

## SOME HARBOUR WORKS IN WEST CUMBERLAND BEFORE 1710

by Blake Tyson

Much of Cumbria's coast is exposed to the full force of westerly gales crossing the Irish Sea so that waves combine with tidal currents to move sediment generally northwards by longshore drift, and natural harbours are few. Ravenglass, used since Roman times but badly silted, is cut off by the Cumbrian mountains whilst Piel Harbour, sheltered by Walney Island, is isolated at the end of the Furness peninsula. Of ports nearer old centres of population and trade, Milnthorpe was described in 1692 as accommodating "Vessels of eight or ten tons"<sup>1</sup> only, whilst at Rockcliffe, serving Carlisle, vessels of 60 tons could lie to unload, the river Eden being "perplexed by shoals" upstream.<sup>2</sup> Elsewhere, in calm conditions, ships could be beached at places like Allonby Bay<sup>3</sup>. Artificial ports like Maryport (1750) and Harrington were late developments for exporting coal, and Workington grew from a small fishing haven. Whitehaven's development resulted from the powerful and ambitious Lowther family exploiting convenient seams of good quality coal in the former monastic lands of St. Bees and certainly benefitted from partial protection provided by a headland in which Tom Hurd rock played a key role, as will be seen.

As early as 1172, Whitehaven was required to provide ships when Henry II sailed for Ireland, but medieval records are scarce. In 1517, the monks of St. Bees Priory derived less than 1% of their income from dues called *caage* [quayage] and *tollage* charged on ships arriving mainly from the Isle of Man.<sup>4</sup> This indicates that a small quay already existed, probably occupying the West Strand. Sir John Lowther mentioned it briefly in his draft description of Whitehaven about 1677.<sup>5</sup>

The Manor of St. Bees . . . had also within it a smal Creek of ye sea called Whitehaven wher was 3 or 4 smal Cottages [and] a little Peer, in shallow water, built with some Wooden Piles & stones [with] Rubbish thrown in amongst them & to wch did belong 3 or 4 smal Barks of abt 8 or Ten Tons each. There was also . . . ye foundations of a smal ruined Chapple . . .

This impression is supported by a Survey of the Ports of Cumberland dated 17th March 1561 which reported "Whythaven hayth a small Village [comprising] 6 households of the lands of the late Thomas Chaloner Kt. No licence for loading or unloading. 1 Pickard of 9 tons called the *Bee of Whythaven* owned by Thomas Milner & Robt Grededell going to Chester & Leverpole with herrings & returning with salt".<sup>6</sup> By comparison, Parton had seven pickards each crewed by three men but, when its pier was destroyed by storm about 1630,<sup>7</sup> Whitehaven embarked on its next phase of harbour development.

From the Chaloners, St. Bees had passed to the Wyberghs of Clifton near Penrith, who mortgaged the manor to George Lowther of Greystoke on 11th February 1599. Three days later he passed part to Thomas Wybergh and part to Gerrard Lowther of Greys Inn, London who, in 1620 conveyed his share to his brother William Lowther of Ingleton, Yorkshire. In 1630 the latter sold the property for £2,450 to Sir John Lowther (d.1637) of Lowther Hall who then settled it on his second son Christopher (1611-1644, created Baronet in 1642), the father of Sir John Lowther of Whitehaven (1642-1706). The Lowther portion contained Whitehaven and some coal seams and more coal reserves were bought by Sir John of Lowther Hall from the Wyberghs in 1634. However, they had "noe perfect estate" because of an "an imperfect conveyance" from Gerrard Lowther.<sup>8</sup> As a result a bitter legal battle continued for most of the 17th century (e.g. see Appendix).

Sir John's description of 1677 notes how his ancestors:

... about the year 1635, designing some Improvmt of ye [Manor of St. Bees] & for ye vent of ye Coals found therein, erected at their own charge a new Stone Peer in Deep water being a Wal of near 300 feet long, 30 foot height & 30 foot in breadth wch has afforded ye convenience for shipping [so] that now ther is above 30 ships belonging to ye same, divers of them [being] of very good Burthen, [paying] . . . every voyage a smal Duty for Anchorage & Pierage . . . & ye Town consisting of 80 or 90 of ye best built houses in al yt Country, where is also erected a new Chapple [c.1642] a Custome house & a Market granted [in 1654]. . .

The chapel and pier are shown on a "Prospect" of 1642 (Fig. 1), but original information is scarce. In a letter dated 20th January 1635, Christopher Lowther complained to Sir George Radcliffe<sup>9</sup> about



Extract from a "Prospect of Whitehaven in the Year 1642", reproduced by courtesy of Tullie House Library, Carlisle. It shows the pier, built c.1634, sheltered by Tom Hurd rock and the headland. The town is seen spreading northwards onto the sandhills where the chapel forms the limit of development.

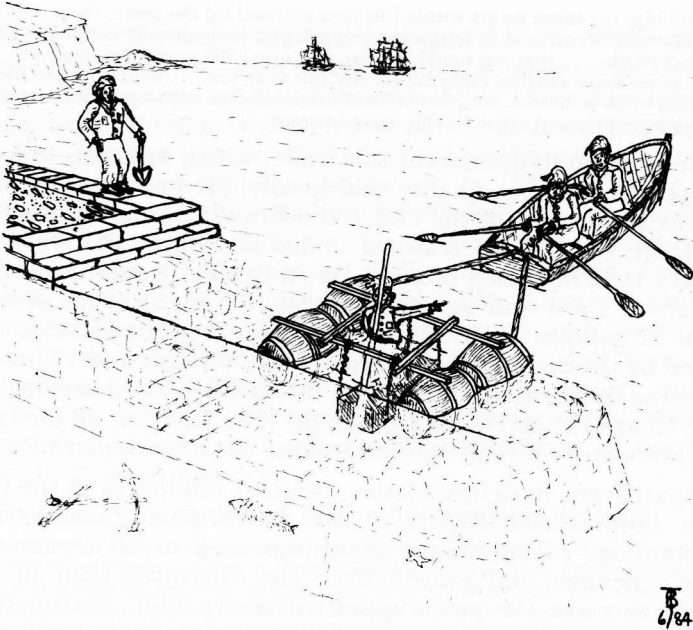
... the rubidge not taken up yet within [the area enclosed by] the peere; the peere itself being reasonable secure and fit for greater shipping. It hath alreadye cost above £420; neither do I thinke . . . that you would imagine that over £600 would have done [it]. . . I pray yow let me know whether I may expect any aide from you . . . to finish it and for the salt and cole when we have it. For coles we must thinke of some way to get them carried by great shipping and stored up at Dublin against winter. . .

He went on to discuss the salt trade, which he seems to have developed to use poor-quality coal locally. He had three or four salt pans at the foot of the cliff ("the Brow") bordering the SW side of the bay just to seaward of his harbour wall. On 18th February 1638 he leased them to David Beebie, Robert Stockdell and Patrick Card and agreed to supply, daily, 28 loads of coal each of 32 gallons. In 1646 the pans made a profit of £156, but declined by the end of the century.<sup>10</sup> They, the pier and 17 houses were found to be encroachments on the Crown's foreshore in 1664 so that Charles II agreed to grant to Sir John Lowther all the land to the low water mark in 1666 to legalise the development.<sup>11</sup>

Apart from Radcliffe's letter, original references to the pier in the *Commercial Papers of Sir Christopher Lowther* are disappointing, except that a crane was used to lift stones and "shillie" (pebbles and gravel) from the excavated floor of the harbour to make the pier's upper surface (p.194). Fortunately, however, a revealing statement of how the pier was built, was written on 10th September 1679 by Thomas Tickell, Sir John Lowther's steward at Whitehaven from 1666 to 1692, whose correspondence<sup>12</sup> forms the main evidence in this article. Tickell wrote on behalf of:

Wm Stockdall aged 72 yeares [who] says he has knowne Whitehaven & Moresby about 60 yeares and the old peers in both places [were] made up with blue coble stones & stakes . . . both of ym built as he belevies by ye seamen for their owne preservation who never paid any Keyage or anchorage to any, save 4d. for each vessell to one Mr. Blennerhessett a Custome Officer &c. He says that about 49 yeares since Sr Jon Lowther [of Lowther] laide the first foundations of a new peere at Whitehaven and frequently had 60 or 70 men dayly at hard Labour when he paid wages unto 'em every Saterdag at night and that one Robert Story, a cheife workman, had 10s. ye weeke and 3d. ye peec for every caske stone, some of wch . . . were 8 tuns weight upon wch he oftentimes stood in water unto ye middle of his body with a long pole guideing ye way & a boate with 2 men in it roweing before him at his directions & so placed ye sd stones into ye peere. . . He frequently had 4 or 6 or 8 caskes of great bulke made for yt purpose wth staves of 2 inches thick and strong iron chaines fastned to ym so as to buoy upp [the] great stones and [he] had no assistance of any seamen or others to this great worke save such as he paid wages for.<sup>13</sup>

Figure 2 attempts to illustrate the scene as stones were towed over the pier at high tide and then guided to their final position as the tide ebbed. Sandstone blocks of 8 tons and a specific gravity of 2.6 would contain 110 cubic feet (say 10 x 5½ x 2 ft.) and would weigh nearly 5 tons submerged. Allowing for chains and safety, if a cask provided 1 ton buoyancy, each would have contained about 36 cubic feet (say 3ft. diameter x 5ft. long). Thomas Tickell summarized the results on 22nd March 1677



Author's impression of Robert Storey in 1634, floating stones into position over the pier as the tide ebbed. Based on William Stockdale's description from memory in 1679. In 1681, sailors were to suspend stones under their cockboats to bring them from the cliffs near Tom Hurd rock.

(Correspondence, box 2; no.286) "before the building of this peer, all vessels were litle, not fitt to Cross the Seas and since that Edifice, ships are made greater".<sup>14</sup> The coal trade blossomed, especially with Dublin, and Whitehaven grew rapidly into a town.

The harbour, however, remained vulnerable to storms, particularly from the north-west. For example, Tickell wrote to Sir John Lowther on 9th March 1668 (1;40):

Another great defect in this port is the want of a good Key [Quay]. I am seriously persuaded that [in total] the losses heere this last 7 yeares . . . would doubly cure & secure this peere and harbour. On tuesday the 18th last month at night a most violent winde (like that about 40 yeares ago) put up an high tide which hath bene in most houses in towne . . . shook the peere, washed downe severall great stones . . . [and blew] a new vessell (here built & laden ready to sail) out of the harbour and so shattered it that £120 will not repaire her. Another storme on Friday the 28 same month had done no less if they had been spring tides . . . a vessell of Wales was blowne upon the shoare at End Foot [Ehenfoot?], severall persons found drowned & nothing quick escapeing . . .

As such events were not uncommon and were damaging the pier, on 1st October 1672, Sir John asked about the condition of

the sandbeds and rocks on its seaward side "for if they be cut or stolen away, the Peer wil be deprived of a great shelter & have nothing left to breake the force of the sea". Tickell reassured him, but reported that "the great sand Bed adjoining to the old Key . . . is driven much nearer the towne and . . . where the water stood like a pond [is] almost filled up, by which many great stones are bared . . . under the vessels to the great annoyance of the seamen and these last stormes have brought a greater abundance of stones, gravel & scawes<sup>15</sup> about the end of the peere . . ." (1;160).

Another persistent problem was the seamen's habit of dumping their ballast in the harbour as they waited to load coal. In only his fourth letter, on 8 July 1666, Tickell had tried to stop "their unlawfull casting of ballast. I have 4 names . . . of this towne & 2 of Liverpoole [and complained that] one of the 2 did publickly affront me by his scurrilous language; tendering me the salutation of his posterior & bidding the Devil take both your person & mine. I did not comand a distress but reserve him for the Law;<sup>16</sup> if I had been any way qualified in the Customehouse I could have humbled him . . .". After some delay, Lowther did arrange Tickell's appointment as Customs Surveyor at a salary of £50 a year in September 1671,<sup>17</sup> thereby gaining access to useful information.

