthorn lines the footpaths. Sir Robert Preston may take some solace from the fact that an IFLI supported community orchard has been planted in the grounds of his home and that Nature Recorders document the diverse fauna and flora of the woodland for posterity and a greater understanding of the environment.

In October 2008 the Scottish National Party Government at Holyrood announced that it was investigating the possibility of re-establishing deep-mined coal as a viable fuel by utilising clean coal technology to reduce coal's sulphur emissions. One suggestion was the reopening of the Longannet Mine complex to access coal reserves beneath the Firth of Forth.[171] If this suggestion eventually becomes a reality, then Culross can rightly claim that the burgh's legacy of industrial innovation and private enterprise still has a part to play in the continued evolution of the Inner Forth.

[171] Baird M., *A Case Study of Blairhall: The Cause and Effect of the 1984-5 Coalminers' Strike* (Unpublished B.A. Thesis; University of Stirling 2010) p. 87.

Appendix 1

Inner Forth Landscape Initiative

What is The Inner Forth Landscape Initiative?

Our vision is of an Inner Forth landscape where the natural, cultural and historical wealth of the area is revealed, valued, enhanced, and made accessible to both the people who live here and visitors. Its important historical and natural landscape will be in good condition, and the future is embraced by a landscape better-able to cope with change.

The Inner Forth Landscape Initiative (IFLI) is an exciting programme of work that is conserving, enhancing and celebrating the unique landscape and heritage of the upper reaches of the Firth of Forth. Between May/June 2014 and April 2018, fifty discrete but inter-related projects are taking place around the Inner Forth area. Throughout our projects there are many ways that you can take part.

Through our projects, we are;

- Conserving and restoring the built and natural heritage features that define the Inner Forth Landscape
- Increasing community participation in our local heritage
- Increasing access to the landscape and learning about its heritage
- Increasing training and development opportunities in heritage skills

The Firth of Forth is the central and dominant feature of the landscape. Not only is it at the centre of the IFLI partnership scheme area, but the cultural history, land use and landscape of the area are physically, visually and strategically linked with the River Forth.

This Heritage Lottery Funded, Landscape Partnership Scheme covers an area of 202 km2 including: the river, estuary and inter-tidal zone; the floodplain and coastal margins; and the settlements on both sides of the Forth from the historic Old Stirling Bridge to Blackness Castle and Rosyth.

Together, projects developed and delivered through IFLI are:

- Turning perceptions of the Inner Forth around and increase local pride in this place
- Connecting disparate habitats to create a landscape flourishing with biodiversity
- Celebrating, protecting and improving access to important historical and natural features
- Training and supporting committed and motivated local community groups, individuals and organisations to take action to conserve their area's heritage
- Increasing physical and intellectual access to the area's important heritage.

Notes on Appendix 2

Custumar Accounts from the Exchequer Rolls of Scotland - Culross

Appendix 2 contains a list of goods exported from Culross for which customs dues were paid from 1579 to 1599. There are no figures available in the records between 1583 and 1589 as the realm's customs were rented by the burghs under the guidance of the Convention of Royal Burghs, for an annual fee of £4,000 and 30 tuns of Bordeaux wine a year . The supposed reason for the burgh's lease being to stop complaints about merchants defrauding the customs, and, presumably more importantly, to limit the activities of royal officials who had been taking wine from merchants without payment.[172] Column 1 defines the particular year, Column 2 shows figures gleaned from the customs returns made by the Custumar of Culross contained within the Exchequer Rolls of Scotland, whilst Column 3 lists adjusted figures produced in an unpublished Ph. D. thesis by Martin Rorke. The figures were adjusted by Rorke after taking into account discrepancies by supplementing the customs returns in the Exchequer Rolls with the particular accounts, for example the original customs dockets, recording and accounting errors and known cases of smuggling.

[172] Rorke M., "Scottish Overseas Trade 1275-1597" unpublished Ph. D. Thesis at *http://www.bris.ac.uk/Depts/History/Maritime/Sources/2001phdrorke2.pdf* p.796 accessed on 11 December 2016.

