

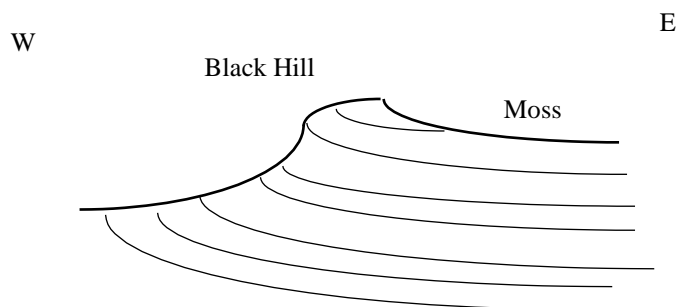
Ford Colliery.

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NB. This essentially an archive report on unfinished work.

Introduction and geology.

Coal seams outcrop to the east of Ford Hill Farm on the west shoulder of Black Hill, dipping to the east at about 20 degrees to the horizontal. This high angle of dip determined that mine drainage would always be a problem, and the driving and subsequent maintenance and extension of a drainage level became the key to the colliery's development until steam pumps were used. Even then, as will be seen, water problems bedevilled most undertakers who sought to profit from working the colliery. Faults terminate the outcrops to the north and to the south of Ford Colliery, both of which throw down to the north side. Several faults, ranging between west-north-west and north-west are present in the region of Black Hill, most of which are believed to throw down on the east side, the largest having a throw of 42 feet.

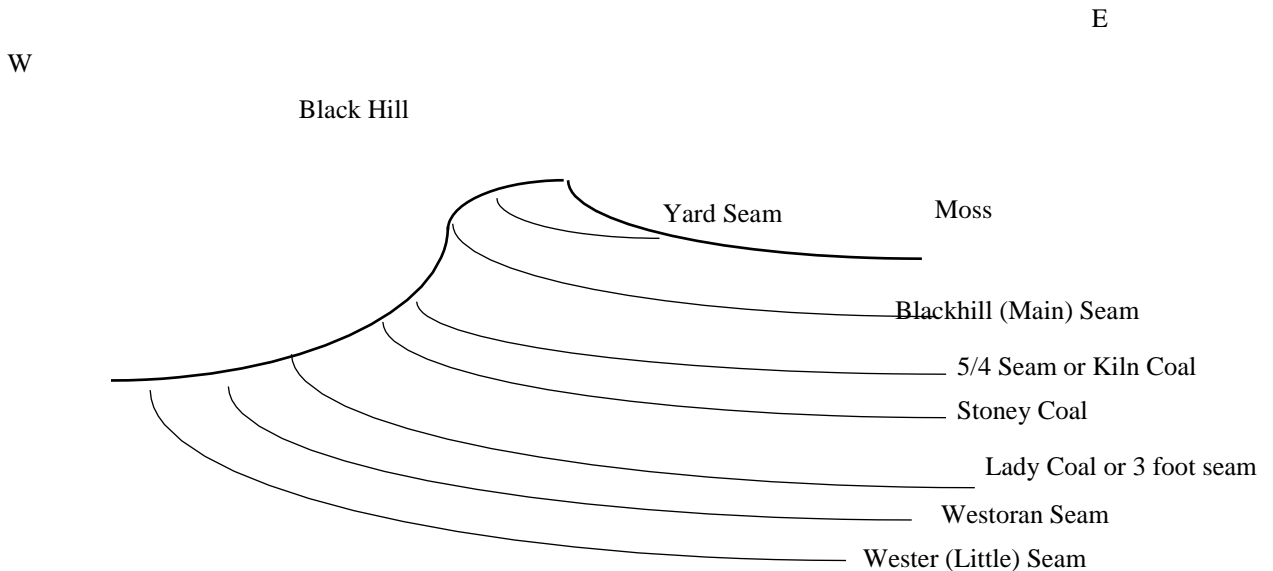


The coal seams worked at Ford Moss are part of the Scremerston Coal Measures for which an almost complete sequence, based on the Ford Collieries, has been published in the *Memoirs of the Geological Survey*. Most of the sequence consists of sandstone and shales with occasional thin limestone and coal seams, the total thickness of strata involved amounting to between 500 feet and 600 feet.

Various names were given to the seams at Ford during its working lifetime and, as elsewhere, the same seam in the Scremerston coal measures worked at a different colliery might have another name. However, at Ford the main seams worked at different periods were the Fawcet

Coal, the Blackhill Coal, the Kiln Coal, the Main Coal, the Three Quarter Coal, the Lady Coal (also know as 'Cooper Eye') and the Westoran or Wester Coal (see appendix).

NB it has not been possible to reconcile the seam names and details given from the various reports and accounts of Ford Colliery. The following diagram is therefore part conjectural.



Note: Brown's report (1765/65) has:

The shallowest seam is 3 feet thick with a central 6 inch stone band. [Could this also have been called the Kiln or the Yard seam?]

Below that is the Main Seam some 6 quarters thick.

Then the 5/4 Seam.

Then the Little Seam.

Then the Stone Seam, 3/4 thick.

Seam Names at Ford:

Best Bet	Nature	Position*	1765/65.	1765/45	Other names	Greenwell (1870)
Blackhill	About 3 ft thick with 2 to 4 inch central stone band		Main		Scremerston Main	Also the 'Unthank Main Coal'
Kiln	2½ ft thick with central stone band, difficult to work	2 to 3 fa below Blackhill	5/4	Little or Stony	Diamond, Hardy, Upper	Stony Coal, about 3 feet thick, 3½ fa below Main
Main	About 5 ft thick with stone bands	16 fa below Kiln	Stone	Main	Bulman, Cancer	Called the Main Coal in many places. Bad roof. 3½ to 6¾ ft thick. 17 fa beneath the Stony Coal
3/4	About 3 ft thick with 2 ft stone band	18 fa below Main	Lady		Stone	3/4, worked at Ford Corner, expensive to work; about 18 fa below the Cancer
Lady	About 3 ft thick with central shale	3 to 4 fa below 3/4	3 feet	Lady	Cupar, Cooper Eye	Formerly called the Stony Coal at many places, and anciently, at Ford, the Lady Coal, about 2½ ft thick; 3 or 4 fa below 3/4
Wester	About 7 ft thick but with 4½ stone and shale	10 fa below Lady	?Little	Wester	Westoran	Lowest seam worked in the district, 3½ to 4 ft thick; 13 fa below Cooper Eye

* At the moment it is impossible to reconcile these positions with known sections of the strata, but as Greenwell (1870) pointed out:

The distance between two adjacent seams often materially varies in different parts of this, as well as other coalfield. Thus, the distance between the Cancer and Cooper Eye Seams is, at Ford, 17 fathoms; at the adjoining colliery of Etal, 23 fathoms; at Berwick Hill, 26 fathoms; and at Gatherick, 14½ fathoms. The direction of the dip varies considerably, but it always inclines more or less towards the east.

See also NRO 559/40, 43; F18, F 19.

Early History of Ford Colliery.

The commencement of coal working at Ford is not known although the colliery was certainly active in the seventeenth century; according to the NCH, the nearby Etal Colliery was leased to George Muschamp in 1585. When Thomas Carr's property was divided between his three co-heiress sisters in 1660, each received a third share of the 'collieries and coal mines within the manor of Ford'. Francis Blake, husband of one of the sisters, gradually bought out the other two shares, the first in 1668 and the second in 1673, thereby becoming the sole owner. An undated map which was obviously drawn up much later than this period, (probably by William Brown in March 1777), nevertheless shows straight lines of closely spaced 'Old Pits' just to the dip of the outcrops of six seams between Ford Hill farm and Black Hill.¹ The seam names and sequence do not correspond with later names, but it is apparent that all seams, from the Blackhill to the Wester, had been worked in this way; each pit had only worked into one seam and they may represent bell pits. However, the steep angle of dip of the seams would restrict any bell-pit working to a very narrow area.

The colliery under the Blakes.

Blake kept both the Ford and the nearby Gatherick Colliery going, although they were small affairs and plagued with water and management problems.² It would seem that the first serious attempt to work Ford Colliery at depth, rather than by outcrop and bell-pit working, was initiated in 1697 when an agreement was made between Sir Francis Blake on one part, and Matthew Coulson of Durham and William Cuthbertson of Newcastle on the other, to 'work, drive and bring up a water level drift' for the sum of £70, the workmen being paid weekly.³ Although it is impossible to be certain, it would seem that this sizeable sum of money was for the beginning of the level driven from Ford Hill lands in a north-easterly direction to pass beneath the main colliery area, thereby allowing the seams to be worked at deeper levels, but only above the Water Level, by lowering the water table of the entire colliery.

The Water Drift.

The Water Drift was driven in stone, and a number of air shafts, called 'Staples' on some plans of the mine, were sunk to it. The plan referred to above, shows this Water Level drift. The Wester coal would first be met, enabling deeper working in this seam, and as the drift progressed, successive seams would be intersected. It might have been sensible to make the drift section large enough for haulage but presumably the increased cost of so doing was not acceptable. Consequently the Water Drift is quite narrow such that, oral history would have us believe, it can only be traversed by moving sideways in some sections. Consequently new winding shafts had to be sunk, and given the primitive nature of the winding equipment - the plan shows a jack roll - these shafts could not be very deep. They were sunk down to the Water Level and to the dip of the seams concerned, to make putting easier.

As an MP and a Gentleman, Blake must have spent much time in London leaving his affairs under the control of George Chalmers.⁴ On 23 October 1703, Chalmers reported that:⁵

... here at Ford the drift is driven ... And the sinke [shaft] they expect to have down and coales wrought end of nixt week ... the drift at Ford now hold [holed or held?] at the lime stone pavement upon the East side of the new sinke is twenty five yeards and cost £5[?] they have about 5 yeards to pump they compute and expect no great change of water.

The drift referred to was presumably the Water Level commenced in 1697, and having been driven in stone, it must have been an arduous exercise.⁶ The new shaft being sunk to the Water Level was probably intended to enable the Lady and Wester coals to be won (see Fig 3); certainly the Wester seam is split by about 18 inches of limestone. That the Water Level was apparently some 25 yards to the east of the new shaft, seems to imply that they were pressing on to enable the more valuable Lady Coal to be won at greater depth, but matters were clearly not quite as simple as that, for at the end of the year, when he was clearly exasperated with affairs at the coal mines, Chalmers informed Blake that:⁷

Ford Colliery would have turned to our account soon [i.e. made a profit] but that the water charge, the enemy ... The outlays beyond the coals wrought was £2/5/3 but they promise I shall be told no more.

It is difficult to know just what this 'water charge' involved, unless it be that existing workings in perhaps the Lady and Main coals were not yet being drained by the Water Level.

By January 1707, matters seem to have improved a little and Thomas Stawart, who 'signed' with his mark, and had been in charge of both Ford and Gatherick collieries at least since 1704,

noted that the colliery was in good condition and that the Water Level was continuing to be extended, but needed another air shaft to enable progress to continue:⁸

... for the Dipp wall is brought up and Lykelie to come to a great hold she stroikes very woill ... As for the drift she has been in groat troubles with hilches [hitches?, i.e. faults] and Extraordinary wett but we have gott her through to string mettals. She comes not Great speed for want of air Therefore wee will be Obliged to put the sink down.

It may have been for the new air shaft that Chalmers had taken delivery of 24 fathoms of rope in March.⁹ Financially there was little in the way of improvement over these years, perhaps because of development work, as the following accounts indicate:¹⁰

		£	s	d	
Dec 21 1706	profit	1	11	7½	} of which Sir F B's
28 1706	"		6	4½	} share was 50%
Jan 4 1707	"		18	2½	}

The role of the banksman.

The banksman for a colliery was a crucial position since he was in effect the pit manager with responsibility for ensuring that proper accounts were maintained; this was especially difficult since it is apparent that not all sales were made for ready money. In October 1707, Oliver Carr informed Sir Francis Blake that the banksman believed that all money owing would be soon got in, except for the Scottish sales which were not likely to be paid up until after Candlemas. At the same time George Baxter informed Blake that:¹¹

Ther shall be a Good Care as possible taken both of the proffits and nicksticks. They gos on very well at prd [present] and ther Splint at ford turns very Good. They are framing the drift and cannot gett down the sinke till the Strength of the Watter Abate she is six fadom down and has other six to goe.

It is apparent from the foregoing that the sinking of a shaft, perhaps the air shaft, although there is no way of knowing, was itself plagued with water problems, and would remain so until it connected with the Water Level.

In February 1709, the mine employed three hewers working 'Great coal, sometimes 50 bolls, sometimes 60, sometimes less', while an additional five hewers worked small coals. The banksman was supposed to maintain some 80 bolls of coal 'on the heap' at bank, replenishing his stock after any sales were made,¹² but a series of letters, some undated but presumed to be

of March 1709, from Michael Paxton at Ford to Blake, indicate Blake's distrust of the detailed procedures at both Ford and Gatherick collieries, particularly concerning the 'bookkeeping' by the banksmen.¹³ The output, and therefore the payment of the miners was based on 'nicksticks', a system originally and perhaps still then of notching a stick according to the number of corfes, or perhaps bolls, of coal produced. The amount of coal won as shown on the nicksticks should correspond to the amount of coal held at bank for sale, and hence the sales should correspond to that indicated by the nicksticks. It was up to the banksmen to keep a record of the nicksticks and the sales and Blake was clearly concerned that there had been discrepancies between the nicksticks and the sales; Paxton assured him that they were compatible. However, Paxton did not receive regular monies due from sales at the pithead from the banksmen and sometimes the banksmen paid the sinkers direct. Blake determined to write directly to the banksmen in an attempt to regularise the situation, and Paxton agreed to reprove the hewers, presumably instructing them that a faithful nickstick record be kept. There were also some concerns about Stawart's management, but after Paxton had told him of Blake's concerns, he was able to report that Stawart had already carried out some of those things asked of him; he had sunk 9½ fathoms at 'Ford sinke', probably the Dipp sink referred to later, and all was going well at Gatherick.

Further developments under the Blakes.

In November 1709, George Baxter pronounced the colliery to be in a very good condition and seemed to indicate bord and pillar working [give evidence]. One pit at Ford appears to have been producing large coal, probably from the Lady Seam which was renowned for the quality and large size of its coals, and another, probably in the Wester seam, was producing small coals which would have been suitable for limeburning for example;¹⁴ both these seams could have, and probably were being worked from the same shaft. The good weather in November 1709 seems to have cut expected demand, both for small and large coals, and as a consequence these were now being separately stockpiled. It is clear that much of the colliery's external trade was with Tweeddale, presumably carried on pack horses, and Baxter suspected mischief in the apparent reduction in demand when some horse men, whom he met at Crookham, informed him that Ford Colliery had been laid in for a month when it clearly had not. Consequently, it must be presumed, they had not believed that there was coal to be got at Ford. Baxter was very annoyed at this, claiming that:¹⁵

This was done out of Envy of me. Horses came ... and wer Fed at Udnis door and they wer putt away to Eatle Hill [colliery] but Udnis is gone And I have got no salle [sale] for Small Coals again.

The poor trade was also being exacerbated by three horse-owning miners, presumably at Ford, who had been selling their fire coals (those which they received as part of their bargain) at Wooler, Cornhill and Learmouth for brewing, thereby hindering the normal trade of Blake's colliery; Baxter suggested that these men should not be allowed to keep horses in the future.

Stewart noted on the 6 December 1709, that the colliery was in very good condition but that there were problems of a long barrow-way from the working places to the shaft, implying that the putting costs would be high, and that the new sinking, presumably the 'Ford sinke' or Dipp pit noted as being 9½ fathoms deep in March, was proving difficult due to hard strata:¹⁶

... the Colliery ... is sixty yards betwixt dipp and rise. As for the sink [tear] is down 12 fathoms but in an extraordinary hard grony [ground?]. The men canet gott a yard in a week of her which is but six shillings to their own. They make a noise and cryes out of me to Assist them which I canot without your orders.

The same letter seems to suggest that a drift, probably the Water Level, had suffered some sort of collapse:

There was a pitt in the taill cast which we were obliged to rid out because the drift stopt the Reason was the Cnd [conduit?] is sunke in the Mettalls and stopt her but we have got her very well dow and freed her from that danger in tyme coming.

Stewart wrote again on the last day of the year, emphasising some of his difficulties, but also indicating that something was being done about it:¹⁷

We have wrought still in the Grt Coall coallry. As for the little Coall I cant not make anything of her hardly to pay her Charge. The Grt Coall Coallry is Coming to such a hold that she canot be driven with on[e] pitt we wer necestitat to lett the main Coall sink Alone till March.

The 'main Coal sink', on which work was underway but being postponed until March, was probably the 'Rys [Rise] Sink', (and possibly that later known as the Hill End Pit, being sunk at 60 yards distance from the working pit, presumably to gain access to the Main Seam at depth; it was now 6½ fathoms deep. The sinkers for this shaft were contracted to sink three yards per week for 15s. 0d. and were provided with the services of a banksman for a 'day or two at most in the week' to assist in raising the excavated material. Work had progressed well

at first, some two fathoms being sunk in the first week, but progress had soon become more difficult. Stawart expected them to have to go down to 10½ fathoms ‘at the most’ and he believed that the coals from this shaft would be profitable both for Winter and Summer sale of coal; certainly the Main Seam coals had a good reputation as a household coal. However, Stawart himself was experiencing financial difficulties:¹⁸

I have done your business very honestly both at Ford and Gatherick but the bankman at Gatherick owes me ten shillings of my wages. Corne being at a Grt rate I am not able to live without my wages.

In accompanying letters Baxter repeated some of this information and added that the long barrowway had reduced the hewers [check, and if correct why did they not just employ more putters?] to 10 bolls each ‘which makes the profit a good deal less than formerly’¹⁹. By the end of the year the small coals were selling well but there was again no sale for great coals.