Then, as Sir John Lowther was planning to buy and extend Flatt Hall<sup>18</sup> to replace his old manor house near the harbour, a serious threat to his domination of West Cumberland's shipping and coal exporting arose when William Fletcher<sup>19</sup> of Moresby Hall (NY 984 210) planned to rebuild the ruined pier at Parton only two miles north of Whitehaven. Tickell first reported this on 1st December 1674, saying Fletcher was "busy enough to promote such a thing . . . for wch end he was at Newcastle abt Mich[aelma]s last to ingage some Artist there and contracted with 2 masons there, the father & son, to have viewed the place". He sought instructions and then reported, on 18th January 1675, (1;218):

Mr. Trolopp the younger,<sup>20</sup> Architect of Newcastle, has been lately at Moresby to view the intended harbour of Parton and proceeded thus far; that Mr. Fletcher must give him abt £60 to direct that work. . . Mr. Fletcher to pay all matterials & labour wch was computed above £1000 [and] who hath taken one months time to consider . . . how to raise moneys. The same person was heere and counts it above £4000 to build a new Key and dubious [how] effectually to secure it. [He] adviseth to lenthen this [pier] abt 60 yards with an elbow [for] under . . . £1000 wch motion hath so influenced most of the subscribers to Mr. Christian<sup>21</sup> that they have desyred him to desist and they now only wait your coming downe. . . [Mr. Trollop] proposeth to strengthen all the back [seaward side] of this peere from the [salt] pans downwards with ashler work and all the sides of the new building with ashlers also. The turne or Elbow at the End shall be to breake the sea . . . [and] make the shipps ride quietly in foule weather, whereas now the outdraughts of the waves are very injurious.

He concluded this important letter with a crude sketch of both

piers, the only surviving graphic representation of what was intended.

Work at Whitehaven was delayed nearly three years by a customs dispute and by finances being used for building at Flatt Hall. In September 1677, Tickell reported that the seamen still wanted the "Key enlarged and say they will raise £500 towards it" by a charge "of 6d. the chalder and the full wages of every seaman for one voyage in the yeare" but, doubting Lowther's agreement, they were "now advising with Mr. Fletcher to have his peere built". Fletcher was trying to raise his money by proposing 2d. a ton for all his coals and trying to get his Moresby neighbours to do likewise (2;307,310). Thus, on 13th October, Tickell was ordered "inform yr self of the Methods used [at] . . . the Peer now building near Tinmouth [Northumberland] . . .". Presumably, Lowther was referring to the pier at Cullercoats, built in 1677 for Lady Elizabeth Percy and the partners of Whitley colliery at a cost of £3,013,<sup>22</sup> but note 37 offers an alternative. Tickell revealed, on 21st February 1678 (2;331):

At Parton the last weeke [there] was a consultation with one Jordan a mason in Northumberland . . . a present undertaker of Bridges in that County & now at Adonbridge<sup>23</sup> which he cannot leave till finished. Therefore [he] has proffered, after 20 dayes consideration of the matter, if he like it that he will make a Key there of 140 yds long with a turne of 70 yds wch turne is to be 8 yds high and 10 broad, the outsides of hewne worke at 30d. the yard & the fillings at 12d. all wch sume is computed to £1200 & Mr. Fletcher to ingage for  $\frac{2}{3}$  of it and [our] townesmen  $\frac{1}{3}$ . The water by their observation [will be] 3 foot deeper within it when it is only level with the end of our peire.

Lowther responded that "for their design at Parton I am satisfied 3 times that money wil not doe it", but he must have started planning how to stop the project.

By Saturday 9th March 1678, Jordan had returned as promised and, on Monday 11th, Mr. Fletcher, George Jordan & Cuthbert Davis<sup>24</sup> "signed articles drawne by Tho[mas] Addison for Parton peer at the price £1200 to be set upon at Midsummer and finished by Mich[ael]s come 12 months, to pay ym £40 at the beginning & £60 the month as the work proceeds. Mrs. Curwen allowes Quarries on Lowca side . . ." (2;334-6). Supporters of this scheme used "young Mr. Gales house [in Whitehaven] where is the counsel table" but by 21st June rumour had it that Lowther "intended purchasing . . . Mr. Fletchers estate" and, on 25th, Tickell was told "If I should deal either with Mr. Fletcher or Mr. Radcliffe [of Bransty] let not the Town be apprehensive . . . for I have no other design but to make the Place florish wch it wil never doe wher ther are so many Coal Owners & so few willing to contribute" (2;356). Speculation was rife but, even by 28th September when "The Northumberland Masons were in towne", work had not started at Parton, and Fletcher appeared to be losing supporters. Thus, on 15th October a public

meeting was called in the town's chapel to gather support for extending Whitehaven pier. Opponents included John Gale junr., Wm. Atkinson, Robt. Biglands,<sup>25</sup> James Millum, Thomas Williamson and the Customs Controller Mr. Miller. Matters were so heated that Tickell left early to help them all to reach agreement, only to find Fletcher, Addison and Young Gale "in the alehouse almost coming to blows". The agent advised Lowther to rely only on his own resources (2;378). One result of this meeting was a letter from Thomas Addison, Fletcher's lawyer, objecting to Lowther:

that neither yourself nor any in yr Behalfe should Directly nor indirectly hinder the going forward of the intended Peere at Parton, the Keeping of Turnes in loading Coals heere, the setting downe of Coales or other goods on any convenient place in the tide time; nor should stop the usuall waies to the towne [for] Coales &c nor Hinder anything that might tend to the freedom of trade . . .<sup>26</sup>

This suggests that Lowther's ships claimed precedence over competitors when loading coal, that he favoured his own extraction routes and insisted on merchants using his quay to raise his revenue from it.

Eventually, on 22nd October 1678, Tickell reported "On Satterday last [19th] came the undertakers for Parton peer & allready [are] at worke" and then, the next day, from Carlisle: "In my way hither I found 7 men at worke . . . most of ym Masons, some heaveing and some Quarryeing Stones". On 11th November, he revealed (2;379):

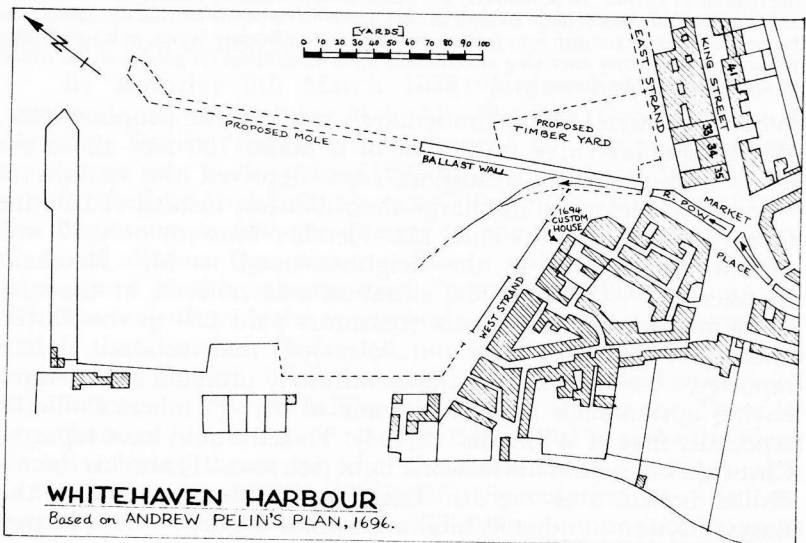
the masons at Parton, 10 in number, are much disappointed by these Quarries of stone either as too clifty or not large enough in solid peeces to be hewne for that use. They have beene busy to contract with your farmers to have leave at Bransty Scarrs, wch I absolutely refused, and now they are trying at Gaitcastle upon Whillimore for good posts [or strata] of stones wch will be uneasy to carry &c.

Whereas Lowca Hill lay immediately north of the proposed pier, Whillimore lay three miles east of it about 700 feet above sea level, and the extra transport costs deprived the masons of "moneys sufficient to discharge their diet for, instead of £60 due to ym the last months end, Mr. Fletcher sent ym only £7 wch raiseth much talke in the neighbourhood to Mr. Fletcher's disgrace . . ." (2;387). The situation was relieved in time for Christmas when "this townes treasurers paid £20 to the Parton masons so that they have . . . clear[ed] their scores. . . It is reported . . . that Christian does infinitely promote that designe having gotten such interest in some of Mr. Fletchers Collieries especially that of Whingills" (2;394). Tickell would have reported Christian's activities in the worst light (see note 21) and his intense dislike boiled over on 9th December 1678: "to remove this Bastard Xtian . . . get Whitehaven made a port . . ." in its own right.

By 13th January some of the masons had returned to Parton

"having already hewen 900 stones towards 4000 stones for that use . . ." but, in the meantime, Lowther asked Tickell to obtain large stones for Whitehaven's pier (2;389). "Discourse with Workmen if . . . [it] can be done by great [piecework]; if not we must doe it by day [work]. The smaller [stones] may be used at the Bulwark I wld have carryed down from T. Jacksons House end.<sup>27</sup> Give your opinion for I wld have . . . the Enlargmt of the Peer goe on [whether] by Act of P or by agreemt amongst ourselves". Thus, on 3rd March 1679, Tickell had spoken to "Jordan & Wilson . . . who will meet me tomorrow morning at our peere to consider on yt. They seem well contented with their paymt for Parton . . . therefore if you can put not an immediate stopp to it, the design seems to take effect" (2;409). Their meeting took place and "Within 3 or 4 dayes . . . they brought me this particular for this peer wch is inclosed. I have also another particular from our builder of Stainton's house at St. Bees ([see Appendix]. . . [It is] not so exactly drawne & the price [is] higher. He may do as well as the Northumberland men and this St. Bees mason, Richd Caton by name, I desyre to incourage because I finde him inteligible & tractable . . . & willing to settle heere & farme Lands under you, and also ready to ingage to build your wall abt the how. . ." or mount at Flatt Hall<sup>28</sup> (2;412).

Tickell enclosed the estimate for £598. 15s. from George Jordan and Cuthbert Hudspeth, dated 15th March 1678/9, and



A Plan of Whitehaven Harbour, based on Andrew Pelin's Plan of the town made in 1696 (see note 29 and Fig. 4b).



his next contained "Caton's, now made more exact for yr view & consideration". As Richard Caton's estimate is dated 20th March, totalled £561. 1s. and had almost identical wording, Tickell must have shown him his competitors' details and cajoled him into offering more favourable terms. His estimate is reproduced below, together with the values given by Jordan and Hudspeth. It is difficult to relate the wording to the shape of the pier shown on Andrew Pelin's Plan of Whitehaven, drawn in 1696<sup>29</sup> (Fig. 3), because of changes to be discussed shortly.

**RICHARD CATON'S ESTIMATE FOR EXTENDING THE PIER  
AT WHITEHAVEN (2;413)**

The length of the Key from the Old Key northwards 20 yards, 12 yards broad in the bottom, one halfe to be brought before the end of the Old Key which being brought as far forwards as the Old Key will be 15 yards. All the foreside, that is the East side, & north end to be faced with hewen stone and the backside to be faced with scabled stone and to be strongly filled within with strong stone. The height of the said worke will be 10 yards, the west side in length 20 yards, the north end 12, the East side 35 yards and 6 more to the Returne of the old worke.

	£	s	d	Jordan & Hudspeth estimate (2;412)
The hewen worke of the North end, East side & the six yards yt returne to the old key are 530 yards at 3s. the yard will come to	79	1	0 (a)	} 108 15 0 (d)
The Backside of rough dressed stones will be 200 yards at 1s. 6d. the yard comes to	15	0	0	
The rough worke for filling will be 2550 yards at 12d. the yard will be	127	0	0 (b)	130 0 0 (e)
Then for ridding of foundations & bringing stones to the worke	120	0	0	100 0 0
For takeing away the stones within the old harbour fourscore yards square from the Key	220	0	0 (c)	260 0 0 (f)
Whitehaven, 20 March 1678[9]	561	1	0	598 15 0

Notes:

- a. Should total £79. 10s.
- b. Should total £127. 10s.
- c. i.e. 8¼d. a square yard

- d. All hewn work at 3s. a yard. Should total £109. 10s.
- e. 2600 yards at 12d.
- f. i.e. 9¾d. a square yard

On 29th March (2;417), Lowther sought answers to several queries about the estimates and indicated his willingness to spend £500 on his harbour if the masters and ship-owners would contribute also. He considered that the rival scheme was assisted by papists and reported, with obvious satisfaction, "I have passed my Patent under the Great Seal for [the right to] the Lands

betwixt the High & Low water mark so far as Moresby Pow [beck] but have not yet finished my other abt the Port" status of Whitehaven.<sup>30</sup> As this grant gave him control of the site of Parton harbour, he ordered Tickell to discharge Fletcher's masons from working there and said he was prepared to pay Fletcher £1,000 over the market price for the Moresby estate. In his next letter he doubled Tickell's salary to £40 a year which must have encouraged him during the unpleasantness which followed.