Appendix 2

Custumar Accounts from the Exchequer Rolls of Scotland - Culross

Period	Exchequer Roll	Adjusted
1579 - 1580	106 chalders coal 446 chalders 8 bolls salt 32 chalders 4 bolls peas and beans	466 chalders coal 526.5 chalders salt 32 chalders 4 bolls peas and beans
1580 - 1581	55 chalders 4 bolls coal 483 chalders salt	55 chalders 4 boll 'Great Coal 416 chalders smiddy coal 563 chalders salt
1581-1582	207 chalders coal 476 chalders salt 11 chalders beans and malt 5 casks wine 5 1/2 dozen woollen cloth	247 chalders coal 556 chalders salt 11 chalders beans and malt 5 casks wine 5 1/2 dozen woollen cloth
1582-1583	96 chalders coal 20 chalders salt	96 chalders coal 20 chalders salt
1589-1590	358 chalders coal 23 chalders large coal 463 chalders salt	418 chalders coal 23 chalders large coal 543 chalders salt
1590-1591	300 chalders coal 26 chalders great coal 460 chalders salt	360 chalders coal 26 chalders great coal 540 chalders salt
1591-1592	208 chalders 'smydie' coal 12 chalders great coal 209 chalders salt	368 chalders 'smydie' coal 12 chalders great coal 260 chalders salt
1592-1593	281 chalders 'smithy' coal 93 chalders great coal 340 chalders salt	321 chalders 'smithy' coal 93 chalders great coal 249 chalders salt
1593-1594	116 chalders 'smithy' coal 100 chalders 8 bolls 'burnecoill' 315 chalders salt	236 chalders 'smithy' coal 100 chalders 8 bolls 'burnecoll' 400 chalders salt
1594-1595	172 chalders 'smithy' coal 108 chalders 'burnet' coal 315 chalders salt	192 chalders 'smithy' coal 108 chalders 'burnet' coal 375 chalders salt
1595-1596	476 chalders 'smithy' coal 157 chalders ' burn' coal 353 chalders salt	556 chalders 'smithy' coal 177 chalders 'burn' coal 413 chalders salt
1596-1597	350 chalders 'smithy' coal 27 chalders 'burn' coal 101 chalders salt	410 chalders 'smithy' coal 27 chalders 'burn' coal 461 chalders salt
1597-1598	112 chalders coal 4 chalders 'burne' coal 483 chalders salt 40 bins beer 1100 'dailles' (wooden planks)	241 chalders coal 4 chalders ' burn' coal 563 chalders salt 40 bins beer 1100 'dailles'
1598-1599	240 chalders 'smithy' coal 30 chalders coal 237 chalders fine salt 511 chalders salt 11 chalders beer 500 'dailles' and 'ruiff sparris' (wooden roof spars)	105 chalders 'smithy' coal 30 chalders coal 237 chalders fine salt 591 chalders sall 11 chalders beer 500 'dailles' and ruif sparris

Notes on Appendix 3

For the sake of clarity, standardised place names have been used as some places are listed under a variety of names in the records. For instance, Culross has been recorded as Curs, Kerss, Cuross to mention a few. Greifswald also has various spellings in the records.. The standardised place names have been retained in Appendix 3 (i) and their modern day equivalent name, region and country are indicated thereafter. Those place names with a (?) have a degree of uncertainty about their correctness.

Appendix 3 (ii) contains a list of all voyages that cropped up during the course of the research for this paper that had a connection to Culross. This includes where Culross was the home port of the shipmaster, the departure port or the destination port for the voyage. Unfortunately, many of the destinations for voyages are not listed in the archives. The voyages are listed in date order.

The lists of cargoes carried are recorded in various languages in the archives including old Scots, old Danish and Dutch. Some archives, such as the Sound Toll Registers Online, contain a translation help-sheet of some of the goods listed in the cargo manifests, however this is not an exhaustive list. Some doubt remains about some of the translations and those cargos that have some dubiety are shown in *italics* as either an 'educated guess' translation to English or simply by leaving the cargo listing in its original language.

Abbreviations in Appendix 3

ASR - Aberdeen Shipping Records
BLHS - Broseley Local History Society
CSPS - Calendar of State Papers, Scotland
NLS - National Library of Scotland
NRS - National Records of Scotland
SNTT - The Scottish-Norwegian Timber Trade
STEU - Scottish Trade on the Eve of Union
STR - Sound Toll Register Online

Appendix 3 (i)