Profits were understandably low at this time:²⁰

		£	s	d
Oct 29 1709	"	3	7	6¼
Nov 6 1709	"	1	17	7¼
12		3	1	4¾
19	"	3	1	3¾

Outlays, i.e.. colliery operating costs, were between £2 and £3 per week, and although the colliery continued to be ‘in very good condition’ in March 1710, this was only after ‘a great dalle [deal] of pains and with much dificulty’ occasioned by having to overcome an underground fire. Stawart’s explanation for the fire was that the ‘mettals’ had become hot because of poor ventilation, and when the new Rise shaft was put down, the ‘Collery got strong Air upon her which was the Occasion of her fying, but now we have prevented it’.²¹ Small coals were being worked in the Rise pit at 12 fathoms, presumably in the Main coal, but no great coals would be obtained there. Even so they would have to continue there until the Dipp pit was finished sinking, presumably to the Lady Coal at depth. In any case there had been no demand for great coals for there had been no storms over the Winter, only 8 days of snow and frost; the result was a large stockpile of both great and small coals. The ‘Dipp pitt’ was going slowly because the post was extraordinarily strong, limiting the sinkers to less than a yard a week, and sometimes less than half a yard. The ‘Dipp Sink’ was now down 13½ fathoms and

there was a further 6 fathoms to go, but Stawart was determined to finish it in time for summer sales while the small coals of the Rise Pit would provide for winter sale.

Late in August 1710, Stawart was again able to re-assure Blake that Ford Colliery remained in very good condition.²² Yet another sink was being put down, this time to 8 fathoms as opposed to the 21½ fathoms of the previous shaft - presumably the Rise Pit; the latter shaft would appear to have been too deep for the men to raise coals in winter, perhaps because the weight of the jack roll rope, when wet, was considerably heavier than the coal being drawn; Stawart therefore asked if a gin could be provided and suggested that harvest time would be the best time to erect one for the colliery would then be closed down. Stawart went on to summarise the financial condition of the colliery operations:²³

The profit of Ford Collry is upwards of eighty pounds. Baxter has pd. the sinkers and all other Charges since your honour went away amounts to twenty seven pounds fyfteen shillings and Nyne pence to yr own Lymkills nyn pound fyfteen and three pence. Yr Nicksticks to the tenants for Lymkill Coalls and other tenents here About Amounts to twenty two pound eight shill & ten pence Your Nicksticks in Sedland (?Scotland) Amounts to fourteen pound fyfteen shillings. We shall Endeavour to get the Nicksticks in as soon as possible after harvest.

In the first month of 1712, James Purdy wrote to Blake expressing concern about Stawart and the miners at Ford and Gatherick:²⁴

Concerning the Collieries it's A Long time since I did doubt and fear a Combination of which now I have made appear and hath proven in Their faces before Maddam Howard. I have Exposed them to their Great Grief And I believe and dare Say that there is not an Honest man amongst them in Both the Collierys Except Hamleton [Hamilton?] Here at ford and Allexander at Gatherick for which they are both Despised and for me they would see me sunk for when the were Redding of the Drift last year and this also they did put in the Charges in low [lieu?] of other work which was certainly known to Baxter and to them All and since I found out their Roguery they do heartly curse me. And if I had not presumed to go down and view their drift it had gone one at the old Rate Although to no purpose but to much Charges for I found in 6 or 7 yards of dead water at ye Cundey mouth the breadth of Room & pillar to ye Rise of the main drift of that coall which was Wrought off the drift in the north Side of the leach [level?] I say in the upmost shaft in that Coall where I found the Water standing to the roof And does Stand to this day the drift being the breadth of a Room and pillar of this Roof which I guess to be near two yards which I did maintain in Staward's face before Madam Howard And Staward said he could do no more [tear in paper] her, Clark and Gray owns that they can Recover as [tear] Levell as will bring A new cutt to the dipp. Now I leave you to judge if this be honest dealing: And as for Gatherick main coall she is Actually drowned. Staward says he cannot help her. Clark hath undertaken to Recover her And I believe yt he will for he hath recovered a yard of Levell Allready in the tail Cast and open drift yt I see for I have been Twice there and Resolve if the Lord spare

me to frequent ym by times till it be Accomplished but my time being so much shortened with waiting on the Barnes with Casting of Stack and dighting of corn which Bollam oblidges me to do therefore I cannot give the Collerys the Attendance I would do but as [tear] as possible I cann, this Season stoopt 36 boles of Bigg and hath in the barn 15 bolles

The Delavals acquire the estate and colliery.

Sir Francis Blake died in 1718, leaving the Ford Estate to his grandson Captain Francis Delaval, who took the surname Blake, and Ford Colliery continued in operation, making profits much as before. Between 1 June and 13 September 1718, £15. 6s. 2d. was spent in 'Drifting' and £3. 0s. 6d. in 'Sinking the Little Coal' allowing a profit of only £14. 3s. 2d. over the period. Over the remainder of the year the respective amounts were £10. 14s. 10d. for drifting, £5. 5s. 2d. for sinking and £27. 9s. 11d. profit. However the profit figure may mean sales, in which case the balance of income over expenditure for the 7 month period was only £11. 9s. 11d.²⁵ Between the years 1718 and 1724 the weekly profit varied between about £1 and £5. Thus for example, between 24 August 1723 and 8 February 1724 the total value of coals won was £182. 9s. 5d., the total outlays were £89. 14s. 1½d., and the resultant profit was £82. 18s. 5½d. [sic].²⁶ The outlays mainly arose out of 'sinking and drifting' but payments must have been made to miners and also on equipment. During 1723 for example, iron and steel were purchased for use at the colliery, oats were purchased to feed the ginhorse, timber and gunpowder were bought etc.²⁷

The colliery leased out.

It would seem that the colliery had been in hand during this period, but from 1724 and at least up to 1744, it was tenanted by Robert Sorsbie and Joseph Blenkinsop. An indenture dated 17 July 1724, let the collieries of Ford and Gatherick to the two men for a period of 21 years from the following Lammas day. The rent was to be £100 p.a. for the first 3 years and £120 thereafter; they were to work the mines in an orderly manner, leaving sufficient walls or pillars of coal to support the roof. Delaval would pay the royalties or land tax.²⁸ Attached to the lease was an inventory of 'utensils belonging to the Colliery of Ford and of the open or working Pitts or Shafts there' notes some five pits in action and indicates the use of horse gins and boring rods. (See Appendix 1) In 1738, Joseph Blenkinsopp wrote to Francis Blake Delaval about more development work at the Colliery, which had been visited by a Mr Peck – almost

certainly a colliery viewer. Peck had obviously advised that boring should take place but the borers had hit some 'exceeding hard stone in the way which hinders much'. New levels were being driven (or perhaps the main water level being extended) but they had not yet revealed the coal which would help to defray the cost of driving.²⁹ Robert Sorsbie & Partners paid £120 rent in 1744,³⁰ but there is little further information on the colliery until after 1752 when Francis Delaval succeeded to the estate. From before 1752, and up to 1757, the colliery was being tenanted by George Blenkinsopp (presumably a relative of Joseph) paying £120 p.a. in 1753, although he was in arrears in 1752, 1755 and 1757.³¹

The colliery at mid-eighteenth century.

In January 1753, John Barnes, a Northumberland viewer, inspected the colliery and recommended bord and pillar working, the pillars to be 4 yards by 10 yards on account of the 'tenderness of the roof'. He noted that 12 imperial gallon corves were in use, being dragged underground on sledges, while horse whims raised both corf and sledge to bank. Barnes recommended the use of 36 gallon corves, but that these only, and not their sleds, should be wound to bank; this, he claimed, would increase profits by 1s. 3¼d. per new corf. The workforce included hewers, putters, gin drivers and an overman, and Barnes noted that timber deals along the roadways greatly assisted the sledges, there being two putters to each sledge, one before and one aft.³²

However, the method of working the pillars, whether as recommended by Barnes or not, had brought problems. As Luke Curry noted on 3 October 1757:³³

I have this day viewed Ford Colliery, and find that they have by working the walls or pillars of the said colliery in an irregular manner brought a thrust upon their watercourse for 130 yards in length ...

Potentially this was disastrous, for the thrust (roof collapse), if complete over the 130 yards, would quite simply stop up the free drainage via the main water level. It may be that the pillar size being left was inadequate, but it remains just possible that the risky business of pillar robbing or extraction was being practised.

John Hussey Delaval had been in effective control of the Ford Estate since 1756, and he found another use for some of the coal from Ford colliery. The copperas works at Hartley required

‘brassy’ coal and in 1758, (probably the year in which the copperas works was commenced) Matthew Dickenson & Partner were paid £13. 15s. for ‘leading Brasses from Ford Colliery to Berwick’ where they were wheeled into a ship, presumably destined for the Hartley copperas beds.³⁴

Ford Colliery was advertised to be let in the *Newcastle Journal* in September 1758.³⁵

A Current-going Colliery at Ford ... containing several valuable seams of Coal, with a free Water-Course, and well situated for an extensive Trade. Enquire of Mr John Watson, Viewer, in the Bigg Market, Newcastle.

This seems to imply that the water level had been cleared of its thrust, and presumably satisfied of this fact, a Mr Handaysides appears to have taken a lease on the colliery. Although few details are known of Handaysides’ tenancy, a Handaysides Pit is marked towards the north end of the site on a plan of the 1770s. He was clearly unsuccessful, as a letter from Wm. Gibson to John Hussey Delaval dated 9 December 1760 noted that he had given it up ‘... to the great loss and inconvenience of yours and your Brother’s servants, which to advise you to do with him am at a loss, for certain it is he is not worth one shilling’.³⁶ In fact Handaysides had £170 rent arrears for the period Martinmas 1760 to Whitsunday 1761,³⁷ and Thomas Dobson was instructed to take possession of the colliery early in February 1761.³⁸ Handaysides was pursued for his rent arrears to the extent of attempting to have him arrested by ‘two officers at Alnwick’, but to no apparent avail.³⁹ George Blenkinsop seems then to have taken the colliery at Whitsuntide 1761, but he too was soon in arrears, and although the colliery was advertised to be let in the Newcastle newspapers in August, it was not tenanted in the following year;⁴⁰ it then seems to have remained in hand until 1776. During this time some equipment was bought from the newly established Ford forge.⁴¹

The colliery taken in-hand, William Brown of Throckley acting as viewer – his advice.

Development work continued in an attempt to open up areas of unworked coal. A ‘Sketch of Ford Colliery’ prepared in May 1760, by William Brown of Throckley, the eminent local mining engineer and viewer to the Delaval collieries,⁴² showed the old level leading slightly north of east before turning east-north-east to Hill End pit and then north-east to its terminus at ‘The last dip pit 25 or 26 fathoms Deep’.⁴³ Workings in the Main Coal were shown along and

to the north west of the level, while workings in the deeper Lady Seam lay still further to the north west, all being north of the ‘Supposed course of a Dyke’ [a fault].

In July 1762, John Hussey Delaval, together with his viewers John Allen and William Brown, inspected the colliery (although whether Delaval entered it or not is unknown) and resolved to carry out some repair and development work.⁴⁴ The report on the recommendations was probably compiled by Allen, but later, in October, Brown gave Delaval his thoughts on the matter ‘notwithstanding what I desired Mr Allen to say to you about it’.⁴⁵ The information in both Allen’s and Brown’s reports enables the intended plans to be clarified. (Both reports are given as Appendices 2a and 2b).

Starting from the level’s entrance in the south west, stones and rubbish were to be cleared out and the staples supported where appropriate in such a manner that ‘a Man may pass & repass through the same’. Cleaning out was to be continued to the north east, in stone or coal drift, until a thrust was met ‘said to be in the workings of the Main Coal’. Once the level had been cleaned up to beyond the fault, attempts should then be made to win the deeper Main coals which were expected to remain whole east of the level but thrown down by the fault which downcasted to the north. These could be reached, ‘notwithstanding the Thurst [thrust] in the water level’ by drifting through stone to the east of the old level and then sinking to the coal from the face of the drift. Water would then have to be raised into the level, while a coal drift was driven to the dip of the thrust until it reached the face of the whole coal to the north. Deeper Lady coals could also be developed either by driving a new 100 yard water level from the old level through stone to the west, which would ‘win abt. 100 yards breadth of the said Coal dry below the old works’, or by sinking a shaft from the Main Coal level to the Lady Coal and ‘driving a Drown drift to win the same’. The extended water level would only have drained a 100 yard width of seam in the Lady Coal because of the high angle of dip. Finally since whole coal was available in the ‘three quarter Coal’ near the end of Broomridge-hill, four men should be set to work there as soon as possible.

Attached to Allen’s report were some calculations by a Mr Hall,⁴⁶ which showed the costs per day for working a mine with four hewers, exclusive of development work:⁴⁷

	£	s	d
Four men [hewers] will work pr. day - 100 Bolls for	4	8	
Candles			8

Two putters at 10d each	1 8
Trams, Tubs, Mauls & Wedges supposed	4
Two Drawers	1 8
Bankmen	1 6
Sinking and Ropes	2
Contingencies	<u>4</u>
	11 0
Sells at 2d pr Boll	<u>16 8</u>
Difference	5 8

These proposals for improving and developing the mine, appear to have been superimposed on the 1760 sketch plan which is annotated in an original and a later hand. The added notes indicate that thrusting had occurred in certain portions of the level and that these sections were to be 'conduited' - presumably walled and arched in cut stone. Other notes added to the plan show that the Main coal lay whole 'through the Long Moss below the water level' - inaccessible except by pumping up into the water level. Another note suggests that Mr J. Hall was in favour of another level, about 100 yards long and costing £50, to drain coal under Gallow Law to enable good coal lying at about 10 or 12 fathoms deep to be worked. He also believed that a good lime kiln coal, previously worked at the outcrop, could be further developed under Kepit Low Rigg.

An undated document which almost certainly refers to this period, suggests that work was put in hand to repair the main water level. This was to be achieved by walling it out on both sides, presumably to prevent collapse, for about 37 yards at a distance of 170 yards in from the conduit mouth, leaving a breadth of only 18 inches. The cost at 3s. 0d. per yard would amount to £5. 11s. 0d. plus 3s. 0d. for 6 lb. of candles and 15s. 0d. for leading the stones. A 30 yard obstruction would cost £6. 12s. 0d. to clear and the drift was then presumed clear for the next 140 yards up to the dyke, bringing the total clear length from the conduit mouth to 480 yards. That would leave a further 500 yards to go of which 40 yards through the dyke would cost £12. (including ridding at 3s. 0d. per yard), but beyond that there would be no difficulties and the remaining 460 yards could be ridded for only 1s. 0d. per yard, bringing the whole cost of cleaning and repairing the drift to just over £48.⁴⁸

Some development work clearly went ahead for accounts for the period August 1762 to September 1763, which were presented by someone un-named, refer to part of the work carried out, perhaps by a team of men working under a bargain. They include work such as driving levels, loading water, repairing the old coal pit, sinking pits, carrying bore rods, cutting rushes

and casting flags to cover the pitmen's houses, repairing the pitmen's houses, seeking pitmen, drawing water with tubs, cutting a wheel room, ridding out the old level etc. In addition drinks or drink money was given to carters, the millwrights making a horse gin, the men who 'hedd the Ginn' and the drifters: the sinkers and drifters received 'fire coals', presumably for use in their own houses. In essence the work seems to have comprised the repair of the Hill End shaft, the sinking of the Dyke Pit and the Success Pit, together with the construction of a wheel pit and whim gin.⁴⁹ [Latter doc now od - use more of it. See also the accounts for July to December 1762 under the same reference – 2DE 16/2] Separate sets of accounts for the same period,⁵⁰ drawn up by Thomas Dobson, record timber and deals bought from Mr Rutherford, the building of pitmen's houses by Thomas Todd, slating work at houses and the schoolhouse by John Rule and carpentry work at the same buildings by Jno. Burn. William Allen was paid the balance of his weekly bills for working coals and clearing the water course from 17 July 1762 to 1 April 1763, amounting to £65. 17s. ½d.⁵¹ Dobson's expenditure for the year, April to April 1763-4, amounted to £313. 13s. 8½d. Between 12 July 1762 and 24 June 1764 the colliery failed to make a profit. The cost of development work and wages amounted to £665. 19s. 7d. (The workmen had received a total of £217. 18s. 2½d. and an un-named manager had been paid £41. 15s. 10d.), whilst the coal sold was only worth £406. 5s. 7d. but there were outstanding debts of nearly £90⁵² - (see Appendix 3).

Joseph Oxley becomes involved.

By December 1763, Joseph Oxley was advising Delaval on a number of matters concerning the estate, which he had already visited, perhaps for the first time. In an apparent reference to Ford Colliery and its drainage problems, he wrote in a letter of 22 December 1763:⁵³

Monday last I bought the wind engine for £21 at Whitlow which I think is cheap. The machine was [drawing] water very well near 10 score that day and has drawn about $\frac{3}{4}$ the work some time and I expect after Christmas to have the horses entirely set off.

If a gutter was cast on each side ford moss with Descent to, and both terminating in the pit it would prevent the raines falling from the circumjacent hills from over flowing the same as well as show what service it would be to the pit in supplying it well with water.

Although it is difficult to be precise over Oxley's intentions here, it may be that he had in mind a combination of windmill and water wheel pumping. Certainly a windpump was erected for Henry Howey was paid £5. 10s. for the 'cariage of a Crank for the wind mill from Newcastle'

on 27 October 1764, the payment being debited to the 'colliery Charge',⁵⁴ and in December, John Allen, in reporting to Delaval on matters concerning the colliery, noted:⁵⁵

... the windmill will draw all the watter the Colly makes in two hours in one day for a small expence all the coal Under the Moss I hope will be got which will at the vend there is at this time last 40 years.