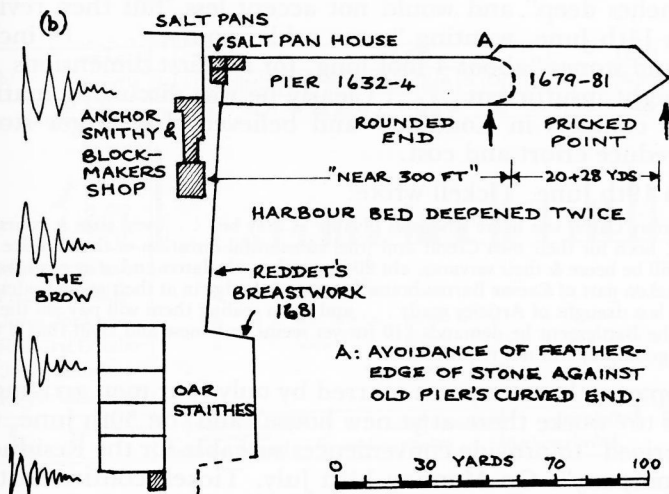
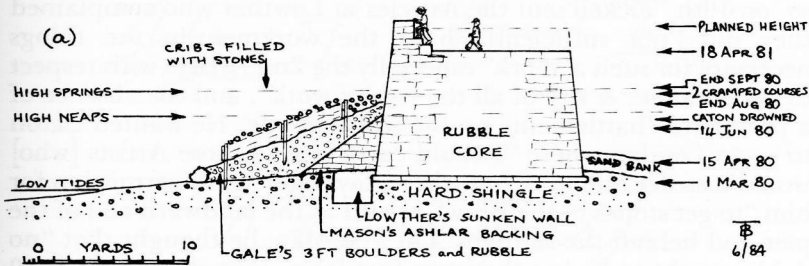
On 7th April 1679 (2;420), the agent revealed "When I discharged Mr. Jourdan & partners . . . they seemed . . . well pleased to quit it as being an hard Bargaine but . . . Mr. Fletcher . . . charged ym to prosecute their worke . . . [for] being in Bonds ingaged they cannot neglect it . . .". A week later he reported that Fletcher "talkes Loud that he will spend all his estate rather than yield to yr patent" but, within three days Fletcher was in Whitehaven trying to exchange his estate for Lowther's in Yorkshire or to get £8,000 rather than the £6,000 offered.<sup>31</sup> Tickell noted that "hewen stones are dayly led into the Bottom of the Bay" by the masons, assisted by "William Browne, a servant of Mr. Fletcher, [who] leads the stones". By 21st April, the men had told him they intended "in the middle of May next to place their foundation stone of the peere . . . begin[ning] that structure at the Lowest end" below the low water mark. Gale, Biglands and others were still supplying finance from Whitehaven.

Again, on 8th May 1679, Tickell warned the Parton masons to stop work, for they were carrying "about 20 stones downe each day and lay them as low in the Bay as they can for the tide viz. about 60 yards below the old peere" destroyed c. 1630 (see note 7). This warning only persuaded "the Morresby masons . . . [to] lay their stones above the full sea, tho' as neare as may be . . .". So that writs could be prepared, Lowther was told that George Jordan and Cuthbert Hudspeth both came from Corbridge<sup>32</sup> and that George Wilson "was dwelling at Adonbriggs". Feelings were running high. By 31st May "John Gale was measureing out the Ground . . . wch they have since been digging & prepareing to Lay the foundation Stones on" but, on the same day, Lowther sent "an Injunction to stop proceedings at Parton" so that, on 6th June, "John Williamson the Egrimond Attorney served [the] injunctions . . . on that spot where they have placed severall stones to show their intentions and ground dimensions of the turne of that Structure. Mr. Fletcher resented the matter very ill and gave me abusive language [such] as Rogue & great Rogue & that he would cut my eares off &c". We know the sort of language Tickell could use! By 12th June the masons had money to clear their scores again and decided to await the outcome of a trial at law, though digging stones continued until 7th July on

Whillimoor.

If the Northumberland masons had hopes of winning the Whitehaven contract, no more is said of them and thoughts were concentrated on lengthening Lowther's pier. In a complex letter (2;427), dated 24th April 1679, Tickell noted that:

Caton's partners [had] come from Lancashire purposely to view this peere & rock within. They have tryed with a large spitt the foundations . . . & are satisfied yt the same is good enough without a wood frame. They are most dissatisfied with the inner worke of Levelling especially the sand & gravell wch . . . will wash in every tide. . . The Rocks [excavated from] there, if sound, they acknowledge very serviceable . . . and they are desyreous to have liberty to take up those under the Steathes so far as yt line even with the Anchor Smithy wch will gaine a great deale of more roome for shippes and . . . a new wall [there would allow] . . . ships . . . to Lade [directly from the staiths] . . . This worke they will sett upon & finish this sumer [and] . . . the addition they will make up the next yeare. . . Inclosed is 4 draughts of the peere . . . No 2 . . . they are willing to do & the Levelling within also for £500 . . . [to be] 20 yards long, 10 high, 14 [wide] in the foundation and 12 at the topp.



Whitehaven harbour details, based on information in Thomas Tickell's correspondence. (a) Scale section of the 1679-81 pier with an outline of the work's progress. (b) Features near the pier.

Figure 4 is based on this and later information. Giving his decision on 6th May (2;433), Lowther approved the second design, "being onely the continuation of the Old Peer, the in side Line direct & the Outward broke by the greater breadth of the new worke", needed to prevent waves attacking a feather-edge of stone against the old pier's curved end. This helps to explain the pier's shape in figures 3 and 4. He was amazed "they should think of deepening the Harbour one summer & lengthening the Peer another", rather than place stones in the pier as they were excavated, to save double-handling and storage problems. He agreed the price and dimensions but thought the articles should define the quality and size of stones and the compactness of filling material. Rather than commit himself on such details, he wanted a written submission from the contractors for his approval.

On 15th May Caton had "not yet returned from *Lancaster*" so, on 19th, Tickell sent the Articles so Lowther who complained they did "not sufficiently bind the workmen in the things necessary for such a Work" especially the 2nd Article with respect to the "manner & size of all the Ashler work", and the absence of a protective "battlement" on the seaward side. He wanted Caton to go to London where "I could carry him to those Artists [who] would instruct him . . ." but, three days later, gave permission for him "to get stones in the Brow" or cliff at the landward end of the pier and behind the saltpans. On 31st May, he thought that "no Ashler ought to be less than two foot long, 16 inches broad & 10 or 12 inches deep" and would not accept less, but then revised this, on 14th June, wanting "some ashler courses . . . 14 inches thick" and stones "about 4 foot long, for my first dimensions . . . are thought insufficient . . .". Clearly he was discussing matters with his contacts in London,<sup>33</sup> and believed that larger stones would reduce effort and cost.

On 19th June, Tickell wrote:

Yesterday Caton was heere who is as plyable as may be . . . [over] sizes & courses of stones . . . both for their own Credit and [the] substantial duration of that Edifice. His partners will be heere & their servants, abt 20 in number, the latter end of next weeke . . . and have taken part of Caesar Barnes house<sup>34</sup> to eate & Lodge in at their owne findeing. I will get yr last draught of Articles ready . . . and upon sealing them will pay ym the first £50. . . The Battlement he demands £10 for yet seems so honest and civill that if their profit be good they will not require it.

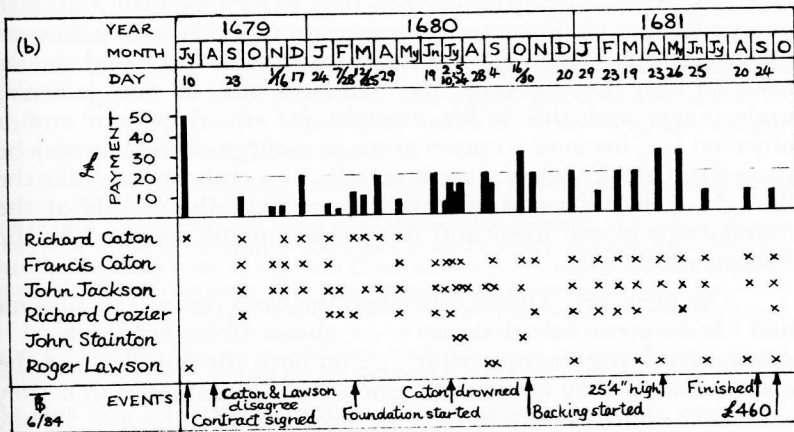
This apparent harmony was marred by only four men arriving at St. Bees to "worke there at yt new house" and, on 30th June, two more arrived "to provide conveniences suteable for the Residue of their Company". On Monday 14th July, Tickell confirmed that the contracts had been signed: "They begin their worke heere this day . . . notwithstanding severall discouragemts given ym by some adversaries". The contract has not been found, but receipts for 29 payments totalling £460 survive. They commence with £50 on

(a) *Rich: Caton*  
*Roger Lawson*

*Richard Crozier*  
*mark*

*John Stainton*  
*Francis Caton*

*John Jackson*



(a) Signatures of the principal partners at Whitehaven Pier and names (in Tickell's writing) and marks of their colleagues.

(b) Payments, recipients and events, July 1679 to September 1681.

Source: C.R.O., Carlisle, D/Lons/W/Whn Town, 6a

10th July 1679, continue with £3 to £30 every few weeks and conclude with £10 on 24th September 1681 as shown in figure 5, which also includes typical signatures and marks of the masons. The partners were Francis Caton, John Jackson and Richard Crozier, led by Richard Caton for the first year and then by Roger Lawson, the second principal partner.<sup>35</sup> John Stainton (Stenton) signed three receipts during July and October 1680.

No doubt to supervise preparations, Lowther left London on 4th August, creating a gap in the correspondence until December 1679. The New Year brought "so great a tempest [on 7th January that] all except 2 ships broke loose from the Key and are driven . . . one upon another. . . There was great breaking of heads, boesprits, mizens, anchors, rudders &c and loss of 10 cockboats" as well as holes in the quay and old pier. Likewise, "Most ships at Workington broke loose and [were] put on greene ground so high that some . . . must be unlaiden and launched". The masons had been quarrying stone, unaffected by the weather. On 23rd February, Tickell noted "Caton is lately come (with his wife out of Lancashire). . . They begin to sett stones this day for the lengthening of the peer". Already, they had been paid £100 but were still short of money and, after a quarrel, Lawson paid Caton £2 to be released from the bargain. On 1st March the agent reported: "The setting of the groundworke at the peere last weeke did so worke upon the minds of many owners that they were very desyreous to inlarge it 20 yards longer on their owne ac[count] wch I encouraged" by promising them the use of Lowther's quarries. After urgent discussions, they agreed by 11th March to charge 6d. per chaldron on 10 voyages to raise £300 for a 28 yard extension, but Tickell asked what form the northeast end should take (3;23), for "young Mr. Gale is one of the [town's] undertakers and this is his draught [of it]. A square end is objected [to] because a corner stone in a surge of the sea may be turned out at a knock of a great vessell . . . a ciphered end like the draught & like the end of Parton peer (as is there laide at the foundation) is well liked and the pricked point designed by the Masons is disliked . . .".

The next day, Tickell described the work done. The masons had "laide great broad stones . . . about 10 inches thick . . . always scableing the upperside . . . on both the outsides and the end as low as they could . . . upon the hard shingle wch they cannot . . . bare plainly for . . . the small sand falling in. . . They place the hewen worke [set in] abt halfe a foote on the flat stones. . . They are 2 ashlers high on the northside wch fills up apace at the back & allready covers the offsets & some of the hewen work . . . [(fig. 4a) but] at the north angle the outdraught of waves seemes to make an hollow . . . wch must be well

prevented in the next" phase. He thought the stones at "The perch"<sup>36</sup> could be used for filling and noted that Lowther's brother-in-law Richard Lamplugh thought "a round end like [the] old Key is best but the masons say it is much more chargeable" for every stone would require a moulding to work it.