Place Names

Original Place Name	Modern Place Name	Region and Country
Aberdeen	Aberdeen	Aberdeen, Scotland
Amsterdam	Amsterdam	Amsterdam, Netherlands
Anklam	Anklam	Western Pomerania, Germany
Bergen	Bergen	Hordaland, Norway
Bo'ness	Bo'ness	Falkirk Council, Scotland
Bordeaux	Bordeaux	Gironde, France
Bremen	Bremen	Bremen/Oldenburg, Germany
Campveere	Veere	Zeeland, Netherlands
Camphire	Veere	Zeeland, Netherlands
Clove	Clove (?)	Norway
Copenhagen	Copenhagen	Copenhagen, Denmark
Culross	Culross	Fife, Scotland
Danzig	Gdansk	Pomerania , Poland
Dort	Dordecht	South Holland, Netherlands
Eckernfjörde	Eckernfjörde	Schleswig-Holstein, Germany
Elblaq	Elblag	Zulawy, Poland
Flyland	Flesland (?)	Bergen, Norway
Greenwich	Greenwich	Greenwich, England
Gribswald	Greifswald	Mecklenburg-Vorpommern, Germany
Holbech	Holbæk	Sjælland, Denmark
Inverness	Inverness	Highland, Scotland
Karlshamn	Karlshamn	Karlshamn, Sweden
Kolobzreg	Kolobzreg	West Pomerania, Poland
Konigsberg	Kaliningrad	Kaliningrad Oblast, Russia
Kristiansand	Kristiansand	Kristiansand, Norway
Lyth	Leith	Edinburgh, Scotland
Malmö	Malmö	Malmö, Sweden
Musselburgh	Musselburgh	East Lothian, Scotland
Narva	Narva	Narva, Estonia
Riga	Riga	Riga, Latvia
Rotterdam	Rotterdam	Rotterdam, Netherlands
Ryfylke	Ryfylke	Rogaland, Norway
South Shields	South Shields	Tyneside, England
St. Petersburg	St. Petersburg	St. Petersburg, Russia
Stralsund	Stralsund	Mecklenburg-Vorpommern, Germany
Whitby	Whitby	North Yorkshire, England

Appendix 3(ii)

Trading Ports and Cargo

Date	Home Port	Departure Port	Destination Port	Cargo Carried	Source
1583	Culross	Culross	Lowestoft	Unknown	CSPS
1583	Culross	Culross	Lowestoft	Unknown	CSPS
1593	Culross	Culross	England	Salt	CSPS
1598	Culross	Portugal	Culross	Wine	CSPS
28-6-1600	Lyth	Culross	-	Salt, belts, *knee-high trousers or socks*	STR
11-7-1600	Culross	Culross	-	Scottish salt	STR
15-8-1600	Culross	Danzig	-	Iron rods, hemp, flax, Swedish iron	STR
27-4-1601	Culross	Culross	-	Scottish salt	STR
10-7-1601	Anklam	Culross	-	Ballast	STR
10-7-1601	Stralsund	Culross	-	Ballast	STR
28-7-1601	Culross	Danzig	-	Iron rods, peas, wax, flax, clapboard	STR
06-10-1601	Culross	-	-	Lamb-skins, rabbit-skins, fox-skins.	STR
26-4-1602	Culross	-	-	Salt	STR
26-4-1602	Culross	-	-	Salt	STR
17-5-1602	Culross	Culross	-	Ballast	STR
21-5-1602	Culross	-	-	*Ale*	STR
27-5-1602	Culross	-	-	*Rye*, hemp, tar, *scherueld*	STR
16-6-1602	Culross	-	-	Salt	STR
16-6-1602	Culross	-	-	Salt	STR
15-7-1602	Culross	Culross	-	Salt, lamb-skins, goat-skins, calf-skins.	STR
20-7-1602	Culross	Greifswald	Norway	Ballast	STR
15-5-1603	Culross	Culross	-	Salt	STR
07-6-1603	Culross	Stralsund	-	None listed	STR
16-6-1603	Greifswald	Culross	-	Salt	STR
18-7-1603	Culross	Culross	-	Salt, sheep-skins, deer-skins, lamb-skins, rabbit-skins	STR
26-4-1604	Culross	Culross	Greifswald	Salt	STR
26-5-1604	Culross	Greifswald	Culross	Ballast	STR
30-6-1604	Greifswald	Culross	-	None listed	STR
14-7-1604	Kolobzreg	Culross	-	Coal as ballast	STR
04-8-1604	Culross	Danzig	-	Rough tar, pitch, iron rods, flax, hemp, clapboard	STR

Appendix 3 (cont.)