[use more from this reference - 2DE 6/4/2 8 December 1764, John Allen at Hartley to Delaval at Berwick, re Ford and Hartley collieries.

I spoak to my Brother about him staying at Ford, he would consent to stay no longer there, I could get a man for his place, I have been at Newcastle four Sundry times to Meit men for the place, I cannot get a man to go for Eight Shillings p Week. I think it is as much as should be given as the banksmen must have two shillings p week to keep on Acct with the Overman, the one will be Chack upon the other.

Dear Sir, Mr Oxley & I am from Ford ... then we spook to my Brother for him to stay at Ford, he said he would consult with his wife & give an Answer in a little time.

Ditto - 2DE 6/4/3 29 December 1764, John Allen at Hartley to Delaval at Berwick.

Allen's brother has left Ford and no one yet found to replace him.

My brother leaving Ford before I could Meit with a man to suit the Place, have mad me very Unesy & he has been Unesey to think the Place should be left so destitute for want of a man, I have go to my Brother to come for a few weeks to keep the work forward Untill I can meit with a proper Man for the Place which I have & will mak my Business to see after Until I can find one my Duty to My Lady, I am [etc.]

During 1764, Oxley was made Chief Steward at the Ford Estate and subsequent developments at the colliery were effectively under his control. In March 1765 he reported that trade at the pit was brisk and had been so for some time. The 'machine', presumably the wind engine, was going extremely well and would now go in 'middling winds'. Mr Hall had suggested that the pitmen wanted a compass and Oxley agreed to obtain one;⁵⁶ a receipt for 4 September 1766 indicates that a dial compass was bought from William Daughlish for 7s. 0d.⁵⁷ Other receipts exist for '12 Coll tubes rec'd from James Borthwick, 21 pences per tube by James Speden £1. 1s. 0d. [signed] James Speding'.⁵⁸ A considerable amount of the coal was used at the estate's lime kilns which were undergoing expansion during 1765-7 with the building of at least one new kiln (see elsewhere). Coal was also of course being led to the castle, in 1765-6 by William Hope.⁵⁹ Window cess of 9d. was paid for the colliers' houses in 1766, (the same amount as for

Ford Westfield Farm), indicating that the cottages had glazed windows;⁶⁰ the houses were also being thatched.⁶¹

By 1766, Oxley was clearly in charge of the colliery, as well as having the usual duties of the estate's Agent; he was unhappy with the banksman at the colliery and wanted him replaced as soon as possible, for, Oxley believed, he was not 'faithful to the trust reposed in him'.⁶²

Between 6 September 1765 and 13 October 1766, Oxley also expended monies on pump leathers, edge tools, spades, nails ropes, shovels, a cog wheel and two pairs of 'trunels', an axle, hoop iron (from Bridget Wilkinson of Newcastle and others), a 'working barrel' from Surtees and Burden, and a chain pump; three cranks were freighted from Newcastle in February 1766 and two broken cast-iron cranks were sold to Aubone Surtees & Co.⁶³ All this, in addition to carpentry work suggests that Oxley was installing or repairing, a water driven chain pump. However, at least one whim gin was being used as is evident by the regular re-shoeing of the horses. It is difficult to be certain of the number of horses used at any one time but shoeing receipts from 1765 suggest that two were in regular use in c.1766 and it is known that there were two gins in 1770:⁶⁴

March 7	To 4 new shoes Horses	6d
March 26	The Ginn Mare two new shoes	3d
March 28	The Ginn Horse three new shoes	4½d
April 8	To 2 shoes and 2...	5d
April 24	The Ginn Mare 2 new shoes	3d
May 26	The Ginn Horse 2 shoes, 2...	5d
June 20	To 2 new shoes	3d
July 14	The Ginn Horse 3 new shoes	4½d
July 19	The Ginn Mare 1 new shoe	1½d
July 23	To 2 new shoes	3d
July 25	The Ginn Horse, 4 new shoes	6d

It would seem that the attempts to keep water in check had been only partly successful for although in June 1765 Oxley reported from Flodden that he found no difficulty in making the 'wheel Draw the whole water nor have I any Doubt of its Continuation'⁶⁵, but one year later he informed Delaval that he had not yet got the water out of the colliery but remained hopeful of success; at the same time he advised that a new banksman should be taken on as soon as possible, for 'the old one is not faithful to the trust reposed in him'. [Ref?]

A 1766 pitman's bond for Ford Colliery.

The colliery remained in hand throughout this period and an example of a pitman's bond for Ford Colliery, dated 8 December 1766, was printed in a local newspaper and pasted as a cutting into a glass works' wages book of 1830-31.⁶⁶ The hewers and putters bound themselves until Whitsun 1768 to hew and put 35 bolls of clean coal per day, free from impurities, at wages of 1s 6d. per day for the hewers and 9d. per day for the putters. There were substantial fines for breaking the rules. Any one found producing more coal than the agent was aware of was fined one weeks wages for the first offence (one half of which was paid over to the informer) and two weeks wages for the second. The putters had to agree to 'put the length of 70 yards from the middle of the work' and for every 10 yards further an advance of 1d. per day would be paid. In the event of a shortage of putters, the hewers would have to put in turns. Delaval would pay each hewer 1d. per day for candles and each hewer and putter would receive three tubs of coal per week. Curiously the bond also obliged those hewers or putters, or their wives, who intended to carry out some shearing at harvest, to do so only at Flodden or Westfield (Crookham), these farms being in hand at the time.

Further trials and extension of the Drift; the water-powered pump.

Early in 1767, Oxley reported that whilst the colliery was going well⁶⁷, a man had been killed by a fall of coal;⁶⁸ this may have been the husband of the Widow Murray referred to in 1788, who had been killed while in Delaval's employ at the pit.⁶⁹ In July 1767, Oxley referred to a seam of coal discovered near Kiputlaw Ridge, just outside the estate boundary which was expected to be 'cheap for the lime kiln' and also noted that a fine seam at Barmoor, which John Mow was working at Gatherick, at a depth of 4 fathoms, should continue to Ford.⁷⁰ Oxley was clearly interested in opening up new sections of the mine and in August 1767 he wrote to Delaval asking whether Lady Hussey Delaval would 'give me leave to make a further trial to win the main seam. It would turn to great account now as coal in General is Scarce in this neighbourhood and particularly splint'.⁷¹ It is difficult to believe that the main coal seam had not been worked previously so that Oxley's intention must have been to attempt to work below the water level; quite why Lady Delaval's permission should be required is unclear. It would seem that Oxley's wish was granted and that he began to devise a scheme for pumping from

beneath the water level. Oxley however wished to consult Mr Allen, the manager or viewer of Hartley Colliery, over the matter:⁷²

If Mr Allen could come over it would do well, as there is something of Great advantage to the colliery I would consult him on.

In November Oxley reported that 'the drift is within 8 yards of being done, communicating between Ford Moss and the Engine Pitt' and that the pumps needed to win the main seam had been bored.⁷³ In December, he reported that 'the colliery never did so well as now', and 'a great deal of trouble was overcome' in January of 1768, while he was still busy with the Engine Pit, and making part of the 'water machine' in birch.⁷⁴ Coal continued to be won as this development work proceeded and Oxley was to report [when?] that the colliery was going well, that he expected to get the new machine working in 3 or 4 weeks, and that they were presently clearing £130 p.a.⁷⁵

An undated plan⁷⁶ shows the development work at this time. The water level links the bottom of 4 shafts of which only one can be determined - the Hill End Pit. At the Hill End pit the Stoney coal was met at 15¼ fa. (or 17¼ fa. - the annotation is not clear) and the Main coal at a further 7 fa.; thus the total depth of this shaft was 22¼ fa. (or 24¼ fa.). The shaft with the water wheel appears to be referred to either as the Engine Pit or the Machine Pit. Oxley's intention is clear. By deepening the Machine Pit below the water level and installing a water wheel to pump from lower levels, then the Main seam and the 'Little' or 'Stoney' Coal could be won below the water level. The overshot water wheel would be fed from surface water channelled or pumped down the machine pit shaft whilst the tail race and pumped water would run out of the level. The plan also indicates that a 'collateral drift' had been driven up towards 'Handaysides Pit'

In August 1768, Oxley claimed that the water wheel in the Machine Pit was going well,⁷⁷ and that the next week's coal bill would be 'clear of unusual expenses'. However, John Allen had not been impressed, reporting that when he had been there in the previous April there was so little water to drive the water wheel that he could easily stop its rotation by hand when at the fullest speed:

...which will Dow nothing at Drawing the wattor out [of] the Main coal ... as there is not a quantity of wattor at this time to drive the wattor wheel, the best Method that I can

see is to get forward with the Watter level that was spoak of two years ago which would have been a great way forward before this time

The stone drift was not thrusting as the men proceeded, and appeared to be very strong. He believed that the Little Coal seam in the Machine pit was very good, and thought that it would remain so all along the Moss. Working round the Moss in this manner would provide a good water course. The Main Coal to the dip of Handysides pit could then be won by sinking two pits at a cost of about £60. Allen made a further suggestion which he believed would ease underground haulage:⁷⁸

... the winning may be mad without sinking any pits if a conven't place is mad in the watter level for a Canal: the coals may be conveyed from handysides pit to the Machine [pit?] Underground at a Esy Expense Upon flotes which may be mad for that Use.

This interesting proposal reflects a general interest in underground canals for mineral and metal mines during the decade or so following the successful venture at Worsley, Manchester, by the Duke of Bridgewater and his associates John Gilbert and James Brindley; it would appear however that the suggestion was not followed up.

Some unusual cost items were recorded for November 1769; these included the leading of bricks for the building of two 'cinder ovens' and the building of the ovens by the mason Ralph Lowery, and the cost of a stallion 'serving the Ginn Mare'⁷⁹ The cinder ovens were to supply coke to the iron forge but nothing else is known about them. The thatching of the pitmen's houses may have been unwise for although there is no record of them being fired, John Rule was paid £23. 10s. 5d. for slating them in May 1770.⁸⁰

Inventories of Ford Colliery in 1769 and 1770.

Inventories for Ford Colliery taken in 1769 and 24 October 1770 indicate how little there was in the way of equipment. The 1769 inventory consists of:⁸¹

	£	s	d
1 piece of oak	3	0	
2 old pumps		6	
1 piece of oak		10	
1 squar pump	2	6	
1 Oat Bin	2	0	
Several pieces of old Roap	15	0	
1cwt 1qr 0lb of New Iron Shovels @ 36/	2	5	0

5 Old Tubs		4	0
A New Roap		4	0 0
1 stone of hogs lard		4	8
5 Fathoms of Bore Rods		2	1 3
Oats		7	0
12 cart load of Hay at 17s /pr.	10	4	0
2 long pumps		2	6
1 Hay Forck and one Muck D ^o .		2	6
To 1 Ladder		4	0
1 Curry Comb and Brush		2	0
1 Small Pump		1	6
1 Jack Roller with Roaps		10	0
1 Store Chest		8	0
1 Iron Working pice		2	15 0
1 Coal Ginns with Roaps		10	0 0
2 horses with Trappings		16	0 0
1 New Jack Roler with Roaps		4	0 0
15 Fathoms of Air Boxes		2	18 0
A Watter Wheel Down the pit			<u>7 0 0</u>
	65	7	3

Outstanding Debts

	£	s	d
The Revd. Mr. Geo. Marsh	2	10	6
John Askew Esq., Pallinsburn	4	5	2½
The Revd. Mr. Allen, Wooller	1	6	4½
Majoribanks, Tile Maker, at Wooller	2	13	0
Mr. James Hall		10	0
Matthew Hall		11	6
John Bruce, Ford Quarry		8	3
John Burn, Ford		8	7
David Haggerston		<u>4</u>	<u>6</u>
	12	12	11

Few working tools are included and we must suppose that the miners provided their own. It is difficult however to explain the absence of sleds, corves etc., unless these were, unusually, also provided by the miners.⁸² The second inventory, a year later shows few changes although a second horse gin had been acquired.⁸³

Inventory at Ford Colliery taken this the 24th Day of Octr 1770.

	£	s	d
1 piece of oak		3	0
2 old pumps			6
1 piece of oak			10
2 squar pumps		2	6
2 long pumps		2	6
To a parcel of Old Wood		4	0
To Sundry pieces of old Roaps		15	0
To New Jack Roler with Roaps		4	0 0
To 5 Fathoms of Bore Rods		2	1 3
To [Blank] load of Hay at [Blank] pr.			
To one Hay Forck and Muck Forck		2	6
To 1 Ladder			4

1 Curry Comb and Brush	2
1 Small Pump	1 6
1 Jack Roler with Roaps	10 0
1 Store Chest	8
1 Iron Working piece	2 15 0
2 Coal Ginns with Roaps	25 0 0
2 Horses with Traping	16 0 0
15 Fathom of Air Boxes	2 18 0
A Watter Wheel Down the pit	<u>7 0 0</u>
	52 0 7

Outstanding Debts

	£	s	d	
Mr. Allen	1	9	0	
Mr. Compton	2	13	0	
Mr. James Hall		4	0	
John Askew Esq.	6	11	2½	
The Rev Mr. George March		4	3	
Mr. Todd		4	0	
David Haggerston	11	10½		
John Burn		4	0	
Mr. Marton	11	6		
Mr. Gray	12	0		
William Jefferays, Westfield	5	0		
Joseph Baldon		1	6	
Edward Baldon		1	1½	
Ralph Smith		1	3	
Mr. Buckham		1	7½	
Ralph Pattison		2	1	
The Revd. Mr. Wallice		1	6	
Robert Young		1	6	
John Bruce	15	½		<u>14 17 5½</u>
				66 18 ½
15 Load of Hay at 19s pr.				<u>14 5 0</u>
				81 3 ½

This can not have been a complete inventory for it is known that the pit had covered screens at this time.⁸⁴

New houses for the colliery.

The colliery had been moderately profitable over the previous few years. At 14 September 1765, the colliery had made a profit over 15 weeks of £18. 6s. 9½d.,⁸⁵ and between April 1767 and October 1770, income had amounted to £385. 0s. 5d., while expenditures had been £163. 10s. 7½d.⁸⁶ Two cart loads of wood and a new pit rope were acquired from Berwick in October 1771,⁸⁷ and a further 9 cart loads of wood were delivered from Berwick before February 1772,⁸⁸ and John Raffield provided plans and estimates for the building of houses for colliers at Ford Moss on 28 January 1772:⁸⁹

I have Inclosed Two plans for the Houses that is to be Built at the Mos. Mr Oxley told me Your Hon would have Every House 8 yards long as in The Plan A Which is Over long for any common Houses. The plan B can be Built Above £20 Cheaper Every 4 Houses and is as Convenient and Will Answer Either for the Colliers or a Farm House as Well to the full and may be Rased a Story Higher as you will see by the Doted Lines in the Elevation by Making a Door and passage in the Middle of the plan as Your Honr and Lady Hussey Delaval was think of when you was at Ford. I Inclosed the Estimate of Each Building at Your Conveniency Your Honr will Pleas to let me have Your Answer and no time shall be lost I getting them forward.

Materials for the new houses had been arriving at least from late in 1771 for accounts show that there were near daily deliveries of pantiles for the colliery houses, usually one cart per day carrying 2 fother of tiles, the same cart returning with coal for the tile-shed at a cost of 3s. 6d. each way. Pantiles for the 'coal houses' were still being led in October 1772. Matt Hall as manager of the in-hand Flodden farm provided this service, as he did for other in-hand properties such as the forge. Hall also went, or sent men, to Berwick to collect wood for the 'Collerey houses', doing likewise for the houses or other colliery business such as supplying oats to the colliery houses on occasions up to June 1775;⁹⁰ iron hoops, wood, deals, and Harrobul[s?] were brought in in this way. Little time seems to have been lost in getting on with the houses for on 27 May 1772, Raffield informed Delaval that they would be finished that week.⁹¹ In March a 'large water barrel' had been obtained, and in September, Hall supplied 'two carts flitting 4 Collier's goods' at a cost of 10s.⁹²

The colliery was still being run directly by the estate, and in December of 1772, the colliers were bound for a year in the well established tradition of the Great Northern Coalfield.⁹³ Some problems still remained and Oxley again asked Allen to come up from Hartley to view the pits. Allen reported his findings to Delaval on 21 April 1772. For some time past they had been working 'very poor coal' and as a consequence were likely to lose trade. There were however some good coals near the Moss which could be won by sinking shafts only 7 fathoms deep and driving a 19 yard level; Allen had instructed the men to press ahead with this development with all speed.

The main water level was again in a poor condition, broken down in some places and 'very full of Ocher' as far as the Machine Pit. Cleaning out the Ochre to maintain a good flow of water was clearly a time consuming and not infrequent business, but Allen suggested an improvement to speed up the process. His solution was rather like that used at Hartley where a

sluice was used to rid the harbour of silt. He ordered Oxley to fix a ‘clem’ at the Machine Pit to hold up the water for a few hours and then let it suddenly run out with a ‘hoish’ [hush ?]. This he argued would clean the drift more in one day than ten men could achieve in half a year.⁹⁴ Whether it was tried or not has not been determined but the general problem remains apparent today as there is still a deep layer of yellow silt on the floor of the drift. Perhaps in response to Allen’s suggestions Oxley informed Delaval in July that they had begun to sink a pit on the Gallalaw to the dip of any previous workings and that they should be able to get ‘full specimen of the quality and thickness of the coals’. But, he added, ‘the waste is so much fallen that we cannot as yet get in’.⁹⁵ Oxley seems to have frequently been away from Ford during 1772 and John Allen remained responsible for the overseeing of the colliery. He made preparations for a new water wheel but wanted Oxley to attend personally to fix the buckets ‘to his own Mind, it will...be a great Meins of forward the work which is very much wanted.’⁹⁶

The importance of the colliery to other estate activities is demonstrated by some accounts for 1772-74. These are itemised in some detail and the credit items are as follows:⁹⁷

	26 Aug 1772 to 26 Aug 1773	26 Aug 1773 26 Aug 1774
By Cash more than paid the Colliers	45 13 5	46 12 6½
By Coals to Ford Castle	8 10 2½	8 19 6
By Coals to Mr. Oxley	3 4 1½	3 1 6
By Coals to the Pantile Shed	33 16 7	15 16 3
By Coals to the Forge and Nailers	15 11 3	5 16 10½
By Coals to Ford Quarry	<u>16 7½</u>	<u>1 7 0</u>
	107 12 2½	81 13 8

This curious form of accounting unfortunately tells us nothing of overall sales since we know nothing of the overall wage bill. Neither does it include the various purchases of equipment made and the services performed by Matt Hall and others. For example, in January 1773 Hall arranged for a cart with three horses to shift the gin at the pit while in May he sent two carts to Berwick to fetch ‘John Punting and his goods to Ford Colliery’.⁹⁸

The search for tenants.