By 15th April the work was "3 foot high at the northeast end" and on 1st June 1680 Lowther said he wanted it finished before winter to prevent destruction in the first storm "and would not retard it by building houses" which would draw off labour. To speed the work, Tickell noted that they had "Made 2 flat bottomed boats for filling up the middle [when the tide was in], but jostling by ships . . . misplaces ashlers & breakes the edges" (3;125). On 14th June he reported a storm from the NW "wch has beaten downe the North side of our new peere, the waves inwards loosening & heaving the ashlers out of their places and the outdraught throwing ym downe upon the sand. This . . . will sett ym farr back, haveing been 10 feet high on that side, by wch they see their error of placing too short & too litle stones there. The inside & end have re[ceive]d litle damage. . . . Caton says if he cannot top it ere winter he will at leaving bind the upperworks with bars of iron". To overcome this set-back the masons advertised "at other market townes to invite workmen; masons at 13d., Quarriers 11d, labourers 9d the day" or more after a trial.

On 5th July 1680, Tickell reported that Lamplugh had arrived in his ship, liked the pier "and discoursed Richard Caton about . . . the danger of sucking out small ashlers as at Seaton delavell",<sup>37</sup> 5 miles NNW of Tynemouth. To prevent this, Caton suggested using a piece of "timber . . . over every joint . . . 2 inches deep, 2½ broad and 9 or 10 long, fixed with a masons chezel equally in both stones on the upper parts of the stones at about 3 or 4 inches from the outside" and Tickell sought Lowther's approval. Then disaster!

abt 4 hours after Mr. Lampl. went homewards, the floweing tide coming on again yet not sufficiently covering the peere, Ric Caton (to lose no time) & 2 more [men] went in one of their boates laden with stones to fill the core, but too soone, tho in faire weather and on the inside [of the pier], so that a broken wave or two so suddenly filled the boate that they immediaty sanke by wch Rich Caton & another . . . mason . . . were both . . . drowned. The 3rd man swam a litle & endeavoured . . . to keep Catons head above water but could not. . . . This is a greivous loss & discouragemt. I sent for my Cousen Wm Benson [of Broughton (3;197)] the Coroner . . . by wch the boat is quitted & the men buried. The other two partners heer goe on with their worke this day & have sent to their other 2 partners remaineing in Lancashire . . . to hasten hither to carry on the worke. . . .

As this was written on Monday the accident probably occurred about 2nd July.<sup>38</sup>

Apart from his natural concern for possible delays to the work, Lowther stressed the need for cramping the stone "the wooden way which you mention is the worst, Iron is better but the best is with what we call cobble or blew stones, here Flints or

Pebbles . . . according to the enclosed paper". On 27th July, he advised "There is a sort of Tarrase <sup>39</sup> wch comes out of Holland that will unite small stones as [if] to make one perfect rock & wil in 12 houres time be beyond the power of Water to hurt. . . Tyles beaten to Powder or overburnt Bricks with lime wil doe the same thing . . .". Two days later he had been discussing "with two of the ablest men we have here" and concluded that one or, better, two courses "of the greatest stones . . . cramp[ed . . . strongly with Iron, pouring in good store of Lead & covering over . . . with Pitch" costing £20 to £30 was the best solution. Tickell doubted the workmens' acceptance of the technique and reported that blocks of up to a ton had been dislodged by "a litle working of the sea" and that the *Deliverance* going to sea on the night tide had broken many more.

On 2nd August, "Roger Lawson, that could not agree with Caton" arrived. Tickell found him "more inteligible than the others . . . [but his] intemperance . . . in drinking is offensive & negligent . . .". On 19th, he commented that "the stone cramps are not liked at this boysterous place because the indraught of the surges lifts the ashlers upwards & [unless] . . . they fall [straight] . . . the cramps keep ym out of their beds . . .", the men preferring to "drive store of woodwedges in all the joynts on the upper side wch jumps them close and holds very well". He had allowed the men "to pull downe a toofall [lean-to] on the west side of the Garner at the W. end of the [old] key to be a cartway . . . [enabling them] in tide time to throw downe stones &c upon the new peer, but they would rather have pulled downe the [salt] pan house wch I could not grant" (3;97).

Meanwhile, Lowther ordered: "preserve all the Rocks as far as Tom-herd inclusive, for those are the great shelter of the Peer. If you could bargain with them for about 60 yards of Wall from Tom Jackson's Bulwark streight down towards the end of the new Peer it would . . . be a means of imploying the Workmen this Winter. Caton askt abt £50 . . .". The agent admitted that some stones had been raised "within Tom Herd . . . [because] these stones are the very best . . . & come easily in their boats . . . and some stones they get in the brow behind the [salt] pans & smithies when the tide is in; the quarry in the harbour [floor] is difficult to get up & affords few ashlers . . ." (Fig. 4b). He was reluctant to be too strict in case the workmen left. By the end of August, Tickell had paid the men £235 and the pier was "above five yards high" but the harbour deepening was behind schedule. Lowther wanted him to "press them hard for large stones & long binding inwards [on] the upper part [which] requires it more . . . for the stress of deep water is always upon the surface", where wave action was greatest. Thus, on 6th September, the masons had agreed "on the



next course of ashlers [being] 18 inches deep . . . cramp[ed] . . . with iron, covered with pitch & fastened with lead and . . . cramp[ed] . . . into the great long filling stones that do taile them". Lowther had won his point—at an additional cost of £5! He was told there was 12 feet of water at the end of the pier on neap tides and 17 feet at springs, and that seamen were "helping with their boats to bring fillings & shingle" to hasten the work before winter set in. At the end of September, spring tides still covered the new work and then a storm on the next "Neep tide . . . removed most of the [loose] ashlers placed above the [two] cramped courses . . . but litle injuring the cramped" work. On second inspection, however, the storm had created "a great bulge on the backside [seaward] abt 10 yds from the end of the peere arising from the bottome abt 4 yards and abt 5 yards long . . . swelled abt 6 inches and occasioned from the great outdraught . . . shaking the foundation". Other bulges had appeared in the north end and about 10 yards from the old pier. The masons promised to rebuild these parts the next spring and considered that "additional worke the full length of the peere abt 5 yards broad at the bottom & 4 yards high, sloping by degrees" would cure the problem, but would cost extra (3;196).

On 14th October, the agent reported "the masons, when tide is out [try] . . . to prevent further washing of the foundations by layering stones & whins about it to gather sand". Lowther was unimpressed (3;188) and wanted "a Wall 3 or 4 foot thick contiguous to the foundation of the Peer" along the seaward side, set deeper than the foundation and comprising carefully laid large stones set in holes dug progressively along the length. The masons found this difficult because of the work they had already done. Lowther was displeased, considering "the work . . . much bungled & in great danger" and that loose stones would be ineffectual. He warned "let it be your care to redeem what is amiss . . ."! He had also banned further quarrying in the Rocks west of the pier and commented "I fear . . . you have done prejudice to Tom Herd [rock] wch was our best protection". As the threat of winter advanced he became more irritable, with justification, for a storm on Christmas Day 1680 caused more damage though the ships in harbour were safe. This produced several conflicting proposals. "Mr. Addison was for shifting the peer outwards to the price of £800" whereas Mr. Atkinson wanted a buttress 5 yards wide of hewn work costing £200 and "Mr. Gale propounded a broader backing of 12 yards with great stones on the skirts & filled closely with rough stones halfe the peer height" costing £40 (Fig. 4a). Tickell suggested "wood of any coarse sort well bound as in Workington fishgarthes<sup>40</sup> to prevent the dispersing of the stones" especially if it were only temporary. The

ship masters thought the wall already too high and merely wanted a wooden rail along the upper edge to prevent rubbing by cables and ships (3;157). By 17th January they had decided to use Gale's idea of "great stones 3 foot high & 3 foot long at least . . . wch the seamen will . . . swim under their cockboats to the places appointed" to be filled behind with rough stones and rubbish from the harbour deepening work, the townspeople promising £50 extra when completed. By the end of the month, hopes rose as the buttress grew but further storms caused more bulges so that "the townesmen with many boats & many hands unite[d] their forces to assist the backing [but]. . . We observe that as the paved backing riseth, tho it cureth all under it, yet occasions new breakers above it . . .".

There is much more detail of their empirical approach to solving the engineering problems and their conflicting opinions, but at least the community was united against the common enemy. By 18th April 1681, the inner side was 25 feet 4 inches high and, as that was considered sufficient, the masons agreed to build the battlement along the seaward side "abt 6 foote high, abt 8 broad at the bottom and 5 at the topp with offsets of 2 or 3 steps at the bottom on the inside" in lieu of the unwanted height (Fig. 4a). On 12th May, Tickell reported "the Backing . . . is finished and very well as all say, the end is now a doeing in the same manner" but Lowther ordered "let not the conjunction of them be in a Ridge like the corners of a hip'd Roof, but round so the sea may have no power upon it . . ." (3;221). On 30th May another storm severely damaged the backing at the north end, and again on 5th June. "The west end of the Backing stands well . . . and the back of the old peer fills up with gravell & shingle but tho this [damaged] part . . . was well gravelled . . . it is now so washt out as if there had never bin any". Repairs were completed by 28th June before the next storm on 12th July, when Lowther suggested "if the seeds of Sea wrack were scattered all along . . . or the wrack itself transplanted . . . it would . . . hinder the gravel from washing out". By 4th August the town had paid their £300 to the masons but, on 21st, Tickell gave them only £10 to pay off their hired labour. On 1st September 1681, he wrote "The peer is finished and satisfactorily if it will stand". Twelve masons continued deepening the harbour, but left by 3rd October, promising to return the next spring to finish that work and collect their final £40. They did not return and left "one Reddet . . . finishing the brest work on the South end of the Levell wch is part of the old Key next the towne neare the oare steaths wch I long ago bargained for at 9d the yard" (Fig. 4b). Expenses continued to increase, however.

As if celebrating the departure of the opposition, a SW gale,

on Tuesday 18th October, broke up the paving at the end of the pier. After the next storm on 28th Tickell decided to keep "men in readiness to waite the [expected] reparation". Worse was to follow. On 27th November a NW gale "tore up a great peece of the Backing in a new place" and then, on 3rd December a WNW gale "made another larger breach . . . abt 40 yards long & abt 8 broad beginning abt 3 yds from the old peer" as well as at the very end. The approach this time was to place upright wooden posts up to 6 feet long amongst the backing stones at one yard intervals and in four rows, the shorter seawards and all bound in with stones tightened by wooden wedges. Tickell's optimism grew (3;274), until the next storm on 14th December. Then, on 28th December he wrote: "the last weeke was reasonable faire & we finished abt 7 yards with 3 rows of posts planked 2 planks deep each rowe, well set & wedged yet . . . the last of those partitions . . . [by] the extremity of the winde since . . . is sore shaken & . . . I know not what to do [but] hope the other 2 rowes may yet stand . . .". This suggests that the planks had been set parallel to the harbour wall, so that they faced the main force of the crashing seas, unlike groynes. They needed more support between the rows.

Desperate measures were called for, so Tickell continued (3;267): "[As] to your Terrace [see note 39] I know not the strength therof, only acquaint you that the Alabaster [in the] quarry at Sandwith Baurgh<sup>41</sup> being burnt does quickly make an hard floor wch perhaps may be effectuall [if] . . . poared upon the backing & I purpose to try a litle of it as soone as I may". On 7th January, Lowther liked this idea: "I wish I had thought of it when we begun, tis of the nature of Tarrace & wil sett in Water & almost in as short time", but then, on 29th, wrote urgently "the Artists here differ as to the Allabaster. I fear twil not doe". He did not know that plaster of Paris would disintegrate in water and that calcium sulphate (e.g. gypsum) is now used to retard the setting of cement to maintain workability. This exchange demonstrates how ill-equipped they were to undertake such civil engineering work and how rapidly information could be exchanged and discussed with informed experts in London. On 2nd January 1682, Tickell had been sufficiently encouraged by the timber work in the backing to buy "a parcell of an old shipp's hull that cost 50s. besides the labour to pull it in peeces wch will afford us posts & planks to goe a great way in the work . . . [and] to carry on the same behind the old peer".