Trading Ports and Cargo

Date	Home Port	Departure Port	Destination Port	Cargo Carried	Source
22-8-1604	Bremen	Culross	-	None listed	STR
22-8-1604	Flyland	Culross	-	None listed	STR
14-9-1604	Scotland	Culross	Danzig	Salt	STR
27-6-1605	Culross	-	Bergen	Flour, malt	STR
09-5-1606	Culross	Culross	-	Salt	STR
07-6-1606	Culross	Greifswald	-	*Hats*	STR
02-6-1607	Greifswald	Culross	-	None listed	STR
04-6-1607	Greifswald	Culross	-	Coal as ballast	STR
20-6-1607	Eckernfjörde	Culross	-	Scots goods	STR
16-6-1607	Anklam	Culross	-	None listed	STR
22-7-1607	Culross	Culross	-	Lambs-fur, large fur,goat-skins, calf-skins, *huitklede*	STR
23-7-1607	Kolobzreg	Culross	-	Coal as ballast	STR
01-8-1607	Greifswald	Culross	-	Salt	STR
08-8-1607	Stralsund	Culross	-	Ballast, coal	STR
12-8-1607	Stralsund	Culross	-	Ballast, coal	STR
27-8-1607	Culross	Danzig	-	Iron rods, Swedish iron, clapboard, fine pitch, rough tar, flax, hemp	STR
17-10-1607	Stralsund	Culross	-	Ballast, coal	STR
1612	Culross	Ryfylke	Culross	Timber	SNTT
1615	Culross	Ryfylke	Culross	Timber	SNTT
04-7-1633	Culross	Culross	=	Scots salt, textile, baize	STR
24-8-1633	Culross	Danzig	-	Wax, flax, hamp, tar, clapboard	STR
09-10-1633	Culross	Culross	-	Cloth, *jersey textile*, baize, rough cloth, coal as ballast	STR
11-7-1635	Culross	Culross	-	Scots salt, small lamb-skins, textile, calf-skins	STR

Appendix 3 (cont.)

Trading Ports and Cargo

Date	Home Port	Departure Port	Destination Port	Cargo Carried	Source
20-5-1636	Culross	Culross	-	Small salt	STR
09-6-1636	Culross	Stralsund	-	Peas	STR
09-6-1636	Culross	Culross	-	Salt, textile, baize	STR
23-4-1637	Culross	Culross	-	Salt, textile, baize, jersey textile, mercury, *stockings*	STR
09-6-1637	Culross	Danzig	-	*Lead*, hemp, flax, pipe staves,	STR
09-6-1637	Culross	Danzig	-	Peas, *schuttex lanken*	STR
15-5-1638	Culross	Culross	-	Salt, cloth, jersey textile	STR
20-7-1638	Culross	Konigsberg	-	Oak planks, clapboard, flax, hemp	STR
11-9-1638	Culross	Culross	-	Textile, baize, lamb-skins,Scots salt, *graefft schoets*	STR
26-10-1638	Culross	Danzig	-	Clapboard, fine oak logs	STR
03-5-1639	Culross	Culross	-	Salt	STR
05-7-1639	Culross	Konigsberg	-	Flax, fine oak logs, clapboard, *lead*	STR
1641	Culross	Ryfylke	Culross	Timber	SNTT
1642	Culross	Ryfylke	Culross	Timber	SNTT
16-7-1642	Culross	Culross	-	Salt, coal	STR
1643	Culross	Ryfylke	Culross	Timber	STR
07-7-1643	Culross	Culross	London	Salt	NRS
20-4-1643	Bremen	Culross	-	Salt	STR
1664	Culross	Culross	Greenwich	Building stone	STEU
11-11-1644	Culross	Danzig	-	Flax, iron rods, iron sheets, glass, copper kettles	STR

Appendix 3 (cont.)