During 1775 thoughts were turning to leasing out the colliery. Allen visited it in March and found it ‘very much out of order’ but believed that it could be put right and worked to profit

within a few days. He noted also that the nearby Doddington colliery was not working and that this presented a good opportunity for Ford. There had indeed been an offer for the colliery at a rent of £100 p. a. for six years but the prospective tenant was not prepared to supply coals to either the castle or the limekilns; in any case Allen believed it would let for more than £100 once it was in good order.⁹⁹

After Allen's return to Hartley it was left to Oxley to keep the colliery going and hopefully to find a good tenant. In June three carts were supplied by Matt Hall to fetch 'workmen and their goods' to the colliery and between that time and March of the following year he led a total of 53 loads of coal to the castle.¹⁰⁰ A plan of 1775¹⁰¹ shows the Ford Colliery Pits and watercourses 'as they stand on the Hill'. Some twelve separate pits, mainly working in the Main coal, are shown together with an 'old water level' running from day in the west to the Hill End Pit before turning north easterly from this pit towards the Handysides Pit, and a new water level, likewise leaving the Hill End Pit, presumably at the lower level of the shaft bottom to the Engine Pit before again turning to the north east. An intended cut from the Upper seam ('Stoney' or 'Kiln') water level into the Main Seam 'old water Level' at the Level Pit is also shown; this may represent the embodiment of Allen's plan of 1768.

Oxley had no immediate success in finding a suitable tenant even though trade was good.¹⁰² In addition to the un-named interested person mentioned by Allen, a 'Mr Seebit [Sibbit] from the North' was prepared to offer £120 p.a. for six years. Some objected to Delaval reserving the limekiln and castle coals, while others wanted a 21 year lease, a requirement which Oxley was not given to entertain. He supported Allen's proposal to sink another pit to the Main Coal, a development which should advance the rent to £160 p. a.¹⁰³ The new work went ahead for as Oxley wrote to Delaval on 2 August 1775:¹⁰⁴

We are working the main coal at Ford ... exceeding good quality; 5 feet thick, very little water, 2 hogs heads per hour lifted with tubs ... a hand pump is ordered which will easily do it.

Presumably this was a section was beneath the main water levels. Alternatively it may be that the new water level, which would drain further Main coals only, was not yet completed. Certainly in December a water level had been driven 96 yards in the coal drift, but the men did not want to go further.¹⁰⁵ As Paul Forster wrote from Ford to John Allen at Hartley :

The top seam is gone [by?] 35 yeards And is very much trubeld with stons. The men will not drive hur but I told them but to drive hur untel you come over. I am forst [forced] to advans there prise [price].

Sr we will be all over renk we have great want of shuls [shovels] and mels please To let me know when you will Send them over or give me order To by [buy] sum. pra[y] bring over the bond with you, the pepel is all hireing here. So no more at present but I am yours Paul Forster our love to you all & to Paul.

A 1776 Bond.

Another binding agreement exists, for 1776¹⁰⁶, and is considerably more detailed than that of 10 years earlier. The hewers, putters, overmen and banksmen were required to do any work requested of them by Delaval's agents, in any existing pit or seam, or in any that might subsequently be opened up. The hewers would, from time to time, work the Little Seam for 1s. 8d. per 36 bolls per day of 'good and clean coals, or the 'Main or Lady Seam' for 1s. 8d. per 30 bolls. The putters would be paid 5d. per 20 bolls of coal taken 80 yards to the shaft bottom and an extra 1d. per 20 bolls for every further 20 yards. The hewers must only send tubs of coal to bank that were completely 'woodfull' and would receive no payment for any tub that was short. Moreover if any tub was insufficiently free from stones or dirt, then not only would they not be paid, but in addition there would be a fine of 2d. for every such tub. All workers must agree not to combine, stop or neglect their work on pain of a fine of 2s. 0d. per day lost by so doing.

The Colliery leased out to Wm. Landless, October 1776.

Eventually the colliery was leased out to Wm. Landless who was already tenanting collieries at nearby Doddington - perhaps those which Allen had earlier reported as having closed down. John Hall had recommended Landless to Delaval who agreed, on 1 October 1776, that Landless should become tenant of the colliery. His lease, dated 1 October 1776, allowed Landless to work only the Main and Stoney Coal seams at the 'Coal Hill', Ford,¹⁰⁷ within the limits of earlier workings where, apparently, and possibly without a lease, he already worked several pits. Landless could extract as much coal as he wanted, but must not employ more than eight workmen. The lease was to run for 7 years from 7 October for a rent of £150 p.a. but Landless was also required to provide small coal for Delaval's lime kilns, and large, best

coals for the castle, as required and free of any charge. Delaval's agents or viewers could inspect the mine at any time and Delaval could specify matters such as the sizes of the boards, headways and pillars; at the end of the term of the lease Landless was to leave everything belonging to the undertaking in as good a condition as upon his entry to it.¹⁰⁸ As when the Colliery was in hand, farm tenants were still required by their leases to buy all their coal from Ford Colliery, and their lime from the Ford kilns.¹⁰⁹

Brown's report of 1777.

Thus it was, that on 17 March 1777, William Brown sent Delaval a report on the Colliery, an update of his plans of May 1760 and October 1762.¹¹⁰ Brown noted that a drift had been driven, some 100 yards on the south side of 'the Great dyke', which had cut through all the coal seams from the lowest to the highest. The latter seam was being worked and should continue in production for several years provided that the water level drift was carried forward to the north east. A very large quantity of coal could be won from all the seams by further driving of the level but trial borings should first be made to the north of the dyke to determine the strata which would be met. An 'Eye Map'¹¹¹ would, according to Brown, 'better explain things'. The Eye Map indicates workings in seams, presumably near the outcrops on the west side of Black Hill but curiously, Brown's contemporary report on the colliery held in the Watson Collection and dated 30 May 1777¹¹², indicates that he was not personally able to inspect the pits as there was no means of getting down them - there were no ropes on the gins. However, he discussed the mine with whoever he chanced to meet and found 'her in a very bad situation'. The shallowest seam was near 3 feet thick but with a 6 inch band of stone in the middle. Below that was the Main Seam, some 6 quarters thick but again with a 6 inch band. Further down was firstly a 5 quarter coal, then the 'little coal' and finally the 'stone' coal of 3 quarters thick. Again it has not been possible to reconcile these seam names with known sections of the strata (see appendix) - possibly because of inaccurate verbal evidence given to Brown. Everyone agreed that the Main Coal was good but that it had a very bad roof. The water level in the Main Coal had thrust for around 90 or 100 yards near 'the last Water Level pitt' where there was now a considerable depth of water even though this shaft was dry when first sunk. He had also been told that the colliery had been set on fire but that there was no such problem at the moment. Brown noted the horizontal position of the drift staples and the water level pits as well as the perpendicular level from the adit mouth to the 'wrought pitt'

where the level was some 20 fathoms down; he had, however, been informed that this shaft was 25 or 26 fathoms deep. He found it strange that the water level had not been commenced some 500 yards further south west where a further 20 fathoms fall in the ground would have enabled twice as much coal to be won. In his March letter he suggested driving boreholes to the north of the level and north of the dyke, to search for deeper seams and also to determine the different strata which would be encountered if such a lower level were to be undertaken. Still, there was plenty of coal to be won if the drifts were cleared up and the thrust dealt with. Another plan¹¹³ is related to the former and is probably also of 1777. Most of the old pits are shown north of the dyke and near Hill End Pit, with one pit then being sunk, and another nearby at work. The 'present water level in the Uppermost Seam' is shown projecting well beyond this area and 'Whole Coal in all ye Seams' is noted on both sides of the level. It may be that the level shown refers to Brown's suggestion that the level should be carried forward to the north east although as he indicated, he would rather have driven a lower level altogether.

Landless takes the limestone quarry and kilns – the colliery drowned out.

Landless soon realised that he could not profit from his lease for the colliery was not proving to be as lucrative as had been hoped. In December 1777, after only one year in operation, he obtained permission to work the limestone quarry and kilns for one year; he was to produce 6,000 bolls of lime for his own benefit on condition that he delivered, free of all charges, 600 bolls of the best clod lime, well burned, for Delaval's own use, and whatever further amounts of lime needed by Delaval for his lands and buildings at a price of 4½d. per boll. Landless was also required to keep a book of account to demonstrate that no more than 6,000 bolls were produced for his own benefit.¹¹⁴ These proposals seem to have been acceptable but Landless was not yet out of the wood or rather out of the water. On 3 March 1778 he called on Oxley 'with the disagreeable news of the colliery being drowned'. It would seem that the drainage level had run in somewhere between the Handysides and Hill End pits thereby drowning the workings in the Main and Stoney (Kiln) Coal seams. The water had 'risen above the shaft eyes' and the house in which he lived 'was much shrunk'. Oxley had asked Landless to provide details of all the water levels so that he could better judge the situation, and having received these, he felt that he could put matters aright in a few months.¹¹⁵

Your honour will please to remember that the main drift comes in a direction of full due[?] deep of the three seams viz, the lady coal; the main coal; and the (stoney coal

now drowned) and therefore as the drift come up they have always so sought the undermost point; for instance the Lady, then the Main and last of all the Stoney coals or that the Tenant wrought last now as the Main coal was lost by the water level running together between Handaysides pit and the Hill end pit it therefore for ever became out of our power to work the main coal seam and as the present working seam call Stoney coal is drowned it remains as some little consolation that the Lady Coal dress[?] in that seam is in good condition and being as far forward nearly as the other seams it will be most likely the best way to drift through the Stratums and that the due[?] dress[?] and thereby the water will all come to the Lady Coal level and run into the Main Drift. But as the Lady coal is not quite as far forward as the other seams; it will be advisable to work about 50 yards over the bank in the Lady Coal which with 35 yards of water free wall now unwrought in the Lady coal will make in the whole 75 yards of wall in the Lady coal and this will serve the trade 2 years until the drifts are put trong [through?] and this way may Be effected by some machine capable of lifting[?] water only 5 fathoms and what water the Lady coal makes in that part of the seam.

Presumably to provide relief for the miners and for Landless, he was ordered to send all men he could spare to Hartley Colliery,¹¹⁶ while Oxley pondered on how best to retrieve the situation. If, as seems likely, an area of the Lady Coal remained unaffected by this drowning out then there would be some time for redevelopment without a total loss of production. In fact on the last day of the month Oxley was able to report that the water in the drift had broken away and Ford Colliery was back to normal working.¹¹⁷

Oxley had visited Ford Colliery with Brown in April,¹¹⁸ their aim was to survey the 'Old drifts' and also a new one intended to be about 20 fathoms below the old one. Either Oxley or Brown, or perhaps both, came up with the idea, in December 1778, of erecting a water wheel of 30 feet diameter, at or near the mouth of the existing water level drift, to drive pumps via a flat rod system back along the drift to the Hill End pit. This pit would be sunk down to the Lady Coal at 17 fathoms below the old water level and the flat rods used to lift the water from that depth into the level. Thereby a great quantity of Main and Lady Coals could be worked without the need for any new stone drifting,¹¹⁹ (Fig. 6). There is neither documentary nor field evidence to support the implementation of this proposal, nor of another, indicated on the same plan, to drive a parallel drainage level about 20 fathoms below the old level.

A document which is undated and vague in terms of location, none the less appears to describe Ford colliery at this time:¹²⁰

For your Information shall here give you the particulars of one Days work at a Landsale Colliery in a Detached Estate of Sir J. H. Delavals where 8 Hewers of Coals are allowed to be imployed and each mans days work sells for 6s. and which colliery is let

at the Yearly rent of £150. The Undertaker sinks his own pits and does all other Incidentl work necessary in the said Colliery. There being no lifting of water required as the same is freed by a level and the pits at present are about 24 Fathoms deep - and the seam of coal about 4ft 4in thick or high upon an average.

	£ s d
Value of Coals wrought by the 8 Hewers in 1 day at 6s. P	2- 8- 0
Charges against the above:	
8 Hewers wages at 20d pr Day each	13- 4
Putting the ... coals from the Diff works [? 8 putters]	8- 0
Banksmans wages Banking the sd coals	1- 8
Charges of Horses Drawing the same to Bank	3- 0
Gin driver (a Boy)	10
Smith Work	6
Incident Charges including the wear of materials above and underground And sinking of pits	1- 6
Agent (or Manager)	2- 0
	<u>1-10- 10</u>
Neat Profit p day	17- 2

On the basis of these calculations Landless should have been able to make a yearly profit of about £105 after rent, assuming a six day week over 50 weeks.

However, Landless clearly had problems meeting his commitment to supply Delaval with lime during 1778, and indeed, whether by design or accident, he failed to deliver any.

Consequently, in the December of that year, he entered another agreement which required him to deliver 1,200 bolls of well burned clod lime free of charge to Delaval over the following year, and a further 1,200 bolls at 4½d. per boll as required by Delaval.¹²¹ Thus he continued to work both the coal mine and the lime business and was still paying his £150 a year rent in 1782.¹²² In the summer burning season of 1782 for example, Landless supplied some 3,000 bolls of lime for Crookham Westfield, then in-hand, a total of 653 cart loads mainly carried by the tenants of the Linthaughes.¹²³ The colliery also continued to be of indirect use to the estate in providing coal for the brickworks for example,¹²⁴ and new tenants for the colliery were being sought late in 1782, when Oxley further suggested that the colliery should be let together with the brickworks, tiled, and limestone quarry; he also recommended that after two years of a lease on these tenancies, the tenants should be accommodated with some land on the east side of Ford Hill farm.¹²⁵ Accordingly an advertisement which appeared in the local newspaper offered:¹²⁶

... to be let in one farm, and may be entered upon the seventh day of October next, the Landsale Colliery, Limekilns and Quarries; likewise the Pantile shed and Brickyard, with several cottage houses belonging to the same. All which premises are situated in the Parish of Ford, in the County of Northumberland.

Clearly the estate was unwilling to embark on the direct running of these concerns and in common with estate management practises elsewhere the somewhat simpler and less speculative business of collecting rents was seen to be preferable.

Landless pulls out; Smith & Sibbit take over the colliery etc, 1783.

Landless was evidently unwilling to carry on with a new lease and instead opted to run the corn mills.¹²⁷ [see write-up on the corn mills] But, as the Hartley agent John Crooks informed Delaval late in December, others were making proposals. A Jno Jackson had already bid £120 p.a. for the Colliery and Quarry, and had apparently written to Delaval with an even higher offer. Meanwhile a Mr Smith together with a Mr Sibbit had offered £130 for the colliery and quarry, and wished to know whether this offer had been accepted, particularly since Smith was soon about to set off for the Ford area when he could view the colliery.¹²⁸

In January 1783, Robert Smith of Plessey, parish of Stannington, and Adam Sibbit of Shoreswood,¹²⁹ successfully put forward their formal proposals to take the colliery, limestone quarry, land and cottages at £130 p. a..¹³⁰ Heads of agreement for the new lease for colliery and kilns were drawn up on 1 February 1783, the intended lease to run from Martinmas for 15 years, but with an option to terminate at the end of the fifth and tenth years on giving twelve months notice (if approved by Sir John). The rent was less than Landless had paid but Smith & Sibbit were to carry out all necessary works at no charge to Delaval and to guarantee that they would not raise the price of coal sold to people residing on the estate during the term of the lease i.e. Stoney Coal at 2d. per boll, Main or Lady Coal at 5d. per boll when large and 2d. when small. Coals for the castle were to be free and all lime needed by Delaval would be supplied at its present price of 7d. per boll. At the end of the lease, at least two pits would be left open for ventilation and enough coal left for at least one year's working by ten men. They were not allowed to employ more than 10 hewers.¹³¹ Oxley had hoped to obtain a better rent and a shorter term, and suggested that Delaval should get the new tenants to pay ready money for all the boring rods, sinking gear, tubs and horse gins on the site.

Delaval may also have been dismayed by the intended rent. In an undated letter, written long after the event to Carr and Fitzwalter, and probably c.1807, he noted:¹³²

I recollect that after I had let the Colly to them [Smith & Sibbit] there was a very general outcry in that part of the Country of its being a pity that I had done so and that I might have let it to much better advantage.

Oxley still wanted Smith & Sibbit to take other properties - the pantile works for 11 years at £40 p.a., the Moss Farm for 2 years at £10 p.a. and part of Mr Hall's farm at Ford Hill for 8 years at £20 p.a. as well as the colliery, a proposal which he put to Delaval in February 1783.¹³³ Delaval, however, was not too impressed with the idea, believing that the suggested rent for part of Hall's farm at 8s. 0d. per acre was inadequate, likewise Ford Moss Farm, and he would not let the pantile works for less than £50 p.a.; moreover, Delaval would not agree to forgo the possibility of commencing brick and tile manufacture elsewhere on the estate, a suggestion which Smith & Sibbit must have made in their proposal:¹³⁴

I will never engage not to make any Tiles or Bricks for my own use, perhaps I might find it expedient to make them in some parts of my estate distant from the shed to save a great expence of leading.