Despite more storms in mid-January, repairs continued and had cost over £55 by mid-February. On 4th May 1682, the agent despaired "we forebear doing anything at the peer until we have your presence here . . . a great banke of gravell washeth as usuall

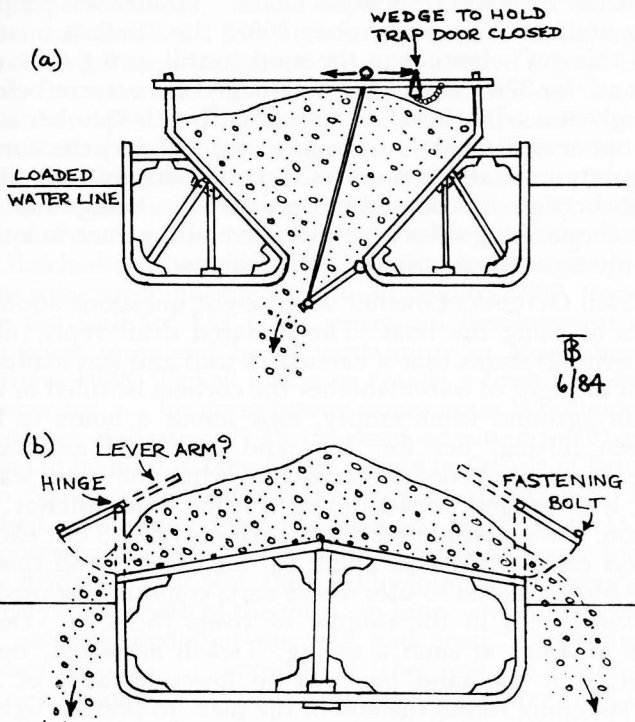
abt the end thereof into the harbour & is very noxious, a part wherof Wm Atkinson is now Ballasting his ship *Guist* for Norway", probably to fetch a cargo of deals. On 18th August, Lowther had reached his estate at Roundhay (Leeds), northward bound to inspect the pier at first hand and was back in London by 10th October. He advised: "buy some old Ship Timber so far as £10 or £12 goes [and] have Piles ready cut, out of Harras [park] or elsewhere for the Peer" to be at hand in case of storms. Damage caused by a westerly gale on 20th November, persuaded Tickell to try to set up a repair fund in the town but, on 10th January 1683 had "spoken with Wm Atkinson abt the maintenance of the peer, who briefly replied that, if you would not support it, you did ill to hinder ym from makeing an harbour at Parton . . . Robt Biglands has positively declared ag[ain]st" but others were flexible. Ill feeling prevailed. The next storm, on 14-15th February tore "a great hole about 10 yards square on the north side, but by 19th they had "set 2 cribbs allready with posts & planke" to be filled quickly with stone. Apparently the planks now ran in two directions at right angles. Another NW gale, on 14th November 1683 "ruptured a crib", but the technique appears to have been fairly successful and damage reports became fewer and less dramatic.

The main problem became debris washing round the end of the pier and choking the harbour. In February 1683 Tickell noted "the seamen are very desyreous to have it removed" and proposed "to set upon it with carts to . . . let the small dribling water that lyes among the Shippes to run" out, so that the sand might be carried by it. Except in floods, the Pow<sup>42</sup> beck, even when boosted by water pumped from Lowther's collieries, was insufficient to cleanse the harbour. Tickell identified another basic problem (4;31), observing that the shore between the pier "& Tom herd is never free either from the many slippes of quarries from the hill or from our covetous inhabitants [who], to get coales, frequently break . . . [into] the small seam of coales there" causing collapse of the rocks above. To trap this debris, on 29th November 1683, he was arranging for "as great stones as carts will carry" to be dumped along the seaward side of the whole pier<sup>43</sup> but particularly near the salt pans. To shift the sandbar, the town agreed to pay William Atkinson and Robert Biglands £60 in March 1684, but Tickell discovered that they had then arranged for a John Harriman to do it for £45. Naturally this was reported in the most unfavourable way.<sup>44</sup>

On 10th September 1684, the owners and masters petitioned the Customs Commissioners to formalise the harbour's management. They were prepared to offer ¾d. per foot of keel

(compared to  $\frac{1}{2}$ d. previously), provided foreign vessels paid 1d. per foot pier dues. In return they wanted a patent to authorize Sir John Lowther, Sir Christopher Musgrave (Honorary Principal Collector) for his life, and afterwards the Collector for Whitehaven for the time being, plus two elected masters to inspect harbour receipts and repairs. As well as a suitable and convenient place for dumping ballast, with offences punishable by law, they wanted a pier master,<sup>45</sup> paid out of dues, to regulate moorings and preserve the harbour from sedimentation. This might have weakened Lowther's control.

Tickell reacted the next day, thinking that a levy of 1d. a ton, assuming chaldrons of 30 cwt rather than  $27\frac{1}{2}$  cwt, would barely "secure the Pier & cleanse the Harbour wch cleansing is very needful—I suppose [that] may be best done by a Ballast



Author's interpretation of ballast boat sections.

- (a) Thomas Tickell's suggested hopper (unexecuted) with a possible alternative arrangement for opening the trap-doors, avoiding undue friction on bolts.
- (b) Sir John Lowther's design obtained from London, showing the deck slope too shallow for clearing wet sediment, and the sides raised for unloading.

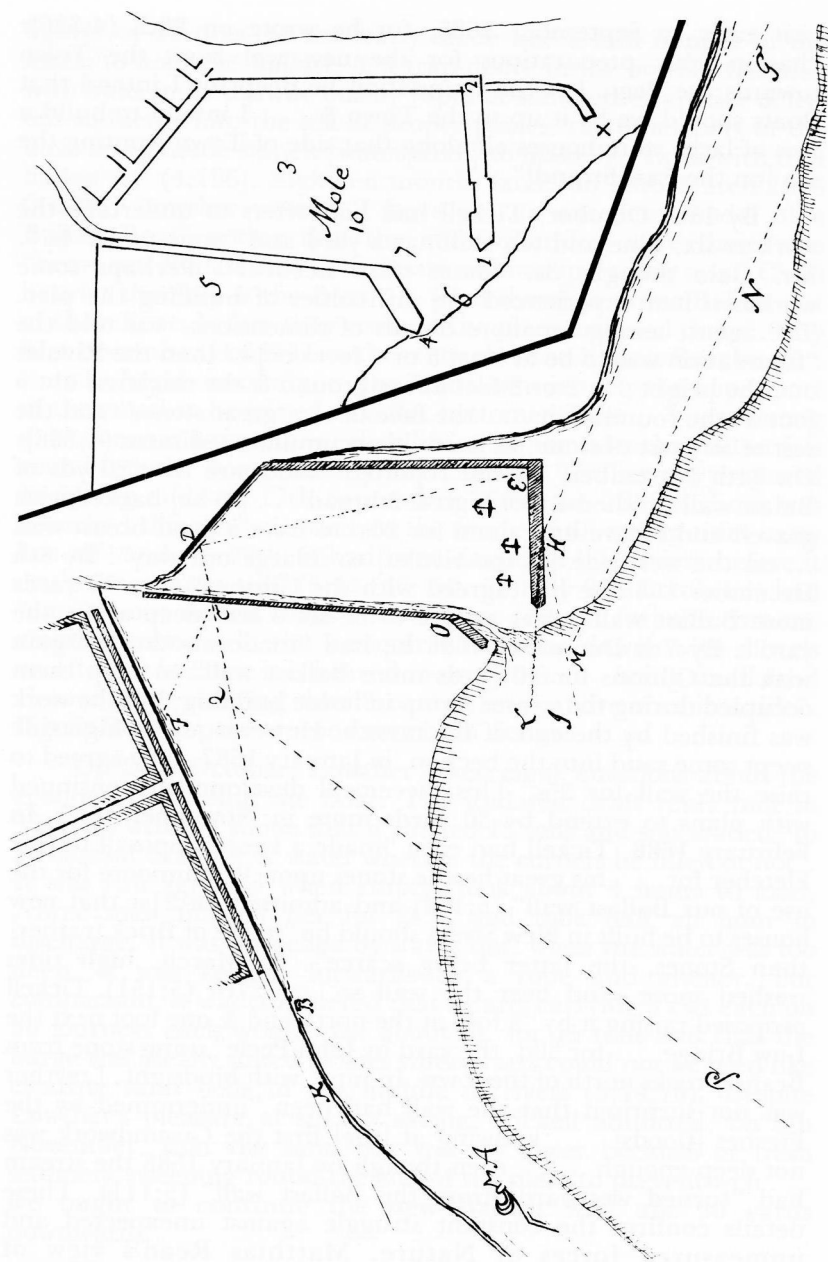
lighter of 20 tons (at the least) made like a mill hopper in the middle to hold the Ballast, & a trap doore in the bottom fastened with bolts to be drawne out by ropes or some other artifice & lett out suddenly into the sea at proper places, the other part of the boat being made stanch [waterproof] to make her swim with that ballast in" (4;196). Eighteen months later, on 20th March 1686 (4;389), Lowther wrote: "I have got an excellent model of a Ballast Boat" noting that the main offenders were those who "heave out Ballast into their Boats without spreading a sail Cloth betwixt the Ship & the Boat . . . [and those] yt throw Ballast out of their Boats before they come to the place assigned them".<sup>46</sup> By 21st December (4;521) Lowther thought "the Ballast Boat ought . . . to be begun instantly. . . the Model sent is onely the upper part of the vessel to be joined to a flat bottomed Boat . . . very strong so as to run it aground . . . then lifting up the sides the Ballast falls round it & the Boat instantly floats again." Timber was prepared in Spring and, on 17th September 1687, the "Ballast boat was launched this day". It stuck in the mud "untill spring tides carry her off" and, by 27th, it had been damaged by a storm before it could be given a trial (5;41, 47, 50, 53). By 9th October it had "carried out several loads . . . & now, [except for] the corners, empties pretty well, tho it requires thrusting downe with shovels on all sides because it is heaved in wettish & . . . being small sand cleaves to the shelving sides & cannot serve above once in a tide". Figure 6 attempts to reconstruct both designs.

On 24th October, Lowther asked eight questions about the economics of using the boat. The undated draft reply (not in Tickell's writing) shows that it carried 15 tons and was loaded "to a constant draught of water whether the corners be filled or not". It was run aground when empty, took about 4 hours to load, "three men fill[ing] her for 2s.", and took half an hour to discharge. It was propelled by staves but, when the water was too deep, it was kedged forwards by a rope and anchor. For comparison, it was considered that 2 carts carrying 5 cwt each on 30 journeys each would cost about 6s. for 15 tons and that the barge was ideally suited to sites where carts could not be used like clearing sand beds in the middle of rivers (5;74,76). Despite Lowther's pleasure at such a saving, Tickell admitted, on 8th November, that the sand bar was no lower because of fresh sediment sweeping round the end of the pier "to prevent wch . . . we ought to continue the new Ballast wall abt 30 yards downwards".

The ballast wall was intended to stop the clockwise movement of sediment and is shown on Andrew Pelin's plan (Fig. 3), directed towards the end of the new pier from Thomas Jackson's house. It seems to have been planned during Lowther's

visit early in September 1685, for he wrote on 28th (4;326): "hasten your preparations for the new wal from the Town towards the Peer. Let the foundation be deep for I intend that Boats should lye by it up to the Town & . . . I intend to build a row of large store houses all along that side of Town fronting the sea [on the East Strand]".