Trading Ports and Cargo

Date	Home Port	Departure Port	Destination Port	Cargo Carried	Source
19-5-1645	Culross	Culross	-	None listed	STR
22-5-1645	Culross	Newcastle-upon-Tyne	-	Coal	STR
04-6-1645	Culross	Culross	Holbech	None listed	STR
23-8-1645	Culross	Elblaq	-	Tow, flax, iron	STR
1646	Culross	Ryfylke	Culross	Timber	SNTT
22-7-1646	Culross	Greifswald	-	Malt, rye	STR
13-8-1646	Bremen	Culross	-	Coal	STR
06-6-1666	Culross	Culross	Aberdeen	None listed	ASR
08-6-1666	Culross	Culross	Aberdeen	None listed	ASR
14-1-1676	Culross	Amsterdam	Baltic Sea	Salt, raisins, currents, pepper, trade goods	STR
25-2-1676	Culross	Karlshamn	Amsterdam	Potash	STR
03-8-1677	Culross	Amsterdam	Riga	Herring, glass, Rhine wine	STR
17-9-1677	Culross	Riga	Bordeaux	Clapboard	STR
23-3-1678	Culross	Amsterdam	Elblaq	Herring, trade goods, Spanish wine	STR
01-6-1678	Culross	Amsterdam	Danzig	Currents, Rhine wine	STR
11-6-1681	London	Culross	Riga	Coal as ballast	STR
30-3-1691	Musselburgh	Culross	Danzig	Salt, white leather, woollen socks, trade goods	STR
30-3-1691	South Shields	Culross	Danzig	Salt	STR
06-5-1693	Kristiansand	Culross	Danzig	Salt	STR
10-4-1694	Whitby	Culross	Narva	Herring	STR
14-7-1706	Bergen	Culross	Danzig	Salt	STR
17-5-1710	Culross	Bo'ness	Copenhagen	Herring	STR
03-6-1710	Culross	Malmö	Culross	*Fost*	STR
25-10-1722	Culross	Inverness	Danzig	Herring	STR

Appendix 3 (cont.)

Trading Ports and Cargo

Date	Home Port	Departure Port	Destination Port	Cargo Carried	Source
08-12-1722	Culross	Danzig	Culross	Iron, clapboard, pipe staves, flax, paper, brandy, copper, *merchant's cabinets*	STR
1734	Bo'ness[173]	Campveere	Clove	Tobacco	NRS
1734	Bo'ness[1]	Rotterdam	Culross	Timber	NRS
1782	Culross	Rotterdam	Culross	Timber, iron	NLS
1783	Culross	Culross	St. Petersburg	Tar products	BLHS
1783	Culross	Culross	Norway	Tar products	BLHS

[173] These two voyages relate to a contract between James Johnstone, a Culross merchant, and James Drummond, the master of the 'Diligence of Borrowstouness' to carry tobacco from Campveere in Holland to Clove in Norway and thereafter carry a cargo of timber from Clove to Culross. *National Records of Scotland Ref. No. GD300/38.*

Appendix 4
Culross Mariners

Year	Name	Occupation	Notes
1601	Primrose, David	Shipmaster	
1602	Band, William	Shipmaster	
1602	Griff, David	Shipmaster	
1602-7	Halliday, Archibald	Shipmaster	
1602	Kruber, Willaim	Shipmaster	
1605	Bello, Hans	Shipmaster	
1611	Hogg, John	Shipmaster	Master of the John of Culross
d.1617	Lothian, Richard	Mariner	
1633-42	Bell, George	Shipmaster	
1633	Koebrug, Hans	Shipmaster	
1637	Dorrie, Hans	Shipmaster	
1644-45	Blaw, Alexander	Shipmaster	
1645			
1645-46	Turcan, Severinus	Shipmaster	
d.1657	Blair, Alexander	Shipmaster	
d.1663	Crockat, John	Sailor	
1666	Brock, James	Shipmaster	Master of The Agnes of Culross Arrived Aberdeen 06.06.1666
1666	Flury, John	Shipmaster	Master of the Margaret of Culross Arrived Aberdeen 08.06.1666
d.1669	Heweson, John	Shipmaster	
1676-78	Annis, Joseph	Shipmaster	
1689	Sands, John	Shipmaster	Master of the Janet of Culross
d.1692	Gellatly, George	Mariner	Died onboard HMS Vanguard
d.1698	Somerville, William	Sailor	Died onboard the St. Andrew
d.1698	Stevenson, John	Quartermaster	Died onboard the Rising Sun
1710	Smith, William	Shipmaster	
1722	Christie, William	Shipmaster	
1761	Crawford, John	Sailor	
1761	Nichol, James	Sailor	
1761	Struth, John	Sailor	
1761	Thomson, Alexander	Sailor	
1761	Thomson, William	Shipmaster	
1764	Todd, Thomas	Shipmaster	
1764	Walls, James	Sailor	
1765	Shedd, James	Sailor	
1767	Cowie, Robert	Shipmaster	Master of Culross Passage Boat
1768	Anderson, Finnan	Sailor	
1768	Bowie, William	Sailor	
1771	Anderson, Dougal	Sailor	

Appendix 4 - cont.
Culross Mariners

Year	Name	Occupation	Notes
1771	Hutton, Charles	Shipmaster	
1772	Campbell, James	Sailor	
1772	Dobbie, Robert	Sailor	
1772	Walls, George	Sailor	

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