Oxley basically agreed with these sentiments, feeling that the colliery ought to let for more than £130 and that if the Moss was included it should be at £20 p.a.¹³⁵

In April of 1783, Robert Smith formally declined to take the pantile shed and grounds; they knew nothing of pantile business and had no need of any ground as Mr. Hall let them have horses whenever they needed them for the colliery; they would however take Ford Moss Farm if Delaval wished it.¹³⁶ In fact they offered to take a 15 year lease on 'all that White land situated near Ford Colliery', about 50 acres, half to be kept in tillage, and they also proposed that the two eastern-most collier's houses near Ford Moss should be included in with the Moss Farm in lieu of the two houses then in the possession of John Bruce at the limestone quarry. They offered to pay £10 per year for two years for the Ford Moss farm, the land to be sown with grass seed and not converted into tillage.¹³⁷ In the event Ben Oxley took the pantile sheds.

John Crooks valued the colliery materials which Smith & Sibbit would buy at £44, but the person who valued them on behalf of Smith & Sibbit made it £32; 'The matter remains (as yet)

unsettled' noted Oxley.¹³⁸ Whatever the outcome of this haggling, Smith & Sibbit took the colliery but moved slowly. Oxley complained, just 6 days after Smith & Sibbit should have entered their lease on 11 November 1783, that they 'has not got any Thing done at the Colliery'; the hewers had stopped work at the pit but they had, however, been drifting and sinking on the Gallalaw.¹³⁹ Oxley and Crooks were at Ford in March 1784, to give directions about the repairs needed at the colliers' houses for Smith & Sibbit.¹⁴⁰ (In May 1784, Oxley reported that he had let the farm at Gatherick to Mr Adam Sibbit for £130 'and is £15 a year higher than any other' offer¹⁴¹) Towards the middle of 1784, Mr Hall, the tenant of Ford Hill which bounded the colliery site, was rather ill and thought to be incurable. His farm was soon due to be let and the agents recommended that it be split into three or four farms. Smith & Sibbit were keen to take about 200 to 300 acres of the easternmost part of the farm 'called the Moss Ridge and Keeputlaw Ridge', part of which they already occupied under an agreement with Mr Hall.¹⁴² This proposal seems to have come to nought.

The outcome of all this appears only in the rentals. In 1788, for example, Smith & Sibbit were paying £130 p.a. for Ford Colliery and quarry plus £21. 17s. 0d. for Nights Close,¹⁴³ but in addition Sibbit was tenanting Gatherick farm for £130 p.a.¹⁴⁴ Although the signed lease exists, a document written c.1797 (watermark)¹⁴⁵ suggests that another lease was signed on 30 September 1784, but with a commencement date of 11 November 1783.

Smith & Sibbit were also involved elsewhere, at a Delaval colliery for example, for in December 1786 they considered undertaking the drawing and banking of Hartley coal - but not the mining - for 12 years. In the event they withdrew that proposal, and Joseph Oxley offered to do likewise, on the basis that he would cease to be head cashier at Hartley, but still keep on his responsibilities at Ford; the outcome is uncertain, but Oxley did build new machines for drawing coals, and Smith & Sibbit again offered to take the drawing of the Hartley coals for 15 years from 1799.¹⁴⁶ [see also SML's lecture notes on Hartley:]

A minute glimpse of life at the colliery site is offered by one document of 1788, telling of how Thomas Murdy, 'a servant at Ford Colliery of Messrs Smith and Sibbit' was caught setting snares for hares and rabbits in the plantations at Broomridge. The penalty for this if brought before magistrates, would be between £10 and £25; John Hall and John Carr, however, wrote to Delaval suggesting that since Murdy was a man of honest, sober and industrious character, but a poor labouring man, he would be ruined by such a fine and should be forgiven, for which

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he would probably acknowledge his crime.¹⁴⁷ Early in 1788 another argument about roads ensued when Mr. Wilkie of Doddington attempted to stop the road at Routing Linn on the east part of Broomridge Farm. John Carr informed Oxley that this would be detrimental to the Colliery and Mr Marsh and others had known the road to exist for the last 40 years;¹⁴⁸ the outcome of this argument is not known.

Throughout this period, farm tenants were still required by their leases, for example Kimmerston farm (1784), the Linthaughes (1789), Encampment farm (1793), and Ford Westfield (1794), to buy all their coal from Ford Colliery.¹⁴⁹

A new lease?

Delaval or Smith & Sibbit would appear to have been negotiating a new lease, according to the provisions of the existing lease, at 10 years after its commencement. A draft lease of May 1792,¹⁵⁰ was broadly similar to the earlier one, allowing for development work and liberty of passage for carriage of coal and lime ‘through common ways and cart roads now used for that purpose’. Delaval reserved clay and stone working on the site to himself and also the freedom to inspect the mine and make trial sinkings. The draft lease was for 21 years but the proposed rent was left blank. Again coal was to be supplied free to the castle ‘one half to be fire coal, the other half best coal’. The price of coal was to be maintained at its existing level, indeed at the level of the 1783 lease, and fines by way of increased rent would be levied should the tenants fail to supply coal and lime to the castle, or increase the price of coal to inhabitants of Delaval’s estate. Again Smith & Sibbit could mine as much coal as possible with only ten hewers or pay an additional rent of £30 for each additional hewer employed. They were not to kill game nor keep any dog but a guard dog, nor keep any gun, gin, trap etc.; they were not to depasture sheep on the Common nor on any roads, lanes or wastes, and should only grind corn at Ford Mill. They must however dismiss any of their workmen, excepting members of their family, if required to do so by Delaval. Should the colliery become unworkable or not turn out as expected then on the tenants could quit the lease at the end of the tenth or fifteenth years on 12 months notice.

As usual there is little information on the performance of the colliery. As long as the tenants paid their rent and obeyed the covenants in the lease, then the estate agents were largely unconcerned. In 1793, however, John Carr saw it appropriate to inform Delaval that:¹⁵¹

The Colliers in this and the Neighbourhood of Berwick has made a Stick and will not work without an advancement of Wages; which has made an annoying scarcity of Coals; indeed the hinds and every description of Labourers are upon the wing and standing out for an augmentation of their wages, which I told them did not lye in my power without your Lordships allowance, they request an advance of two pence pr. Day.

Smith & Sibbit take Etal and Gatherick collieries, but become uncertain about Ford and Gatherick collieries.

It was, in fact, a difficult time throughout the country, the high grain prices due to poor harvests and the effect of the Napoleonic war, making ordinary foodstuffs expensive. None the less, Smith & Sibbit extended their operations by leasing William Hay Carr's Etal Colliery in 1795, for 21 years at a rent of £350 p.a.;¹⁵² they were to employ ten hewers to work the Cooper Eye seam in the south-east part of the colliery by board and pillar mining because of the poor nature of the roof;¹⁵³ they also leased Gatherick colliery in 1798.¹⁵⁴ However, they clearly ran into difficulties at Ford, for as Carr reported to Delaval on 22 June 1799, they were going 'badly on with winning the coal at this place'. Indeed the mine seems to have been standing still which 'may preserve it, but it is very inconvenient to your tenantry'. In fact, in 1799, Smith & Sibbit sought a lengthening of their lease but Carr advised Delaval in August that restrictions should be included.¹⁵⁵ The lease should be for 21 years and commence at Whitsunday 1800. Carr went on:¹⁵⁶

... the first three years to continue at the present rent in order that the reversion of the present Term may be reduced to ten years and to allow time to drive up the level to the Coals, then an advance of £65 to be added to £170, the present Rent, making the new Rent £235 a year for the remaining Term of 18 years; I think Ford Colliery, when the level is driven up, should let for £300 a year at the end of the present Lease. I should imagine the advance fair and equitable, they having 11 years added to their present reversion. They should be allowed 12 Hewers at the Wall and should be restricted, not to exceed that number - as to many Clauses to be inserted, the present lease would be the Guide.

In addition Carr recommended that they should immediately employ sufficient men to carry on driving the level and once the coal was won they should supply the tenantry with small coal at 3d. per boll, 'the Grounds and Splints' at the usual price. The level should be inspected by a

proper person while it was being driven and the agents should regularly inspect the mine to ensure that it was not being worked wastefully. Carr was clearly worried that Smith & Sibbit might take the colliery but not work it.¹⁵⁷

I would not advise you to renew the Lease without a participation of a fair proportion of the profits. Indeed upon the whole my Lord, it is very injurious to the Country to suffer any company of men to engross the whole of the Collieries, as they think nothing of paying dead rent for a Colliery suppose they do not work it should they meet with any difficulty in the working thereof they can sell Coal equal to their Conscription at other Collieries easier wrought.

It is apparent that the mines around Ford were in a parlous state and Carr instanced as proof the fact that tolls collected on the turnpike in 1798/9 were only one half the value collected in 1794, so little coal was being supplied by Ford and Etal collieries.¹⁵⁸ For whatever reason Smith & Sibbit did not wish to continue at Ford, and they informed Delaval on 4 May 1801 that they intended to quit the Ford and Gatherick Collieries on 12 May 1802.¹⁵⁹

In this situation Oxley, still active, thought that steps should be taken to get forward with the main level and to immediately advertise the letting of the colliery.¹⁶⁰ The agents promptly set about finding a new tenant but had considerable problems. A Mr Nicholson of Greenlaw Walls, a colliery near Gatherick, was interested but only 'if your Lordship will ask a rent'. John Carr regarded Nicholson as a very eligible and experienced man and suggested that if no offer should come before Christmas 1801 then Delaval should ask a rent.¹⁶¹ This may relate to an unwillingness on the part of potential tenants to accept Carr's suggestion that Delaval should share in the profits of the mine.

Christmas passed without any further moves and in January 1802, Carr urged Delaval to make Nicholson virtually the same offer made to Smith & Sibbit, which was a 21 year lease at £170 p.a. for the first three years and £270 p.a. thereafter. Carr noted that Smith had made Delaval an offer and asked that Delaval decide between the two.¹⁶² By 7 April the Ford Colliery lease had still not been settled with Smith & Sibbit due to quit in May and it would appear that a Mr John Davidson of Newcastle, probably a lawyer, was holding matters up, much to Delaval's annoyance. Delaval urged Davidson to get on with the lease 'the longer delay of which may be attended with considerable disadvantage'.¹⁶³

Smith & Sibbit agree a new lease, 1802.

In the event Smith & Sibbit did agree to a lease of 25 years from 12 May 1802, although it was not signed until later in that month.¹⁶⁴ Again it was for the colliery and limestone quarry plus the colliers' houses and outhouses at colliery and quarry, excepting two cottages 'formerly in the possession of William Landless and belonging to Moss Farm. Smith & Sibbit do seem to have won some concessions on the rent, which would now be on a tentale (output) basis at £150 p.a. for the first 5 years (unless a new winning was made before then) with a maximum output of 150 tens, but over the last 20 years of the lease, or sooner if the new winning was made, it would be £220 for a maximum of 220 tens of coal raised. An extra £1 rent would be payable for every additional ten of coal raised.¹⁶⁵ Any coal used for fire engines at the colliery or given to the pitmen employed at the colliery would not be counted as part of the annual output. The tenants could change the size of tubs, corves or baskets at any one pit provided that they were consistent at that pit and that the change was made only on 12 May or 11 November (rent days), and that one month's notice was given. The new winning was to be commenced immediately the lease came into force. The working was to be by bord and pillar and a 40 yard thickness of unworked coal was to be left between each pit. Coal and well burnt clod lime were to be sold when requested to Lord Delaval and his tenants at Ford at the present price. In addition there were the usual covenants on game, milling, powers of inspection etc.

In all, this was the longest and most detailed lease for the colliery, and Davidson, with Sober Watkin of Byker (Delaval's Viewer at the time) would appear to have drawn it up after receiving quite detailed outlines from Delaval.¹⁶⁶ The reference to the use of coal for 'fire engines' (i.e. steam engines) is the first encountered in the documents relating to Ford Colliery; they had long been used at Hartley, and Smith & Sibbit had installed a 'fire engine' at Slainswood Moor for Etal colliery before 1805, by which time they were working the colliery there by the longwall method.¹⁶⁷ This engine had enabled them to win coals further to the dip than the drift driven from Leatham Hill Burn would allow. Their lease at Etal was apparently due to expire in 1807 which suggests that the 1795 lease had been re-negotiated. The requirement to maintain 40 yard barriers between each pit at Ford suggests that the intended workings would be below the water table and not drained by gravity. If so then pumps of some kind would be needed. In the absence of any further evidence we cannot be certain whether the covenant in the lease concerning coal for fire engines was intended to cover a possibility or an anticipated reality.

There would appear to have been ongoing discussions about the wisdom of a rental agreement based on tentale, i.e. £220 p.a. for 220 tens output although tentale rents were not in themselves unusual at this time. An undated document presents a series of calculations respecting previous and present rental systems.¹⁶⁸ Basically these showed that under the previous arrangement the yearly rent was £170 p.a. but, since the free coal delivered to the castle was worth about £25 p.a., the effective rent was £195 p.a. The mine was now worked by ten hewers, 5 days per week, producing 3,250 chaldrons of coal in 52 weeks. Thus the rent was equivalent to 1s. 2¼d. per chaldron. If on the other hand the rent could be raised to £300 p.a. with ten men, an output of 3,250 chaldrons would mean a rent of 1s. 10d. per chaldron, or, with twelve men, 1s. 6¼d. per chaldron. However, under the present tentale agreement, a rent of £220 p.a. for 220 tens output only represented a rent of 1s. 1d. per chaldron. Clearly such an arrangement was not in Delaval's best interest since the rental received for each chaldron of coal won was now less than previously levied.

Smith & Sibbit still had other irons in their fire, and it may be that further investigation would reveal a concern of widespread involvement in coal and lime. *A Report of a Visitation to the Greenwich Hospital Estates in Northumberland* in 1805, noted that the limestone quarries, kilns, and farms and Howgate Colliery (possibly at/near Scremerston?) were:¹⁶⁹

... under lease to Messrs Robert Smith, Adam Sibbet, Robert Ancrum, and George Smith for twenty-one years expiring in 1824 at £208. 10s. per annum for the first two years ending 22nd November 1805 and £300 per annum for the remaining years of the term; for which fixed rent they enjoy the farms and land with the liberty of vending a limited quantity of lime, namely 40,000 bolls, each boll containing 32 gallons Winchester corn measure; and for what shall be vended in the last 19 years of the term exceeding that quantity, they shall pay one-sixth part of the price at which the same shall be sold at the kiln; and should the price during the said 19 years exceed ten pence per boll, they are to pay an additional rent upon the whole quantity vended, at the rate of one-sixth part of such increased price. ... With respect to Howgate Colliery mentioned as part of this bargain, it is included in it for the purpose only of supplying the limekilns with coals, and the tenants are restrained from raising more ...

One omission from the Ford Colliery lease became apparent in 1806 when several dangerous pits had been left lying open near the 'common road to the Black Hill'. John Carr thought that Smith & Sibbit ought to fill them in but apparently the lease contained no such requirement.¹⁷⁰

Smith & Sibbit did press on with the new winning and when coal was won from it within the first five years of the lease the higher rent became due. However as Smith & Sibbit informed Delaval on 28 March 1807:¹⁷¹

In Decr 1805 a piece of coal was cut by the new level and we then began to work and did sell some coals but to our great Mortification that coal soon faild us and as we got to the deep the coal declined in thickness till at last we had only 6 or 7 inches in that state we have run a drift along the face of the hill for about one Hundred yards but no alteration nor is there any appearance of its getting thicker so that we have no Marketable Coal to work.

We do not by any means wish to contend with your Lordship about the construction of that clause in the lease but hope that your Lordship will consider the peculiar hardship we labour under and allow the rent for the first five years to continue at the sum mentioned (viz) 150£ as we have first and last expended several Thousand Pounds there and no prospect of ever being reimbursed from this uncommon circumstance of the coal losing its substance when getting below the Crag.

The outcome of this plea is unknown but it would probably have met with some sympathy, for Delaval would have had little or no interest in the concern failing. At the same time Delaval would have been reluctant to take the colliery back in hand. The undated letter referred to earlier¹⁷² was a response to another, which has not survived, from Smith and Sibbit. Delaval asked Carr and Fitzwalter to investigate its contents, making whatever queries they thought necessary:

... but be carefully guarded in every line you say so as not to give the least pretence for it being said I will take the Colliery off their hands which I have by no means made up my mind to do.

Trespass at the mines.

Later that year a familiar problem re-occurred - that of trespass. Messrs Bell & Sibbit had opened out a colliery on the Barmoor Estate to the north and east of the Ford Estate. Bell may have been James Bell who was listed as owing suit and service to Delaval for Ford Colliery and land in 1793 and 1804; he may have been the resident manager at Ford colliery, under Smith & Sibbit.¹⁷³ By the mere act of passing and re-passing with loads of coal between the Barmoor and Ford mines they had created a road where non existed before, passing through a part of Ford Hill Farm. James Laidler the then tenant of Ford Hill had complained of this to

the agents John Carr and T. Fitzwalter who verified the accuracy of his complaint, discharged the people found trespassing and cut ditches across the road of the estate boundary.

The agents informed Delaval that if the road was to continue in use it would militate against the future letting of Ford Hill Farm. They added that when Bell formerly attempted to carry a few loads of Ford coal to his limekiln via part of the Barmoor Estate, Mr Sitwell had refused to let him pass without payment for wayleaves. Even if Delaval sought to obtain wayleave payments from Bell & Sibbit the public would also seek to use the road without payment.¹⁷⁴ Again we do not have Delaval's response, but on earlier occasions he was quite steadfast in challenging trespass of this nature.