By 15th October, Tickell had had offers to undertake the work at six, nine and ten shillings a yard and "none under 4s.". Mr. Gale thought 3s. "more than needful". Perhaps some workmen had experienced the difficulties of building the pier. The agent, asking for more details of dimensions, was told the "foundation was to be at least 3 or 4 feet deeper than the Rivulet . . . the height . . . 2 or 3 feet above ground & the thickness abt 5 foot at the foundation . . . the face of . . . great stones" and the rest of any sort of stone, as it would accumulate sediment (4;336). On 24th November, Tickell reported "there are now 20 yds of Ballast wall finished 4 foot high & 3 broad . . . [to be] backed with gravell and I have bargained for 20s. to have a good breast wall . . . on the west side [of the rivulet] to enlarge our way". By 8th December 1685 he had agreed with the Gibsons<sup>47</sup> "for 30 yards more Ballast wall 5 feet square to be set 3 feet deep at 6s. the yard". By 7th December 1686 he had "made another bargain with the Gibsons for 30 yards more Ballast wall" to keep them occupied during the winter slump in house building, but the work was finished by the end of the month. However, every high tide swept some sand into the beck so, in January 1687, they agreed to raise the wall for 25s. This piecemeal development continued with plans to extend by 30 yards more in November 1687. In February 1688, Tickell had even "made a fresh proposall to Mr. Fletcher for . . . his great hewne stones upon Whillimoore for the use of our Ballast wall" (5;124) and admitted on 21st that new houses to be built in New Street should be "made of Brick [rather] than Stones, the latter being scarce". In March, high tides washed more sand over the wall so, on 27th (5;151) Tickell proposed raising it by "3 foot at the north end & one foot next the Low Bridge . . . for 30d. the yard by John Peele" using stone from Bransty rocks north of the town. In June, with hindsight, Lowther was not surprised that the wall had been "undermined by the Freshes [floods] . . . knowing at [the] first the Groundwork was not deep enough . . .", even though by January 1688 the stream had "turned westwards from the Ballast wall" (5;111). These details confirm the constant struggle against unexpected and unmeasured forces of Nature. Matthias Read's view of Whitehaven in 1738 shows the ballast wall with ships alongside, but by 1754 a new wall further north replaced it (see note 56).



Extract from a plan endorsed "Mr. Dummers draught for a counter-mole at Whitehaven".  
There is no date [1693], name, key or scale.

*Inset:* Part of a second plan showing differences in detail, especially the orientation of East Strand and the inclusion of the wall X for fortifications and to check drifting shingle.  
Both drawings are 62% of original size.

Source: C.R.O., Carlisle, D/Lons/W/Harbour papers.



When William Gilpin became agent in January 1693 following Thomas Tickell's death in December 1692, he familiarized himself with the harbour works and paid off bills which had accumulated. These included £22.10s. "Paid John Peile and George for making 30 yards of new Ballast wall sett at the North End of the old Wall and is 6 feet in the Bottome & 4 feet in the Top broad [at] 15s. per yd." dated 19th November 1692.<sup>48</sup> On 10th May 1693 he remarked "As to the Haven, the [direct] distance from the lower Bridge to the peer head is 355 yds. There is built of the Ballast wall 123 yds and [there] remains of it to build according to Mr. Dummer's Draught abt 190 yds, including the Counter-mole at the end . . . [which] when finished will preserve the mouth of the Harbour from Banking," then nearly four feet "higher than the grounding within". Part of Dummer's two surviving plans are reproduced as Fig. 7.<sup>49</sup> In March, Gilpin had decided they should always "have in readiness 2 or 3000 piles" for emergencies and hoped to get suitable trees from Hensingham and St. Bees. Thus, on 1st May 1693 he paid £6. 13s. 4d. "to Workmen for getting & Leading 1000 piles for the use of the Peer". From August he paid over £20 "to Wm Thompson & Matthew Sudock for Carting the Great Bank in the Harbour" as well as £4 for "fixing the Water Race to Scour the Harbour".<sup>50</sup> Presumably Lowther's ballast lighter had failed and the harbour was still insecure. On 14th October Gilpin suggested that a "low wall well rampired . . . from the new Ballast Wall transvers [to] the South End of the Harbour may . . . receive a Considerable Quantity of Water and, with Sluces in convenient Places may . . . Effectually keep clean the Harbour . . . and perhaps . . . bring it as low as the Low Water mark". He thought a "Natural Basin" could be created above the town to store more flushing water from the Pow, and also wanted a wall projecting seawards from the pier to trap debris from the cliff falls to the west (see note 45 & Fig. 7). This wall would have been beside the salt pans and was developed later into the Fort.<sup>51</sup>

From 1694 Gilpin was more interested in new developments at Parton. On 4th October, he reported that the Fletchers of Moresby wanted to arrange a mortgage of their estate: "they must either do it or starve. They had long ago anticipated all their Rents and have now so little Credit left that they are forced to pawn their Household Stuff for Bread". Then, on 12th September 1695, he revealed "Mr. L[amplugh]'s new project [to build a coal staith] is not founded upon Mr. Fletcher's Peer, but upon an ancient Heap of Stones yt was thrown up to secure the Fishing Barks . . . [named] the Old Peer". He noted that it was within the area of Lowther's grant but thought it would fail through lack of money and shelter. On 13th November he

reported "The Peer there is now finished & some ships have already been laden there. Mr. L has endeavoured . . . to confine himself to the old Foundation . . . he has by cutting a Channel improved . . . [it] fit for the reception of considerable ships . . .". Gilpin was making preparations to stop the work, when a flood early in December "washed a bank of sand into the new harbour". He thought an injunction would stop them from moving it. Then, in early January, of "two small ships attempting to get into the Harbour, the one beat sore upon the Rocks but got in [and] the other [was] stranded upon the Great ridge &, putting out her boat with an anchor, it overset & two boys & a man were drowned and the ship remains . . . in great distress amongst the breakers". Then, at the end of January, part of the pier was broken down and the two ships were in even greater trouble. On 5th February, he expected "the sea will level all . . . [at Parton] if wee can keep ym from repairing the present Breach in their Peer. In the Interim I send thither every tide to terrifie all people from assisting Jenkinson", presumably the contractor. However, by 18th May, the pier was repaired and small ships used it "now and then". On 6 June 1696 Gilpin suggested that, as Fletcher's lease to Lamplugh forbade its use by Lowther, the latter should buy Moresby. On 16th June 1697 he reported "Mr. L is again set to work at Parton . . . cutting a New Channel for Morresby beck through the East End of the great Sandbed . . . to preserv it from being filled up by the Tides. . . He is also working upon the Basin there . . . to fill with water from the full sea, Retain it till the Harbour be bare and then through several sluices direct it . . . for cleaning . . ." like Seaton Sluice (note 37). In addition "a great many men & Carts [were] . . . removing the Rocks for a channel . . . from the Low water mark to the End of his Peer" and, a week later: "Mr. L . . . has been blowing up the Rocks and yesterday his Ingenier had like to have blown up himself—He lost a leg in the service". After that Gilpin passed to other interests.

In January 1705/6, Thomas Fletcher obtained an Act of Parliament to improve his harbour, so that the next spate of activity at Parton was reported by John Spedding, James Lowther's colliery steward.<sup>52</sup> On 10th May 1706, he revealed: "This week they have begun the Foundations of the New Peer at Parton & carry it down from the N. End of the Old peer directly into the sea but how far . . . I cannot certainly learn". He noted the names of six trustees and two others who had lent £700. "They have above 60 Labouring men . . . on day Wages at 14d. p. day. Mr. Lamp.<sup>53</sup> himself, being Master-builder, both he & Mr. F . . . are either heaving Rubage or bearing Stones all day long to animate the Workmen . . . who are to Work 10 hours in a day". By 17th May they had "laid out about 60 yards . . . 3 or 4 foot high . . . 7 or 8 yards broad with a Wall on each side & filled only

with small Coble Stones in the Midle which is but a sorry defence ag[ains]t the violence of the ocean upon so open an Exposure. They are at abt £20 charge a Week". By early August he said Lamplugh had "laid the foundation for the whole length westward which is 150 yards" but had sacked all but 18 men through lack of funds. Spedding was confident the project would fail. Many people had taken up ground plots there but few were willing to risk their capital in building houses.<sup>54</sup> By 18th May 1707, Parton comprised "about 18 houses . . . & 2 more almost finished. Mr. Lamp[lugh] is going on with Great Buildings there. He has already built a Barn & Stable and a house to Live in . . . which he designes afterwards to turn into a Kitchin for [a greater] house [to cost] . . . 5 or 600£, but most of what he has built already has bin done by the Workmen Employed at the Harbour which has disgusted the rest of the Coal Owners. . . There is about 4000 Tun of coals in the Steaths at Parton" and too few small ships to take it. Both trade and settlement languished. On 7th August 1714 Lamplugh had "done nothing more at his House . . . [and] does not seem to make any further Improvement there, his Stables remain uncovered". The harbour was constantly damaged by storms (e.g. 23rd December 1720) and then was completely destroyed in January 1797<sup>55</sup> and no traces of it remain. It had never offered real competition for Whitehaven but the evidence discussed above complements that for its more successful neighbour, which enjoyed the most advantageous site on Cumberland's coast.

Conclusions must be brief. On 26th March 1709 an "Act for Preserving and Enlarging the Harbour of Whitehaven" was passed. This vested management in the hands of 21 Trustees, 14 of whom were to be elected by the town and 7 nominated by (Sir) James Lowther. Their minutes survive for the next 58 years and outline the continuing growth of the harbour,<sup>56</sup> but they are not nearly so informative as Sir John Lowther's correspondence. On 21st September 1686 (4;478), he had told Tickell that "a long succession of time wil produce many letters . . . useful to posterity".<sup>57</sup> Thanks to his foresight, the creation of Whitehaven's harbour nucleus has been traced in considerable detail, despite the omission of much more through lack of space.

It has been possible to correct earlier errors and delve beyond a mere historical outline to discover the problems, thoughts and interactions of many interesting characters. The political squabbles and controversial intrigues and deals are as interesting as the evidence of how civil engineering knowledge was gained as much by trial and error as by postal contact with eminent London "artists", none of whom are named. Without their advice, many mistakes would have been made like using

alabaster in 'cement' or using too small stones and inadequate cramping methods. A gradual realisation of how wave action created longshore drift and problems of silting and loosening of stones was matched by successive developments in construction technology particularly in fixing the stones and building a protective barrier first with only small stones, then with wooden planking later turned into cribs and then by the placement of large stones to break the force of the waves before they reached the pier. They did not use groynes but the adoption of the wall projecting from the salt pans shows that they came to appreciate the principle. It is interesting to see how ideas like using sluices to clean harbours were probably copied from Northumbrian experience and the way in which West Cumberland relied on Tyneside (Tickell's home) for skilled workmen and advice is well illustrated. Information about Workington's harbour and the construction work in Northumberland is as much a bonus as are the references to Henry Trollop and Edmund Dummer. These merit more attention.

It is rewarding to discover so much about the teams of masons. George Jordan, Cuthbert Hudspeth and George Wilson are likely to be found on jobs associated with the Trollops, who probably recommended them to William Fletcher, but whether their previous civil engineering experience was limited to bridge building remains to be proved as does their area of influence. Robert Storey, though otherwise unknown, appears as a man of action and daring, not unlike a World War II human torpedo 'charioteer'. The Lancaster masons, especially Richard Caton and Roger Lawson emerge as characters worthy of more detailed research, particularly in their home area. Certainly Caton's last two jobs are now firmly recorded. The 1680 pier work can still be easily identified by joins at either end of its different stonework and by marked subsidence of the inner side. On the third step of the protective battlement, just northward from its break in line, one mason's mark  $\times$  survives. Clearly Francis Caton used the same device for both documents and stones but, unfortunately, erosion of the soft sandstone has probably destroyed many more.

This article has also demonstrated Sir John Lowther's struggles to subdue Fletcher, Wybergh, several Whitehaven merchants and even his own relative Richard Lamplugh. His family came to dominate most activities in West Cumberland but, without their ambition and capital, the region's economic development would have been greatly retarded. Together with many later structures, the two earliest parts of the "Old Pier" (extended again in 1713 and 1753) provide a lasting reminder of the initiative of the first two Baronets, the grudging cooperation of the townsmen and the skills of master masons who deserve to be better known.