Smith & Sibbit in difficulties; Nicholson of Greenlaw Walls Colliery steps in.

Matters were clearly becoming difficult for Smith & Sibbit for some dissatisfaction had been expressed over their failure to pay the advanced rent consequent on extracting coal at the new winning. They re-iterated their version of events to Jonathon Bryers in October 1807, claiming to have done their utmost to obtain coal at the winning at great expense, and they would now willingly relinquish their lease if Delaval would take the colliery off their hands.¹⁷⁵ Carr and Fitzwalter again talked to Nicholson of Greenlaw Walls Colliery and as a result believed that he would offer near £300 p.a., on condition that he also had Gatherick Colliery, on the same terms as Smith & Sibbit. Nicholson's interest in the small colliery at Gatherick presumably stemmed from its proximity to Greenlaw Walls and the possibility that both could be worked together. The agents therefore urged Delaval to persuade Smith & Sibbit to give up both collieries for they believed that they would let better together than separate;¹⁷⁶ even if this failed the agents believed that Nicholson would go ahead with Ford colliery alone on the basis of the existing lease but at an advanced rent. The agents certainly thought Nicholson to be 'a preferable Tenant' and emphasised their opinion that they should try to let both collieries to Nicholson although 'from delicacy in this business we cannot absolutely pledge ourselves that he would take them'.¹⁷⁷ Matters did not, however, proceed smoothly, when for reasons unknown, Sibbit refused to give up Gatherick on any account. He did however surrender Ford Colliery allowing Nicholson to take it on¹⁷⁸ and seems to have concentrated his efforts on Etal Colliery. In fact there were several people interested in taking colliery leases, for in November 1807, Fitzwalter reported that a Mr. Jackson, a Mr Crackett and Mr John Grey of Kimmerston

had bid £800 to lease Etal Colliery from Lord Glasgow, which was £500 more than Bell & Sibbit were paying for it. He also passed on the interesting information that ‘it is whispered that Mr Carr [presumably John Carr the agent] has a hand in Ford Colliery with Mr Nicholson but Time will show whether or not’. Fitzwalter also recommended a new clause in future leases which would allow Delaval’s carts ready access to collect coals from the colliery and not have to wait their turn - ‘It makes no difference to the Tennant but a great diff[erence] to your L[ordship]’.¹⁷⁹

Nicholson soon got to work on Ford Colliery (at an unknown rent) for Carr reported in November 1807, that he was cleaning out the old level at considerable expense. Furthermore Carr claimed that everyone was ‘vastly pleased at his having taken the Colliery as it is expected he will carry it on with vigour’.¹⁸⁰

Early in 1808, Carr reported that he had failed to find out what rent was being paid for Etal Colliery; he understood that Smith & Sibbit had in fact taken it again and were paying a tentale rent.¹⁸¹ Later that year John Hussey Delaval died to be succeeded at Ford by his widow for her lifetime and then, in 1822, by his grand-daughter Susan Hussey, Marchioness of Waterford. Ford Colliery continued to be worked under the successive owners of the Estate, but few details of its operation survive.

In 1811, when moves were being made to renew the Ford & Lowick Turnpike Act, Messrs. Nicholson (Robert?) & White (James?), the Ford Colliery lessees, made representations to the trustees to include roads around the colliery in the renewal Act. In particular, they wanted the road leaving the turnpike at Ford Common and passing by the colliery site to Redscar Ford and on to the Wooler and Milfield road, to be turnpiked, and a bridge to be built at Redscar. It is clear that this road was in a poor condition with indictments on Ford Parish having been brought by Nicholson & White, presumably because of difficulties they had experienced in carting coal along the existing parish road. Indeed it is apparent that Nicholson and White had constructed a new road from the colliery, northwards to the turnpike which they were prepared to keep in repair given a £15 p.a. payment by Lady Delaval until it was incorporated into the turnpike.¹⁸²

Ford colliery at 1817.

A report on the colliery produced 5 April 1817, probably by J. Patrick noted:¹⁸³

Ford Moor Colliery - originally an old pit to the Scremerston Seam or Stony Coal but afterwards the same shaft was sunk to the Main Coal ... then won to the dip by an under level drift. Prior to coal here being driven all away, the works were carried on after the fashion of pillar work. At this time, there was a pitt called 'Ben Oxley's Pitt', from a person of that name who sunk it, [sic] and by so doing he won some extent of coal to the dip of the Day level. To this pit, there was a waterwheel, which, being supplied by Ford Moss with water, it always ran short in the summer months, and they thus from time to time lost water level until they again came to the day level. This Pillar work is now a drowned waste, but there is a barrier kept (between the drowned waste and the pillar work) of about 10 yds thick. Coal wrought, reckoned from the surface, first Stony Coal, second Main Coal, third Cupar Eye (eg Lady Coal), fourth Wester Coal, four fathoms below Cupar Eye. The Wester Coal lies in three beds, each a foot thick, with black grey metal of about six inches thick between each bed. This coal has been wrought at Ford and at Etal. It lies about 12 fathoms below the Cupar Eye seam. It is not generally known, and was first sunk by Andrew Scott and John Stevenson at Ford Moss and Etal. It was won at the latter place and used from ~~1780-1800~~ 1805, 1821. Unlike its neighbour, Ford Colliery is still worked at the present day [at the time of printing the book].

The reference to 'Ben Oxley's Pitt' is confusing but it is possible that the shaft was sunk under Joseph Oxley's agency and perhaps, in a not uncommon manner, he named it after his son.

On the same document, but written in a different hand, is a note concerning the finances of the Colliery. It was rented at £250 p.a. ('formerly £300') in 1823 and the payroll was as follows:

1 Steward	1 guinea per week.
Overseer	but he sends out coal at prime cost for his wages. i.e. paid in kind.
12 Hewers	3s per day each for 55 bolls worked. (£561 7s 0d. per year).
6 Drivers } or Putters }	1/6 per day each (£140 8s. 0d. per year)
2 Banksmen	2/6 per day each (£78 per year).
1 Brakesman	2/6 per day (£39 per year).

The use of six 'Shetland Galloways some not 3 feet high', cost 10s. 0d. per week each, and the total yearly expenses were £1,136. 7s. 0d., but the sale of coal brought in £4,125 p.a., the output, exclusive of allowances, being 198,000 bolls valued at 5d per boll. A six-day week was now being worked, as opposed to the five day week in 1802, and the total output inclusive of allowances, was 205,920 bolls, leaving total coal allowances to the overseer, and possibly to the miners, of 7,920 bolls, (about 4 per cent of output). It was also noted that as the roof was a

‘soft blue metal’, this all had to be removed, (i.e. ‘way-going work’), for otherwise the hewers would not be able to achieve as much as 20 bolls a day

The 1820 Strike.

In the meantime, in 1820, there had been a strike (‘illegal combination’) at the collieries near Berwick, and the men at Ford were involved. As reported in successive editions of the *Newcastle Courant*, the strike was aimed at getting the colliery proprietors to alter the time of binding, which had for some years past been at Whitsuntide, to Christmas, and also to allow the miners an advance of wages. The strike had begun on 3 January, and:¹⁸⁴

The coal works at Ford, Greenlawalls, Thornton, Shoreswood, Murton, Lickar, and Berwick Hill, were deserted: the men rambled about from pit to pit, compelled those who were inclined to work to join them ...

The men at Scremerston refused to listen to the strikers and appear to have stayed down their pit. The Berwick Justices were called to Scremerston with the aim of persuading the strikers to go back to work, but to no avail. A meeting of representatives of the strikers and owners was held on the following morning, but no agreement was achieved. Then, or a little later:

Four of the leading characters concerned in this combination have been apprehended, and on the 5th inst. were sent to the House of Correction at Durham, guarded by six constables, and also by a military escort for a short distance, to prevent their rescue.

This was apparently done ‘as a caution to the rest’. At the same time, the magistrates swore in a considerable number of special constables to ‘keep the peace’ and took measures to ship coal into the Tweed from Blyth, and to supply those who needed it ‘at prime cost’. The *Newcastle Courant* was in no doubt that the miners were simply being greedy:

The conduct of the pitmen deserves the public censure as each can earn about a guinea a week at the present wages, and their combination at such a season as this is highly criminal.

Whether all or any of the coalowners agreed with this sentiment is unclear, but the Ford miners were the first back to work, probably on 10 January, after they were offered an advance in their wages.¹⁸⁵ They were followed by those at Felkington and Shoreswood, ‘belonging to Mr Robert Sibbit, of West Allerdean’ who were also offered an advance. Elsewhere the strike continued, and at Scremerston, where some of the miners must have joined the strike, returning

miners were escorted by the military. Nine of the 'principal ringleaders' of the strike were now in custody. The *Newcastle Courant* was evidently satisfied with this turn of events:

There is ... no doubt but that the difference between the Coal-owners and the workers will be adjusted in a few days, as three of those collieries are at work, and will of course strive to monopolize the trade; besides so many of the principals in this combination being in custody, the alternative intended to be proposed, whether they will go to work again, or suffer their comrades to be sent to the house of correction, must have a great effect in settling every point.

Contrary winds meant that coals did not reach the Tweed from Blyth until 15 January, but by the time that it was being unloaded, two days later, the strike was virtually over.¹⁸⁶

Ford Colliery 1820 – 1883.

Apparently the Waterfords undertook new sinkings to below the main seam, and won coals to the dip by an under-level drift. Nicholson & White were still leasing Ford Colliery in 1828, and Patrick Thomas, living at Ford Moss, was their steward. Carr, Grey & Co. were lessees of Etal Colliery, John Carr, agent for the Marquis of Waterford, presumably being one of the partners.¹⁸⁷

There is little further detailed information on the colliery for the next 50 years, although there is no reason to suppose that it ceased production at any time. A paper presented to the Berwickshire Naturalists' Club between 1831 and 1841,¹⁸⁸ noted of that area in general, that explosive gases were rarely met in the mines, for they were too shallow and candles were still universally used. The workmen, probably at Greenlaw Walls, appeared healthy, men being paid 20s. 6d. per week, and boys of 16 years 10s. per week. Plans of 1838, to link Barmoor to Flodden with a railway passing close to Ford Colliery, and expected to carry 70 tons of coal per day, as well as lime and freestone, came to naught; likewise a railway scheme of 1852, to link the colliery with the Wooler to Coldstream turnpike, near the tileworks, never got off the ground.¹⁸⁹ However, a significant geographical expansion at the colliery seems to have taken place around 1841 following the proposal for a new shaft as indicated in a 'Section of the coal in the White Hill'.¹⁹⁰ The Cupar Eye (or Lady) seam and below it the Western coal is shown penetrated by a shaft taken to 2 fathoms below the latter to provide standage for water and making the total depth of the shaft some 35½ fathoms. This 'Engine Pit' was to be sunk within 24 yards of the Barmoor Estate boundary and would allow the coal under some 64 acres of the

White Hill to be won. The section had been prepared without the advantage of borings but was based on existing knowledge of the thickness, dip, and separation of the known seams. It seems likely that the shaft was sunk and came to be known as the Moss Pit where the remains of two engine houses still remain at the north side of the Moss. Although the first edition 6 inch OS map implies that the only working pit was at the 'Temple Pit' site (see Fig 11), the Moss Pit must have been sunk soon after.

Another proposal of the same year was for winning the Blackhill seam by driving an underground inclined plane from an un-named shaft below the Main coal, to cut through the dipping Main, Kiln, and Blackhill seams¹⁹¹; it is not known whether this scheme was carried out.

According to the Berwick Advertiser, Lord and Lady Waterford visited the colliery in September 1842, shortly after they were married.¹⁹² The same source suggests that the colliery was in hand by 1855, employing over 70 men, rising to almost 100 hands just three years later, surely the highest number ever in its history; the 1861 census returns indicating a number of 12 year olds being so employed. Seemingly there was then (1855) a school at the colliery village under a teacher named John Kidd, with 50 pupils on the role, and also a Primitive Methodist chapel.

In his article 'On a Part of the Carboniferous or Mountain Limestone Series of North Northumberland' published in 1860-61,¹⁹³ E. F. Boyd implied that the Fawcett coal was being worked at Ford and that formerly the Blackhill, Cooper Eye, Cancer and Wester coals had been worked. Boyd also gave a description of the mode of working adopted throughout the district which probably applied well to the Ford Colliery. (See appendix V)

Robert and George Brown take the colliery.

The colliery was again rented out, in 1883, to Robert and George Brown of Eglington. The lease covered 'Mines or seams of coal opened and unopened known as Ford Moss Colliery', also cottages (except for five), Engine house, Blacksmith's shop, Joiner's shop, stables, fixed and loose machinery. A schedule of plant and machinery included three Engines and Boilers, 16½ fathoms of pumps, two winches [presumably jack rolls], one horse gin, two pit cages, ten

trams, one cart weigher, one tub weigher, one set of boring rods, 3 ton rail plates, two anvils, two vices, two hammers, six dozen nail tools, six swages, two circular and one cross cut saw, a lathe, grindstone, bellows, set of taps and dies and a compass.¹⁹⁴

The Browns were soon to experience problems, not this time in working the colliery but in selling the coal won. A note dated 21 October 1889, observed that they had experienced bad trade since the Alnwick to Cornhill line had been fully opened in 1887, enabling cheap coal to be brought into the area from South Northumberland. In the year that the line opened the output from Ford Colliery had been about 3,200 tons, but by 1889 it had fallen to 1,334 tons, and only 12 men were employed - five hewers, three putters, one banksman, two shifters and one driver at bank.¹⁹⁵ It would seem that the main working shaft of only 6 feet diameter was being worked by horse gin. It was an old shaft, 'ridded out', 19 fathoms deep and situated about 300 yards to the rise of 'Stead Pit', with a second upcast shaft opened out between the two to assist ventilation (see Fig 11). However, there was less coal at this pit than had been expected for they had found many old workings.¹⁹⁶ The Browns were not, however, about to give up, but rather to re-open another old shaft further up the hill to work the seam known as the 'Diamond (Hardy or Stony) Coal' (ibid.). Their success or otherwise in this venture is not known, but by 1897, Messrs Bolton Brothers were the colliery proprietors at Ford Moss.¹⁹⁷

Thomas Snowdon leases the colliery; the Joiceys acquire the estate.

When Joicey acquired the estate c.1906, he did so by outright purchase with money gained from extensive coal mining and engineering businesses in County Durham and Newcastle respectively. In contrast with those concerns, Ford Colliery was small fry, but nevertheless the Joiceys kept it going for a while longer. Just prior to its acquisition by Joicey, Thomas Snowdon had taken a lease on the colliery for seven years from 1 January 1904, the main working pit was apparently at the old Wester Pit, shown as 'Old Pit on the first edition 6 inch OS map but indicated as the active pit on the second edition. According to George Gray of Milfield, agent to Lord Joicey, and perhaps to the Waterfords before him, Snowdon was 'a very good and intelligent man', an under viewer of one colliery in County Durham and a lessee of another. Lady Waterford had given him financial assistance towards development work, in particular meeting half the cost of the machinery needed to de-water the pit.¹⁹⁸ However

Snowdon soon ran into difficulties and in 1907, in his own words, was 'still very unfortunate at Ford'.

Ongoing water problems.

Steam powered pumps and winder were being used, and although this is the first direct reference to their use, field evidence indicates a much earlier introduction. However, the main problem was the boiler feed water which was taken from the mine at 'No. 1 pit', probably the site where the chimney still stands (see Fig 10) and was full of a 'sulphurous sediment' which formed a thick coating on the boiler plates and tubes such that they very soon burned out. This sediment would almost certainly be ferrous sulphate derived from the iron pyrites in the coal. Thus on 11 July 1907 Snowdon wrote from Cockfield in County Durham to George Grey:¹⁹⁹

We got the water pumped out of the No. 1 Pit practically down to the Diamond Seam when the tube of the Winding Engine boiler began to leak & the Vertical also shewed signs of weakness. I got Messrs Black & Sons to repair the leaking tubes & patch the others & as the pump had to stand the water soon returned to its old mark. We began again & other tubes shewed signs of leaking. We have been keeping the pump going with the vertical boiler only & Mr Black has been replacing the whole of the tubes with new ones. Now I received word yesterday morning both from Mr Black & my overman to say that the vertical is done & not worth repairing. It was in capital working order when I got it but has entirely failed owing to the use of the water at the No. 1 Pit.

Clearly there was little point in replacing the tubes for even new tubes would have a similarly short life. The steel piston rod of the pump was also pitted and consequently the glands could not be kept tight but Snowdon had ordered a replacement piston rod of manganese bronze. He was uncertain how or whether to proceed for the ferrous sulphate problem seemed insurmountable:

I am nearly tired out with the place as I have spent so much money, nearly £3,000.

But I dont want to give in till I've tried the last expedient, because I think if a good quality house coal could be found a fair return may be looked for particularly at the present prices.

So, with your permission, I propose commencing at the Wester Pit, pumping the water out & cleaning out the shaft which contains a few fathoms of dirt down to the Wester Seam. The quantity of water flowing into the Water Level from this pit would fill an inch & a half pipe. The old water level runs within 25 yds to the east in the Cooper Eye Seam so that the water from the Wester should only be to lift up to the Cooper Eye.

In making this suggestion Snowdon was hoping that none of the Wester coal had been worked to the dip (i.e. east) of the pit although that to the rise had been worked out. If he was correct and also if the coal was of good quality then he would continue with it and thereby perhaps also win the Cooper Eye Seam at the No. 1 Pit. Essential to this plan was to clear out the old level as far as No. 1 Pit for it drained all the rise-workings and outcrops of the various seams, and there did not seem to be much water beneath it; Snowdon had in fact commenced cleaning out the level and had reached the Cooper Eye Seam at a point below the Kimmerston road. The next 250 yards, to the Pit near the Blue Row, was blocked up and would need cleaning out. From that pit Snowdon had already driven 50 yards of new level at 4 feet square, heading for No. 1 Pit and if the Wester coals proved satisfactory to the dip, he would clean out the rest of the level to link up with the new one to No. 1 Pit where he would erect a pump just to raise small amounts of water from the Wester seam to the Cooper Eye drainage level. The existing steam pumping plant (at Wester Pit?) could then be, and probably was, abandoned.²⁰⁰ (See Fig. 10).