## APPENDIX

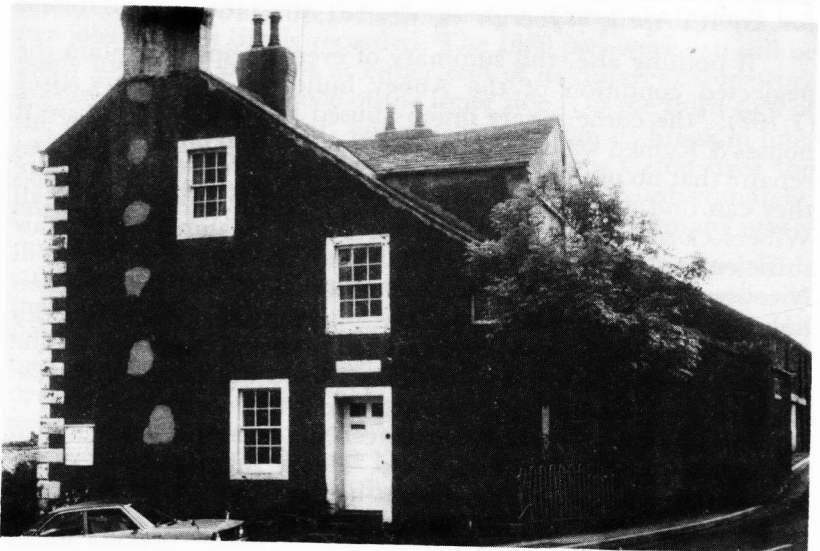
### The Building of Abbey Farmhouse, St. Bees, by Richard Caton of Lancaster

Abbey farm (Fig. 8) stands immediately north of St. Bees church and originally formed a part of the monastic property granted by Edward VI to Sir Thomas Chaloner in 1553. In 1599 he sold it to Thomas Wybergh who mortgaged it to the Lowther family. Eventually Sir John Lowther of Whitehaven foreclosed on the mortgage and won a suit in Chancery in 1663.<sup>58</sup> Thus, on 27th August 1668, the Sheriff with Lowther's brother-in-law Richard Lamplugh and his cousin Mr. Teasdell from Sockbridge, tried "to turn Mrs. Wiber out of her house in St. Bees" but her husband had taken all the household and farming goods so they could not be distrained (1;52). Gradually Lowther tightened his grip on the property and by October 1670 "the corne sowed by Wiber [was] housed at the Abbey & in our possession". Teasdell had sent one Lancaster "to secure & protect the Abbey barns & corn against Wiber" and Tickell bought locks and nails to secure the doors (1;94), but could persuade no one to become tenant. In January 1671, Lancaster and two others tried to capture Wybergh who was on horseback, discharged a pistol at them (1;103) and then fled to London. He took refuge "at Mr. Mills house, the Cock & Dolphin in Grays Inn Lane, in the Chamber over the Kitchin . . . on the Right hand through the hall and was . . . not well in an aguish distemper . . . by wch discovery, if you imploy some subtle person you may attack him". Tickell's scheming was unnecessary for, by 4th April, Wybergh was dead (1;107,110).<sup>59</sup>

If nothing else, this summary of events helps to explain the neglected condition of the Abbey buildings in January 1671 (1;102): "the corne is very much abused by bad gathering, wett houses & Ruined walls. . . The dovecoat . . . is so much out of . . . reparaire that no pigeons sitt there but haunt . . . the Church where they can find drie habitations . . .". In March, Tickell "sold all Wibers Corne to W. Lancaster for £10 . . . allowing us straw sufficient to reparaire those houses" and for £2 a year let Will Nicolson have "some of those outhouses . . . [and] the Mansion house in wch they will always have some corne" so that Wybergh could be evicted more easily if he tried to gain entry (1;107). The sea mill at St. Bees was also in disrepair and was to cost £70. 12s. to correct. The church was neglected too. In March 1677, Lowther asked "whether the Chancel . . . was ever in Repair in the memory of man" and was told "Henry Biggrig, Clerk of St. Bees now aged 83 . . . tells me that he (in his minority) has seene an old Ruinous slated Roofe upon the Chancell . . . but that for



Abbey Farmhouse, St. Bees. (a) Southeast elevation painted dark brown.  
(b) Northeast gable with dated doorway.



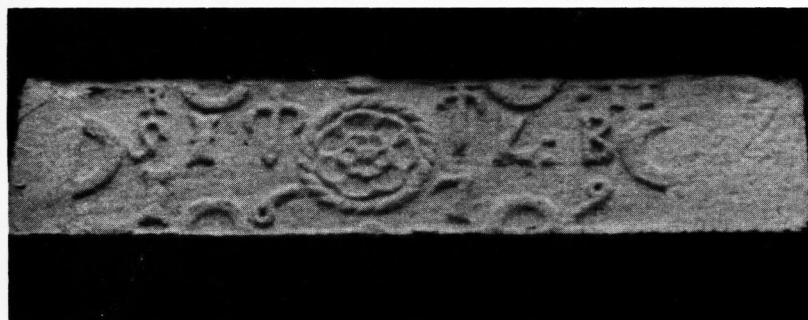
sixty yeare at the least there hath beene no Roofe at all nor yet any timber theron appurtenant to it and the reparation therof needless, the Church being large enough . . .”.

By 1675, Richard Stainton had become tenant of Abbey farm and, on 11th November 1678 (2;379), Tickell reported:

I have made a Contract for Ricd Stainton's house & Barne at St. Bees to be finished ag[ain]st next Mich[aelmas] for £110. The front of the house is to be 12 yards long with 2 hewen Coines in the front towards schoole like this house [Flatt Hall] and 8 yds high, the windows in the three stories like this house also, besydes the Outcasts or toofalls [lean-to rear portion] &c. The Barne 20yds long, 6 yds wide, 6 yds high [in the] side walls, 2 hewen doores and a Stable besides. . . All sufficiently finished with all materials whatsoever . . . and moneys paid according to the going on of that worke; alloweing the undertaker liberty to get wood in your grounds for lintells &c and part of the Tower stones such as may be best spared for his purpose with an addition of five pounds more if he be not a sufficient saver by that bargain.

Lowther replied on 19th “As to Stainton's House I understand it al wel, except the Barn, wch where to be placed you doe not mention”. On 2nd December (2;387) he was told “The Barne at St. Bees is to joine on the west end of the tith Barne between it & the Tower, but the undertaker [is] not yet returned out of Lancashire tho dayly expected”. After this details are scarce, but Richard Caton was certainly building the house by mid-March 1679 when he submitted his first estimate for extending the harbour wall at Whitehaven. He was working in Lancaster during May and early June (2;437) but, despite preparations for the pier, Tickell reported on 28th December 1679: “The house at St. Bees is finished & paid for without any surplus untill you see it”.

The datestone over the gable-end doorway facing the street, confirms the year but in rather an uneven lettering style (Fig. 9). Its central motif is a rose of ‘Lancaster’ (but with seven outer petals) surrounded by a rope wreath. Six semi-circles are



Abbey Farmhouse. Datestone probably carved by John Stainton.

interspersed with two daggers and numerous letters; I L B for John Lowther, Baronet; R S for Richard Stainton, the tenant; and T T for Thomas Tickell, the estate steward. As Lowther's wife had died on 9th May 1678 "of a Feavour very rife in Town" the customary combinations of husband and wife initials were inappropriate. Because the mason's mark  $\times$  is the same as John Stainton's signing mark (Fig. 5), as was Francis Caton's on the pier, surely he carved the datestone. The appropriate Lancaster parish registers include only one Stainton (Margaret) and the defective St. Bees registers many. It is likely, therefore, that John Stainton was related (a son?) to the Abbey farm tenant and that he wished to record his relative and his employers for posterity. Certainly, several children of a John Stainton were buried at St. Bees following 1682.

Perhaps proof of these mason's marks and of Richard Caton's house building style will stimulate a search for other works, particularly in the Lancaster area.

#### NOTES AND REFERENCES

1. Thomas Machel's observation in J.M. Ewbank, *Antiquary on Horseback*, 1963, 54. On 17th February 1696, Timothy Banks, Col. James Grahme's agent at Levens Hall, wrote: "I was at Milthrop this day and was requested by some Merchants to desire you to build them a Key [Quay] and a small Crane to load and unload Goods at the waterside. A small charge will doe it and it will turne to good profit to you besides keeping up your right there . . .". (Levens Hall Manuscripts, Box E, Banks 1). The outcome of this request has not been found.
2. W. Parson & W. White, *Directory of Cumberland & Westmorland*, 1829, 361; J. Bailey & G. Culley, *View of the Agriculture of . . . Cumberland*, 1805, 203.
3. For example, between 30th September 1693 and 19th May 1694 when Lowther Hall was being rebuilt, nine named men were paid nearly £35 "for leading Dals from Allonby to Lowther". They received 3d. each for 2,198 deals and 4d. each for 206 large deals. C.R.O., D/Lons/L,A1/19, Sir John Lowther's Estate Accounts.
4. J.M. Todd, "Origins of the Port of Whitehaven . . ." *Cumberland & Westmorland Antiquarian & Archaeological Society (CWAAS), Transactions*, 1981, 162.
5. Cumbria Record Office, Carlisle (C.R.O.), D/Lons/W/Whn Town 20. Lord Lonsdale's Mss are hereafter referred to as D/Lons/ . . .
6. Apparently recorded by John Aglionby, Queen's Searcher. D/Lons/W/Whn Town 13. His findings can be tabulated:

Creek§§	Inheritance of	Houses	Licensed Pickards§	Comments
Bowsteadhill	Lord Dacre	14	—	
Skynburness	Crown (Holm Cultram)	10	—	
Elnefoot	John Senhouse	12	—	
Workington	Henry Curwen	30	3	Trading herrings for salt
Parton	Lady Knevet	"no town"*	7	No mariners, only fisher men
Whythaven	late Thos Chaloner	6	1	No licence for loading



Ravenglass	Wm. Pennington	10	4	Licence to load in Fair time
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Powfoot	Anthony Hudleston	"no town"*		
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Notes \* "houses dispersed along the coast".

§ all of 7 - 9 tons, all owners named.

§§ some fishermen with 1 ton boats in other creeks [transitory].

7. J.V. Beckett, *Coal & Tobacco*, 1981, 158. This is the most important text on Lowther interests in West Cumberland. For an outline of harbour developments see pp. 158-160. For general background see D. Hay, *Whitehaven an Illustrated History*, 1979, esp. pp.18-32.
8. This paragraph is akin to a historical minefield! It is based on D/Lons/W, Estate Papers, bundle 21 including "Descent of Manor of St. Bees" and also C.B. Phillips, *Lowther Family Estate Books*, Surtees Society, Vol. 191 (1979), 35-8 etc. Much research is required on this topic if the uncertainty is to be removed.
9. D.R. Hainsworth, *Commercial Papers of Sir Christopher Lowther . . .*, Surtees Society Vol.189 (1977), 64. Sir George Radcliffe was Secretary to the Earl of Strafford (Sir Thomas Wentworth), President of the Council of the North 1628-33. The Radcliffe family owned property, salt pans and collieries at Bransty just north of Whitehaven.
10. D/Lons/W/Whn Town 1.; J.V. Beckett, *op.cit.*, 1981, 134.
11. D/Lons/W/Foreshore Papers: Grant dated 10th November 17 Car II. Also Sir John's description.
12. D/Lons/W, Tickell Correspondence in 5 boxes. Some box and letter numbers will be included in the text for clarity.
13. D/Lons/W/Whn Town 5.
14. This impression is supported by comments in Sir John Lowther's petition, dated 15th January 1677, to Thomas Earl of Derby, Lord High Treasurer, asking for a reduction in customs duties to those charged at Chester and Liverpool. D/Lons/W/Deeds/Whitehaven, Ex Box 9, bundle 1, *re*. Customs House.
15. Scaur; isolated rock in sea (ON *sker*): presumably boulders rather than fine sediment.
16. On 27th August 1666, Lowther instructed Tickell "As to Ballast casting be very severe therein either in Distresses or Law . . . & get the . . . next [Court] Leet to raise the Pain from a Noble to 20s. or 40s." For obstinate offenders, he suggested cutting the ship's cables. (1;8).
17. Box 1, letters 127, 130, 140. In 1;132 Tickell referred to "When I was surveyor of ye members of Newcastle port . . ." and in 2;280 is described as "formerly a trader & now Surveyor of this port".
18. Described by B. Tyson in *AMS Transactions*, 28 (1984), 61-92.
19. He was great grandson of William Fletcher, a rich merchant of Cockermouth, who bought Moresby Hall from Thomas Knevett in 1577. In 1670 William (1644-1703) married Frances, sister of Sir George Fletcher of Hutton-in-the-Forest, near Penrith (and great granddaughter of the earlier Wm Fletcher's brother Thomas). His son Thomas inherited Hutton when Sir George's son Henry retired to Douay Abbey in France. J. Nicolson & R. Burn, *History of . . . Westmorland & Cumberland*, 1777, ii, 49 & 390. C.R. Hudleston & R.S. Bournemouth, *Cumberland Families & Heraldry*, 1978, 116-8.
20. Henry Trollop was the son of Robert Trollop (made a freeman of York in 1647 and Newcastle in 1657) and produced the surveyor's report in 1671 for rebuilding Rose Castle chapel for Bishop Rainbow. Both lived at Redheugh, Gateshead. B. Tyson, *AMS Transactions*, 27 (1983), 65 & 75. H.M. Colvin, *Biographical Dictionary of British Architects . . .*, 1978, 837.
21. At the restoration, William Christain was appointed Collector of Customs at Carlisle and Whitehaven (2;286). On 30th November 1674 (1;215) he proposed a levy of 6d. a chaldron for 3 voyages to finance a new pier, but Lowther (1;217) did not "expect anything but Noise in this Undertaking". Tickell disliked him intensely remarking "This Christian's unchristian venom extends to inure you" (1;129), that he sought "to insult a tiranize &c" (1;74) and followed various corrupt practices (2;387). In September 1672, Christian planned to live at Beamish, Co Durham where he had bought a property, worth £200 a year, at which he opened his Customs letters furtively (1;158,2;335) but he knew nothing of the new pier at Tynemouth (2;314).