A letter of 12 July 1907, from George Grey to Lord Joicey, outlined the broader situation facing Snowdon in response to his suggestions:

... Lord Waterford has helped him a good deal, but so far, as you will see, Mr. Snowdon has done little or no good for himself. The last help given him was the payment of about half the cost of certain machinery, to enable him to unwater the pit. The amount of this payment was £200, and in the event of success, this was to be paid back in annual instalments.

The workings at Ford Moss are very ancient ones, even as ancient as to have supplied the Monks of Lindisfarne with coal. Like a large number of similar, small land sale pits, this pit has been "howked" rather than worked and absolutely no plans kept. We know however that there is a considerable amount of coal still lying unworked.

When in work the Colliery is undoubtedly of considerable benefit both to the Castle, and the Villagers, and the Farmers on the Estate and around. But whether that benefit would be commensurate with the cost of clearing the pit of water is problematical.

Joicey may have been influenced by the suggested benefits to the estate, for Snowdon carried on for a while longer.

Ford Colliery finally closes.

The rent at this time appears to have been £46 p.a., presumably reflecting the difficulty of working the pit, and Snowdon's expenses on development work. It can be presumed that Snowdon continued with this plan for a while but he ceased working it in 1914¹ and finally sought to terminate his lease as from 1 January 1919. George Grey accepted this proposal on behalf of Lord Joicey and recommended that Joicey discharge arrears of rent totalling £141. 7s. 6d., accrued since 1914. Snowdon was asked to sell whatever machinery he could and from the proceeds repay the sum of £440 which had been advanced at various times to help development works.²⁰¹

A survey of some of the cottages at Ford Moss was carried out in 1915, perhaps with the intention of assessing their viability for continued occupation.²⁰² Their precise location is not specified but other map evidence,²⁰³ (See Fig. 11), suggests that they were either the short row near the Stead pit, just south west of the Moss pit where the remains of the engine houses still stand, or a similar row of eight cottages near the Temple pit. (Fig. 12) The survey indicates a single storey terrace, 8 feet 6 in. from ground to eaves, with single entrances from the rear and windows on the south-east (front) elevation. Originally the terrace seems to have consisted of four cottages, each with a kitchen with rear offshoot and a bedroom, but by 1915, one of these had been split and shared by its neighbours. The original floor areas had been 15 feet 3 in. by 12 feet for the kitchen, and 16 feet by 15 feet 3 in. for the bedroom, but the pre. 1915 arrangements had been accompanied by interchanges between some bedrooms and kitchens; one of the offshoots had 'slates off here' suggesting a degree of dilapidation. At the south-west end were 'stoves', in space about equivalent to about three cottages and with no windows shown in the elevation, but it is conceivable that these to had once been cottages.

Although oral accounts record that the colliery worked on through the First World War,²⁰⁴ the documents noted above suggest otherwise,. It remains possible, although unlikely, that the Joiceys continued to work the Colliery for a few years after 1917, for memories of the first world war period are usually vivid.

Post script - memories.

¹ Reid's *Handy Colliery Guide*, (1913) has Thos Snowdon of Whinthorpe, Cockfield, County Durham as owner, with B Pescod as mine manager.

Mrs Thompson and Mr Prescott.

In 1968, more than half a century after the mine closed, there were still people at Ford who could remember it working. A group of local school teachers interviewed and tape-recorded three of them. Mrs Thompson, then aged 74 and caretaker and guide for the old Ford School, remembered cart loads of coal being delivered to the village being led by 'farm people', but coal was also delivered to Lowick and Wooler. A Mr Prescott was the last manager to live in the manager's house. The pink gravel on drives around the castle and the village was said to have been extracted from the colliery.

Mrs Mason.

Mrs Mason lived at Blue Row on Ford Moss, being the last family there before moving to Ford Village. Her father was reputedly the last miner at the colliery. In 1968, Mrs Mason was living at the Vicarage, Doddington. She was born at Blue Row in 1912, and recalled that the last coal was taken out in 1920. The main shaft had once been at the 'Middle Pit' [Temple Pit?] about half way between the present chimney site and the engine house site. However, at some time a sudden inrush of bog-slime had caused this pit to be abandoned, the workmen in their extreme haste leaving 'Lady Waterford's tools' behind them. The chimney site formerly had a steam winder and wooden headstock used both for coal winding and man riding. Formerly there had been a school near this site and Mrs. Mason's father had attended it but when a new school had opened in Ford Village the old school was converted into a mission chapel. Miners who used the old level to gain access to the workings were said to have to walk sideways because of its narrowness. Two cottages built in the Waterford style near the Kimmerston road had been converted to one house for Mr Prescott after he left the hill top site. At one time there had been some 32 cottages around the Moss, mainly for workers at the pit, but (according to Mrs Thompson) as the colliery declined, other people from the area were allowed to rent them. For example the 'under footman' at the castle occupied one of them when there was no room at Ford Village.

Blue Row cottages were single-storied but of varying sizes to accommodate different sizes of family. Mrs Mason lived in the third house from the quarry end and they, like others, kept pigs and a family cow in outbuildings to the south west of the Row. Water had to be brought in

pails, two at a time using a 'gord' or iron hoop, from a well down the bank side near the road. Each cottage had a range with oven and boiler. The nearest shop was in the wood above Ford Village but this was replaced by a new shop and post office built by the Joiceys. However Robert Lyall of Ewart provided a mobile grocery service. When the mines closed, all of the shafts were covered or filled in with railway sleepers and mine waste so that the pit heaps which Mrs. Mason remembers as being 40 to 50 feet high have now gone. A childhood delight had been to slide down the heaps on the pit sleds that were still being used underground.
[More to be added - see FdCollOralHist.doc]

Mr James Marshall.

Mr James Marshall, aged 73 years in 1968, had been employed by the colliery owners to lead coal to Ford, Lowick, and settlements in the outlying areas etc. At the age of 13 in 1908, he was paid 7s. 0d. for a 6 day week of 12 hours each day. Horse-drawn carts of 10 cwt. capacity delivered a load of poor grade 'Cobbles' for 4s. 6d., whilst the best grade sold for 12s. 6d., both for ready money; one cwt. batches were carefully weighed at the mine using a conventional 'beam type' weighing machine to deal with 1 cwt batches. Coal was still being taken both from shafts and drifts but the yield was quite low and much of the coal was of a slaty nature. It was however screened below a covered way running alongside the shaft head where hand picking and riddling took place. The seams being worked were only about 3 feet high, and the working was very wet. Mr Marshall also stated that the colliery closed in 1920 or thereabouts. The school at Ford Moss took about 90 children, while that at Ford about 150.

Mr Mason of Kirknewton.

An undated document held at Ford Castle reports an interview by 'two Grammar School Boys' with Mr Mason of Kirknewton. He recalled that shafts were descended using a looped rope system, two men at a time. On one Good Friday a man fell out of his loop and from then on Lady Waterford refused to allow Good Friday working. Originally the winding was performed by horses [whim gin] but later by a donkey engine which powered a 'kettle drum' at the shaft bottom. He claimed that pillar working had been introduced by Lady Waterford and that pit props were unpopular. Underground the coal was hauled on sledges by men wearing appropriate harnesses. The galleries continued out under the Moss. Although the colliery had

its own smithy the mining tools were supplied from Ford Forge. Likewise bricks were obtained from the tile works and gravel from Linthaugh. At one time some 200 horses and carts were employed leading coal, sometimes as far as Kelso - a two-day journey. Mr Mason claimed that the colliery closed around 1915-16. It suffered from bad air, especially when the wind was from the south, from manpower shortages during the war, from flooding (5 men were drowned at Duddo Colliery) and from new and ignorant management [Mr Snowdon?]. At closure some of the miners who were then working 8 hour shifts and being paid 6s. 6d. per day for 2½ ton coal extracted per shift, went to collieries at Longhirst, Amble, Broomhill etc. Three shafts were filled in but four were only covered over. There were 32 houses up to the edge of the Moss. The school at Ford Moss had originally been built as a pub but Lady Waterford put a stop to that and it was converted to a school. In 1887, some 15 miners had worked at the colliery, some boarded locally.

According to the *Northumberland Gazette* of December 1965, a survey carried out by a Mr Chapman of NCB Amble estimated some 40 shafts between 6 feet and 10 feet diameter at the site.

Trans Berwickshire Naturalist's Club, 1834-x, p161, a meeting at Ford made reference to a talk at the BA by Mr Milne, on the Berwick & North Durham Coalfield.

Initial report by RF. This expanded revision by SML, June 1992.

Some of the following not yet used.

2DE 3/5/40

2DE 4/61/1 10 December 1759, Robert Hopkins at Crookham to Delaval, re. Gatherick Quarry and colliery.

[Punctuation and hyphens added]

[Torn section]... Faray has ben with me and tells me he has amind of tak your Quarry at Gatherick but Desiers a weeck trile [trial] - there is a lot of Turnes Geffras friends dus all they can to put him of - they have advised him to a Quarry in Scotland and to another in Bambro Shier. I was tould this day in your House at Crookham that James Tomson and Thos Tod of Ford was boring at Gathick Colery trying for Coll with an intent to tacket and to serve Turney Gefires lime kiln. I finde that Wood End Colery is all moste out of Coll.

2DE 2/26: 1

2DE 11/3/1 22 March 1764, William Allen [possibly at Ford] to brother John Allen at Hartley, re Ford Colliery.

... John, I have ridded out one of the little coal pits, and I find the seam of coals to be there is 6 inches of coal binding left for the Rouff, 1 foot of coals, 10 inches of stone, 1 inch of coal, 4 inches of mettle for the cirven, [kirving?] 6 inches of coal so goof reputed. I think that the coals will suite at 3d. per boule, so as I cannot as yet get any wrought for want of ore[?] I propose to sink a pit at the face of the hole coals. I have consulted Mr John Hall with it and he approves on it.

I shall begin to sink this day. I wish [tear] well of the [tear] ls is [tear] e leading [tear] iht that [tear] agin to cull [tear] ith so the [tear] Being will soune [tear] son if that the men was kepted at them. Let Sir John know that the supposition that I gave him in at Hetherslaw less money will worthe[?] the work.

	Ft	ins
Coal	0 0	1 6
Stone	0 0	0 10
Coal	0 0	0 1
Mettle	0 0	0 4
Coal	0 1	1 3

2DE 2/1: 12 several, 2, 3

2DE 2/4: 2x3

2DE 2/14: 3, 7

2DE 2/18:1, 1a, 6-8, 10, 14, 17, 22-35 inc, ?50

2DE 2/26: 1

2DE 2/27: 1, 4, 5x2, 6, 8x2, 9, 10x3?, 16x3?, 21, 22, 23x3, 24x2, 25

2DE 2/35: 2, window cess on the banksman's house, 9d.

2DE 2/37: 2x3

2DE 2/38: 1x8, 2x10, 3

2DE 2/45: 3

2DE 2/47: 1

2DE 2/56: 5

2DE 2/57: 2x2, 3x6, 4x8, 5x9, 6x3

2DE 2/58: 1x2, 2x2

2DE 2/63: 1 coal to kiln

2DE 2/64: p5x3, pimen buying wheat

2DE 2/65

Debit:

6 October 1770, Thomas Rutherford, Timber, 4 13 5

2 November 1770, Mr Proctor, Oak Timber, 1 4 0

Mr Culley, Oats, 1 4 0

7 September 1771, Mr Culley, Oats, 0 10 6

4 October 1771, John Bilton, carpenters work, 0 7 0

24 February 1772, John Procter for wood, 9 13 4

1 March 1772, leading etc., 1 1 0

20 May 1772, Ralph Forster for Roaps, 8 13 3

Per Contra:

All coal bills totalling £75 6 10½.

24 March 1772, Ralph Lowery for mason work at the colliery, 1 12 0

3 April, ditto, 2 0 0

6 April, ditto, in part 3 3 0

17 April, ditto in part, for mason work at Colliery Houses, £4.

Debit:

22 July 1772, sundry expenses for viewing he colliery, 1 4 4

20 May 1773, William Ford for flannel, 12s 4d

14 July 1773, Ralph Forster for roaps, £10

27 September 1773, John Belton in full for the Drift, 4 2 7

21 October 1773, Mr Rutherford for Timber, 2 7 5

25 December 1773, to sundrys at the High Roads

to one pair Gold Scales

1774, John Liddle for leading, 15s 6¾

21 March 1774, John Bruce for leading, 4 7 6

17 April 1772, George Burn in part for carpenter work at the colliery buildings, £5

To Todd & Young in part at the colliery buildings, £4

1 May, Joinery work at the Colliery Houses, 1 14 2

Ralph Lowery in part for mason work at the colliery buildings, £3

To Todd & Young in part for masonry work at the colliery houses, £7 13 9

16 May, George Burn in part for carpenter work at the colliery houses, £3

Balance paid Ralph Lowery in full for 4 colliery houses, £7 13 9

20 May, Ralph Foster for timber the colliery buildings, 8 19 7

12 June, Sundrys for work at the colliery houses, 5s 0d

Ralph Lowery in part for the colliery Houses, £6

Todd & Young in part for masonry work at the colliery houses, £4

John Bruce in part for leading at the colliery buildings, £6

Mr Rutherford for timber the colliery buildings, £12 5 8

13 June, John Liddle for leading at the colliery buildings, £6 0 0

26 June, John Rule Tying the colliery houses, £3 6 0
 Leading at Ditto, £3 1 10½
 Ralph Lowery in part for mason work at colliery Houses, £3
 George Burn in part at ditto, £5
 Todd & Young the ballance of there account in full for work at ditto, £7 8 6

27 July 1772, leading at the colliery houses, 10s 9d
 Ditto, ditto, 1 1 6
 George Burn in part for work at ditto, £3 2 0

7 August, To leading at the colliery houses, 1 1s 6d
 To George Burn the ballance for carpenter work at the colliery houses, 8 12 7

8 September, 1772, leading at the colliery houses, 16s 1½d

29 September, To Todd & Young for mason work at ditto, 15s 8
 John Bruce in full for leading at the colliery houses, £15 16 4

13 November 1772, John Rule for slating at the colliery houses, 1 12 0

1 December 1772, John Rule for slating at the colliery houses, 6 10 7¼

1 December 1772, cash for 18½ Buslells Coal lead sold Landle & Chambers, £5 3 7

30 December 1772, Fra Collingwood for glazing the colliery houses, 7 4 8

20 February 1773, To Ralph Lowery in -art at the colliery, 3 4 0

20 March 1773, To mason work at the Colliery houses, 4 0 3

2 April, 1773, To leading at the colliery houses, 2 4 0

21 August 1773, sundrys at Colliery houses, 1 7 5¼

2 October 1773, sundrys at Colliery houses, 1 6 4

2DE 2/68: 2, 4x2, 5 foot, 6

2DE 2/69: 2, 3x2

2DE 2/70: 2 April 1777, £75 rent from James Landlass

2DE 2/71: 19, 21, 24, 27, 30x3, 43, 44Ax3, 44, 46

2DE 2/73: 6x2, 20x2, 28, 66, 67, 74, 75, 89, 93, 98, 99, 100, 101, 123, 124, 125-128

2DE 2/75: 3

2DE 2/76: 1,

2DE 2/77: 2

2DE 2/78: 4, 7 (Coll Hill)

2DE 2/79: 1 (Coll Hill)

2DE 2/81: 2

2DE 2/82:3

2DE 2/84: 5, 9

2DE 7/6/1 wages and accounts, 1756-7

2DE 19/36: 2 foot, 32

2DE 36/12/30

NRO 1216 B2/1/2: p1, 7, 9, 11

NRO 1216 B2/1/6/2

NRO 1216 B2/2/2: p4

NRO 1216 B2/2/3: p2x7, 5x7

NRO 1216 B2/4/1: p36f, esp 47

NRO 1216 B2/5/10/1: p1

NRO 1216 D2/3

F18, 19

For 3/28: 120 foot

East/8: 20

Appendix_1 Ford Colliery in 1724 (2DE 52/1).

An Estimate or View made and taken the first of August 1724 of the Utensils belonging to the Colliery of Ford and of the open or working Pitts or Shafts there by Prideaux Selby, John Hall, John Thompson, and Ra Smith, viz.

One Pitt almost wrought out	
One half wrought	
One sunk to the Coal one and Twenty Fathom	
One sunk Eight Fathom and an half	
One sunk Tenn Fathom and an half	
Bore Rodds Sixteen Fathom and an half Two brates Seven } Chisells Three keys the Ri-- [illeg] and Sludger }	£0- 8-9d
A New Ginn	5-00-0
Thirty Fathom of old Rope	0-10-0
An old Ginn with a new overtree	4-00-0
The Ropes Sixty Fathom	3-00-0
Two horse Tubbs and a Kettle	1-00-0
Twenty Fathom of old Rope	0-10-0
The Row Tree [Jack Roll?] Standards and Settle boards	0-10-0
Another old Row Tree with Standards	0-10-0
The Standards and Iron of another Row Tree	0-05-0
Seven Sinking Picks and Eight wedges	0-10-6
Two great mells 30lb weight	0-15-0
Six Drifting picks	0-06-0
Seven Coal mells	0-14-0
Other Two Coal mells	0-07-0
Twelve Shovells	0-09-0
Nine Corves	0-13-6
Six hooks with two Chains	0-09-0
Three Eagers and a Mel	0-02-0
The Iron of Three old Kettles	0-03-0

[Signed] Ja Newburn
Elisha Richardson

Appendix 2a. NRO 1765/69 [On reverse - 'Colliery - Browns opinion']

At Ford the 8th of July 1762, Present Sir John Hussey Delaval, John Allen and William Brown.