22. H.H.E. Craster, *History of Northumberland*, 1907, viii, 281-2.
23. Presumably Haydon Bridge, 6 miles west of Hexham, which would have had a county bridge, rather than a bridge at Aydon, 1½ miles NE of Corbridge.
24. From later evidence, this seems to be an error for Cuthbert *Hudspeth*.
25. Biglands had lived at Flatt Hall with his wife, family and mother-in-law (Mrs. Johnson) but, when she died and the house was sold to Lowther in 1675, he seems to have been evicted—hence his hostility. He died in November 1719.
26. C.R.O., D/Lons/W, Correspondence 13, Addition to Lowther 17 Oct. 1678.
27. The Whitehaven Street Books (D/Lons/W, Whn town 59) contain a comment that Numbers 33, 34 and 35 King Street (see Fig. 3) had been Thomas Jackson's (a former steward to Sir John Lowther), but his accounts were in error so, in 1685, following two law suits in 1682 & 1685, he released all his property to Lowther. For helping to break the "Combinations of Masters", Jackson was admitted to No. 34 which passed to his son Rowland who bought the freehold on 4 Apr. 1701.
28. See AMS, *Transactions*, 28, 78 for more information.
29. For proof of authorship and date, see B. Tyson, "Andrew Pelin's Surveys, Whitehaven's Mathematical School . . . 1688-1701", CWAAS, *Transactions*, forthcoming.
30. Grant dated 24 March, 31 Car II. Copy in D/Lons/W, Foreshore papers, Whitehaven's harbour boundary was set, on 24th October 1681, "from mid-stream in Duddon water into the sea 10 fathoms deep & thence coastwise northwards unto the NE side of Elnefoot" (later Maryport). The limits for loading merchandise ran from the corner of Thomas Jackson's garden (note 27), in a direct line about 300 yards to the East end of the pier (i.e. along the ballast wall), then to the saltpans, along the old quay to Henry Addison's house and then to Jackson's point. Workington's limits reached from "Millers house 500 yards downwards on the south side of the river Derwent" (3:286).
31. The estate was eventually bought by Sir James Lowther in 1737 for £6,600. (J.V. Beckett, *op. cit.*, 1981, 223). Sir John's Yorkshire estate was at Roundhay, Leeds and was sold in July 1688 (5:209), to provide money to buy property at Whitehaven.
32. At Corbridge in 1684, the Manor Court fined Cuthbert Hudspeth and seven others for failing to keep Lynell bridge (Linnels, 3 miles SW of Corbridge) in repair. *History of Northumberland*, x, 135. Between 1657 & 1684 several children of a Cuthbert Hudspeth were baptized in Corbridge and Lee St. John, N. of Hexham, but the surname was more typical of Haltwhistle.
33. Lowther had been a Fellow of the Royal Society since 1663 and, in 1674, was on the Society's Council with Sir Christopher Wren. He would have known Sir Jonas Moore, surveyor to the Duke of Bedford when draining the fens, amongst others.
34. On 15th January 1665, Caesar Barnes (ropemaker) was admitted to Nos 11 to 15 Roper Street and, by 6th June 1667, his house was "almost up" (1:23). By 9th January 1672, he was in debt and Tickell had "all his Goods this weeke made over to me by Bil sale" (1:141). He, his wife and two children and a servant were all lost at sea near Dublin when the *Charity* (Capt Will Woodall, master) sank in September 1672 (1:160). His son John succeeded to only a part of the property in Roper Street. (D/Lons/W, Whn Town, 59, Whitehaven Street Books).
35. If Richard and Francis Caton were brothers, they seem to have been baptized at Lancaster on 25 Nov. 1650 and 16 Mar. 1654 respectively, sons of William Caton of Lanthwaite, 1 mile east of Scotforth (now a southern suburb of Lancaster) (see note 38). Between 1673 & 1690 Richard Crozier "of Scotforth" had 7 children baptized at Lancaster and he seems to have been buried there on 8 July 1719 followed by his widow Jennet on 23 Feb. 1731. His own baptism is uncertain, probably 1642. Roger Lawson of Quarmoor, 2 miles east of Scotforth, was buried at Lancaster on 28 Feb. 1710 and his widow Alice on 8 Jan. 1724. They seem to have moved there from Skerton before 1680 to judge from baptism entries. John Jackson is unidentified and John Stainton (Stenton) probably came from St. Bees (see Appendix), the surname being common there and almost absent from Lancaster. Perhaps Francis Caton stayed on in Whitehaven, producing 7 children between 1686 & 1700 and probably died at St. Bees ("of the Abbey") in 1713, his widow Anne following on 8 Nov 1717. H. Brierley, *Lancaster Parish Registers* . . ., 1908; H.B. Stout, *Registers of St. Bees*, 1968.
36. A long upright pole, often with a distinguishing mark on top, used to mark navigation channels or, in this case, the nearest limit for tipping ballast.

37. The main harbour at Seaton Sluice was built by Thomas Delavel between 1761 & 1764 as an extension of an older harbour, illustrated in F. Atkinson, *Industrial Archaeology of NE England*, 1974, i, 128 & 123-4. Admiral Sir Ralph Delavel before 1685, built a new stone pier to shelter Seaton and deepened the harbour using an impounding reservoir with sluice gates to remove sediment. D. Defoe, *Tour* (1769), iii, 240; J.U. Nef, *Rise of the British Coal Industry*, 1932, i, 34 & 378-9; A. Raistrick, *Industrial Archaeology*, 1972, 213-4. Later comments about using sluices to clean the harbours at Whitehaven & Parton were probably derived from the practice at Seaton.
38. Administration of Caton's intestate estate was granted by the Archdeaconry of Richmond (Lancs. R.O.) to his widow Jennet on 22 June 1681 on the presentation of an inventory appraised by Thomas & Christopher Caton, probably his brothers (b. 1652 & 1656). Two daughters, Martha & Elizabeth, seem to have been born in 1678 & 1680 (see note 35).
39. Or Trass, a volcanic ash (tuff) from the lower Rhine, like *pozzolana* used as a hydraulic cement which hardens under water. F.G.H. Blyth, *Geology for Engineers*, 1960, 90.
40. Other comments about Workington are worth noting. On 7th December 1686, Tickell reported "Mr. Curwen has gotten a patent for a Market at Workington" (4;511) on Wednesdays and others had told Lowther of "a new Harbour ther [and] Ground to be let". To placate him, Tickell said success would depend on "the goodness of the port & plenty of Coales" and there was insufficient stone & wood near it. "The Coast is so bleake below the Barr to erect a pier on and the Barr so apt to fill up that I thinke it will never be deep water over it. . ." (4;531). Robert Biglands and others had offered money and labour in February 1685 (4;251) if Curwen would improve the harbour.
41. Or Hill, W. Dickinson & E.W. Prevost, *Glossary of the Dialect of Cumberland*, 1899, 18. At NY 9614, 2 miles south of the harbour.
42. The name Pow was applied to sluggish rivulets in marshy areas especially in Scotland (*Bartholomew's Gazetteer*, 556). Moresby, Whitehaven and St. Bees all had a Pow beck; the first was known also as Lowca or Moresby beck.
43. He failed to find a contractor and, in January 1685 (4;237,242), was forced into "Employing some of yr Coale Carts & men" to do the job.
44. Amongst many examples of his dislike of these men see box 4;208, 251 etc.
45. Roger Strickland, a Customs tidewater, was first appointed. For Lowther's petition and reactions see D/Lons/W/Whn Town, 4 & 10 and for the Harbour Rules see D/Lons/W/Harbour Papers, unlisted. No ship was to unload ballast within 100 yards of the pier at night (penalty 40s.), a sail was to be spread to stop spillage (penalty 20s), which was charged at 10s. a ton and had to be cleared up. To prevent gravel washing from Tom Hurd rock and to protect against invasion "A platform shall be erected at the west end of the Peer Flankering to East and West and mounted with Ten Guns". A third of fines went to informants & 2/3 for upkeep.
46. There is no mention of coal dust as a factor contributing to the clinging black sediment.
47. See AMS *Transactions*, 28, 78-9 & fn 50 for more information.
48. William Gilpin's Cash Accounts, C.R.O., D/Lons/W/A21, and Correspondence 9 for his letters to Lowther, 1693-8.
49. From 1689 to 1694 Sir John Lowther was a Commissioner in the Admiralty and Edmund Dummer became Surveyor to the Navy in 1692, but was dismissed in 1699 following a dockyard contractor's accusations of bribery. "A competent draughtsman", he appears to have made several surveys of naval dockyards. H.M. Colvin, *op. cit.*, 1978 276-7.
50. On 16th September 1693, he wrote "We have wrought in the Harbour with Carts and Boats from 26 June till now. The Bank is at last intirely removed and 5 foot [of] water gained so as Loaden ships now come in with any tide".
51. Shown on J. Howard's *Plan of Whitehaven*, 1790. See D. Hay, *op. cit.*, 1979, 32.
52. William Fletcher had died in 1703 and his son Thomas (d.c.1735), M.P. for Cockermouth, obtained the Act while there were no Lowthers in Parliament. After Thomas's death, the Moresby estate was sold by John Brougham, in 1737, to Sir James Lowther, Sir John's second son, who inherited the estates in 1706 and then the baronetcy in 1731 when his disinherited elder brother died. J.V. Beckett, CWAAS, *Transactions*, 1980, 131-6. Spedding's correspondence to Sir James is in D/Lons/W/ Letter Books 15.

53. Clearly Lowther's nephew Richard (1668-1724), son of Richard Lamplugh who died in 1705 (Hudleston & Boumphrey, *op. cit.*, 195). By 1685 he was master of his own ship (4;352).
54. D/Lons/W/ Estate papers, bundle 21, "Extract of Mr. Fletcher's Deeds for Houses at Parton" gives some idea of the devious property dealing that ensued, to keep Lowther out.
55. W. Parson & W. White, *Directory of Cumberland & Westmorland*, 1829, 229.
56. *Harbour Trustees Minute Book*, 1709-1767, Typescript copy, C.R.O., D/Lons/W/Misc. J.V. Beckett, *op. cit.*, 1981, 163 maps the growth during the 18th century. The 1634 pier is wrongly located.
57. B. Tyson, "The Preservation of Sir John Lowther's Correspondence", CWAAS, *Transactions*, 1985. . .
58. Nicolson & Burn, *op. cit.*, 1777, ii, 41.
59. On 25th January 1672 (1;140), Lowther was told "Mrs. Wiber lives in St. Bees towne very meanly, her [eldest] son Thos will be eleven yrs old ye 7th May" and she would not acknowledge the fine agreed by her husband. She held out until 1684, demanding a house & £40 a year maintenance during her life (in addition to £500 previously agreed). On 7th October she settled instead for £230 but "kept the writings" (4;184, 188, 212).

N.B. Years are expressed in modern form.

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