Resolv'd.

To begin at the S W end of the old level, and clear the same of all Stones and Rubbish, and secure the same when clean'd, and also secure the Staples with good Scaffolds or Conduits of stone that a man may pass & repass thorough the same; to be continu'd to the N.E. in Stone or Coal Drift until it meet with a Thrust said to be in the workings of the Main Coal.

And whereas it's evident there is a downcast Dyke [fault] to the North, that the said water levell Drift goes thro', and in all likelihood a Quantity of Main Coal standing to the East of the Level above the said Dyke that is whole; Therefore when the Drift is clean'd that far up, attempts must be made to work that Coal.

When the said Drift is clean'd up to the North side of the Dyke, then to be consider'd whether it is more advisable to win the Lady Coal by a Drift drove to the West at Water levell thro' the Stone, until the same cut the Lady Coal; which Drift in all probability will be a 100 Yards, and will win abt. 100 yards breadth of the said Coal dry, below the old works, or to win the same by sinking immediately from the Main Coal level to the Lady Coal, and driving a Drown drift to win the same.

The Main Coal may also be won notwithstanding the Thurst in the water Level by drifting to the East of the level in Stone, and sinking to the Coal at the face of the said Drift, and drawing the water into the Level, while a Coal drift is driving to the Dip of the Thrust till the same be at the face of the whole coal to the North. Lastly as there are whole Coal that now may be wrought near the end of Broomridge-hill in the three quarter Coal, and as by calculation it appears, some profits may be made by working the said seam with 4 Men. That men may be got with all speed to work the said Coal, and also that the cleaning the Drifts may be begun with all speed.

Appendix 2b. 2DE 6/3/17 17 October 1762, William Brown's report to J. H. Delaval.

As I have not had an opportunity of seeing you since I was last in the North, and at Ford. And as I find your being at Seaton is uncertain, I thought it my duty to Give you the State of that Colliery notwithstanding what I desired Mr Allen to say to you about it.

And first I found the Level clean'd a considerable way up till it came to a place where the strong Stone had determin'd the undertakers to leave a yard of Level; And a little above that place I found they had for many yards drove their Levels about the same height below Level as they had, had little water there, so that for 'twixt 2 and 300 Yards their Drift is drown'd about a yards w'ch may be laid dry, and made passable if that piece of lost level were taken up, it seems to be upon the Mean 50 Yards long, and one place with another half a yard thick; if that were done would be able to go in at the low end of the Drain, and come out at the Hill end Pit near the place where it was propos'd to drain the Bog.

At present can get down the said Hill end pit, and the Coal is drown'd about half its height there; therefore there is an easy and expeditious way to win the Main Coal there (Viz) by driving a Stone drift from the said Hill end pit, and from the top of the water as she now stands in her to the East or full Dip of Colliery until the said Drift be 60 yards to the Dip of any Works there, then sink a pit upon the said Stone drift, and the said Drift will carry of such sinking feeders into the old Level made more clean by taking up the Stone above-mentioned. Then sink the said pit from the said Drift to the Coal, which will be about 5 fath's more, and fix a power to raise the water that breeds there into the Level, where it will go away without any further trouble.

The only Machine to do that is the Crank Ginn that was used at Hartley, and which is near compleat. You have a Crank, wheel, Bobbs etc etc perhaps 10£ will make her as good as ever, and may depend I'll make the same Ginn that lifts the water into the Level, draw the Coals to the Bank.

The Stone drift propos'd will likely cost 10s p yard = 30£. Sinking the pit 25 or 26 fath's will probably cost 25£. leading the Ginn and repairing her 20£ more, together 75£ or 80£ which dare say she will not exceed. The whole may be compleated against next Spring, and will Winn at least 12000 Newcastle Chalders of Coals, if 1/3 be lost in pillars, nor do I think the Water to lift will be considerable as the wastes to the rise will in a great measure be drained, it will also win the whole Coal to the North that is now Drown'd by the thrusts brought there by Irregular working.

[Delaval has added:]

70,000 Fother at 0-1s-0 per Fother next may be extended into the Moss by a drift, a pit sunk thereupon, and the water lifted to it by the Crank.

Appendix 3. Cost of working Ford Colliery etc. 1762 to 1764 (NRO 1765/68).

The Colliery Dr. from July 12th 1762 to June 29th 1764

	s.	d.
the Charges on working Coals	£326	1 1
the Charges on the New Winning and other Insident Charges	<u>298</u>	<u>2 8</u>
	624	3 9

Rec'd of Mr Jno Hall in part My wages	35	15	10
Rec'd of Mr Thos. Dobison in part of my wages	<u>6</u>	<u>0</u>	<u>0</u>
	665	19	7

	£	s	d
By Cash Rec'd for the Coals	406	5	7
By Cash Rec'd of Mr Jno Hall}			
to pay the workmen }	<u>217</u>	<u>18</u>	<u>2½</u>
	624	3	9½

To An acc't of Work Wro't from June 29 to An with Sept. 28th 1764

the Working Charges and }	£	sh	d
other Insident charges }	70	5	0½

Contra To June 29th 1764

By Cash Rec'd for the Coals	406	5	7
paid to Mr Jno Hall the out standing Debts	<u>31</u>	<u>14</u>	<u>10</u>
	[438	0	5]

Debts standing out:

Sir Jno Hussey Delaval Bart to Burne lime for the Castle	22	7	1
[Do.] for Flodden	9	18	0
for Crookham Westfield	3	19	4
for Headerslaw	1	2	8
Thos Delaval Esqr	39	12	9
Jno Liddle	3	13	10
Thos Paddison	0	1	9
Elixander Davison	0	2	0
Ralph Compton	0	7	9
Jno Burne	0	1	6
James Thoburne	1	00	10
Thos Todd	0	5	4½
Mr Jno Hall	<u>6</u>	<u>19</u>	<u>1</u>
	£527	12	4½

To Coals wrought from June 29 to Sept 28th 1764

£ sh d

Appendix I Coal Seams and Sequence at Ford Colliery - (from Boyd, (1860) and Gunn, (xxxx))

Blackhill Seam.

Named after the hill to the west of Ford Moss but also known as the Scremerston Main Coal.

Top Coal	1ft. 10in. to 2ft. 8in.
Middle Stone	6in. to 9in.
Ground Coal	6in. to 9in.

Near the base is sometimes found a pyritic band.

Kiln Coal - 2 to 3 fathoms below the Blackhill Seam.

Also called the 'Diamond', 'Hardy', 'Stony' or 'Little' Coal.

Said to be of indifferent quality being hard and coarse burning. Roof and floor of sandstone and the seam is difficult to work. Hard thill for kirving.

Top Coal	11in. to 1ft.
Middle Stone	1ft. 2in. to 1ft. 3in.
Ground Coal	1ft. 3in. to 2ft.

Main Coal

Also called the 'Bulman' or 'Cancer' coal.

Produced one of the best household coals and was said to be a good steam-raising coal but a tender, shale roof made working difficult. The bottom caunch was cut in the shale below the seam. In 1860 the seam was said to be exhausted beyond the ordinary drainage of the engine power used at Ford and was in fact only being worked at Greenlaw Walls.

Top Coal	1ft.	
Chalk Stone		1in.
Splint Coal	1ft.	3in.
Black Stone		7in.
Splint Coal	1ft.	
Chalk Stone		1in.
Smithy Coal		8in.
	4ft.	8in.

(Appendix I cont.)

Three Quarter Coal - about 18 fathoms below the Main Coal.

Also called the 'Stone' Coal.

Good quality coal for household and steam raising. Also withstands weather and carriage very well but a weak roof and heavy labourage payments make it difficult to work. Kirving is made in the shale below.

Boyd and Gunn differ considerably in their sections.

Boyd		Gunn	
Top coal	1ft. 1in	Coal	9in.
Black Danty Band	4in.	White freestone	2ft.
Coarse Grey Coal	6in.	Coal	6in.
Bottom coal	1ft. 1in.		

Gunn probably more accurately represents the situation at Ford Moss.

Note: An agreement of 1762 (NRO 1765/69) refers to plans to work the Three Quarter near the end of Broomridge Hill, with four men.

Lady Coal 3 fathoms to 4 fathoms below Three Quarter.

Also called the 'Cupar Eye' or 'Cooper Eye' Coal.

Produced the richest and best quality household coal in the district and 'most advantageously to the employer'. It produced large blocks of highly bituminous coal, burned with a bright flame and produced a white ash.

Boyd		Gunn	
Bastard Limestone Roof		White Freestone	15ft.
Top Coal Splinty	1ft. 3in.	Top Coal	10in.
Macker*	9in.	Limestone	1ft.
Ground Coal	1ft. 3in.	Splint Coal	1ft. 2in.
		Black Slate	1in.
		Ground Coal	1ft.
		Blue Metal	4ft. 1in.

* Macker: A coaly shale which will burn, but with so much ash that it retains its shape.

(Appendix I cont.)

Wester Coal - about 10 fathoms below the Lady Coal.

Also called the 'Westoran' or 'Western Coal'

This is the lowest seam in the series and although not a particularly good coal it was extensively worked at Ford and Etal 'by extensively driven day levels obtained from the rapidly-descending surface to their west'. In some sections the upper part of the seam appears to have been worked separately, the lower leaf being known as the 'Little Coal'.

It is recorded that the Wester coal was first worked by Andrew Scott and John Stevenson at Ford Moss and Etal being won at the latter place and worked from 1806 to 1821. (Bell MS Colln. v XV p634)

Boyd		Gunn	
Blue Shale Roof		Blue Metal	9ft. 6in.
Coal	2ft. 2in.	Coal & chalkstone	7in.
Limestone	1ft. 6in.	Coal Tops	1ft. 6in.
Coal	7in.	Limestone	1ft.
Blue Shale	3ft.	Coal	4in.
Coal	10in.	Metal	2in.
		Coal	5in.
		Black Metal	2ft.
		Coal	9in.
		White shale	1ft. 3in.
		Limestone	2ft. 6in.

Appendix II Transcript of 2DE 16/1/46 - an undated document - Proposals for Ford Colliery.

85£ Certn. Yrly. rent & 8d p. Score for Every Score of 8 Pecks Corves above ye Qty 2550 Scores

to be allowed 3 Months Witth. rent to Establish a trade and Put the Collry into Condition Except 8d p. Score for what Coals shall be wrot in that Time -

To be allowed 1 yrs Rent for Cleaning & Securing the Level which must be done to the Satisfaction of 2 viewers

One to be chosen by each Party - to have a Lease for 21 Yrs with the usual Covents. for Determining Such as Surcharge of water Strength of Stythe or want of time - to have one or two Horse grass on reasonable terms and some houses for the Pitmen in Ford Town gratis.

The Ginn & Materials upon the Collry. to be taken at a valuation by 2 Indiff. Persons & Paid for, or left in the same repr. at Mr. D Choice.

Mr. [cut away] Proposals are

80£ p Ann for 2400 Scores & 8d p Score for all above that Quantity to be Allow'd 1 Yrs rent for the Waterlevel and the use the Same as [cut away]

NB the Necessary Covents of Working fairly and Orderly, leaving the Watercourses & Air Courses Sufficiently Timber'd Open & Upstanding, the Debasing of Outstrokes or any Wilfull or Negligent Act to Prejudice the Collry. I shall take Care to have Properly inserted [rest cut away]

Appendix III Transcript of NRO 650 l8 - an undated document.

The profit of Six mens work in one Day in the Lady coale

Colliery - Dr.		Colliery - Cr.	
To Charges		By Coales wrought	
To Hewer's wages	0 9 0	By 6 Hewers	
To puting	0 6 0	By 126 Bolls Small @ /2	1 1 0
To Drawing	0 3 6	By 24 Splint @ /5	0 10 0
To Tuging [To Gin?]	0 0 10		
To Banksman	0 1 6		
To Contingent Exp	0 3 0		
To one day's profit	<u>7 2</u>		
	£1 11 0		£1 11 0

The Profit one Day in the Little coale
upon coales Wrought By Six Hewers

To Hewing	0 9 0	By value of Six	
To Putting	0 4 6	Hewers Coales one day	1 14 0
To Drawing	0 2 6	Each man 34 Bolls	
To Banksman	0 1 8		
To Contingent Exp	0 1 8		
To one days profit	<u>0 14 8</u>		
	1 14 0		1 14 0

1 weeks candles	0 - 1 - 0		
1 Do Do	0 - 1 - 0		
1 Do Do	0 - 1 - 0		
1 Do Do	0 - 1 - 0		
Fires[?] for 4 men	0 - 1 - 0		
2 putters candle	0 - 2 - 6		
Tugin [illeg] [To Gin?]	0 - 0 - 3		
Banksm fiers [?]	0 - 0 - 3		
Coller fiers [?]	0 - 0 - 3		
2 puttr fiers [?]	0 - 0 - 6		
Shorfong [?]	0 - 0 - 4		
	<u>0 - 9 - 4</u>		
	1 11 - 0 -		
		<u>15 8</u>	
		2 5 0	

Appendix IV Transcript of NRO 2DE 16/1/47 - an undated document.

Observations on the probable production of Coal from Ford Colliery after the Level is drove up to the respective Seams in Blackchester Hill for Lord Delavals private consideration.

The Days work of one Man at the Wall is at an average	30 bolls
Allow him to work 5 Days in the Week	<u>5</u>
	150
Suppose he works 50 weeks in the year	<u>5</u>
Total produce	7500

	bolls	£	s	d
2/3 of this produce supposed to be great viz	5000 at 4½d	93	15	0
1/3 of Do.	Do. 2500 at 3d	<u>31</u>	<u>5</u>	<u>0</u>
		125	-	-

	£	s	d
Expes viz 375 Score at 20s	31	5	0
Put[t]ing [?] Do.	7	16	0
Expes on Gin Horses for 1 man	6	10	0
Poor Rates at pres't rent	1	14	0
Candles, work tools, sinking new pits and sundry incidental Expes	25	0	0
Rent calculated at 30£ pr Man	<u>30</u>	<u>0</u>	<u>0</u>
	102	5	0
probable profit on one Man	23	15	0

Expenses attending the Level to be carried to the Coal may be estimated at £800 - which sum being expended in the first two years of a new lease - may be calculated to reduce the Rent - at or about £70 pr Annum. Therefore allowing 10 Hewers at £30 pr Man as an annual rent would be £300

deduct on Acct of the level etc.	<u>70</u>
	230

This is supposed to be nearly Mr. Watkin's plan of Calculation.

Therefore the rent being calculated at £230 allowing 10 men at the Wall - if 14 men should be allowed, which is the stipulated Number of Etal Colliery the rent in that case would be £322 which may be presumed to be a fair rent.

The calculated profit attending one Man as on the other side [of the document] may probably not be quite so much as he perhaps may not work 50 weeks in the year.

The contingent rent of £30 a Man reserved in the Lease for each extra Man employed in Hewing Coals above the stipulated Number was presumed to be a fair rent when the Colliery was fairly won and level free - but from the rise of times and should Etal Colliery be wrought out in the course of 7 years and removed to the north side of Etal Estate the rent pr Man should be £35 yearly for each Man Allowed in the Lease.

Appendix V Extract from E.F. Boyd, 'On a Part of the Carboniferous or Mountain Limestone Series of North Northumberland', Trans. NEIME, 9 (1860-61) 206-7.

The mode of working adopted is universally the same throughout the district, and has been handed down from very ancient usage, viz., that of the long wall system. The explorations of 'levels' at the dip side laying dry a certain panel or width of 'wall face' at right angles to the said levels, and wide in proportion to the requirements of the daily 'out-put', or of the powers of the perpendicular engine-lifts or day drifts employed. This wall face is divided amongst the workmen to the extent of ten, twelve, or fifteen yards to each man, according to the thickness or hardness of the seam. The means of transmitting the coals being generally by round tubs capable of being transferred from the framework or sledge on which it is placed, and drawn on the sliding and often moistened floor of the seam by one pony along and from the face to the 'gateway' or 'rolley-road', planned at convenient distances of 100, 120, and 150 yards apart, and there elevated to the economical and improved transit of rolleys drawn in sets of six, eight, or ten, as circumstances admit, by a pony or horse of greater power; - hauling engine power having been already introduced on the rolley-roads of the more advanced collieries, or where the employment of shafts or exits occur to the rise of the lowest drainage or water level.

... the very general existence of strong limestone bands in the sections of seams enumerated, and which, to a manager of 'board and pillar' working, would be a marked and almost insurmountable difficulty, is here hailed as a powerful ally in forming the front edge, even with considerable intervals of the pillar behind (about four or four-and-a-half feet) the workmen around, between and behind which pillars the stouring or 'gob' is effected, as best it can, by the other refuse and kirving material made and met with in the working. Where these bands are absent or not strong enough wherewith to form pillars, then recourse is frequently had to a portion of roofstone for the same, the last alternative being the employment of strong timbering not expected to be again drawn or used. I need scarcely add that the heaviest item in the cost of production is the correct pillaring and keeping open of the branch rolley-roads or 'gateways' which necessarily are preserved as access to the face by well selected and neatly finished pillars. The requisite preserving of the height after the squeeze or crush occurs of the superincumbent strata, the effect of which to the eye of a stranger is a matter of surprise and curiosity, being effected by cuttings made in the altered floor or roof of the rolley road, as is found most convenient.

Still to be checked, from NEIMME Handlist:

William Brown's Letter Books (p18):

Ford - p6, 13, 16b, 27a, 61, 73.

Bell Collection Shelf 14 V5:

Northumberland 1769

A note by Ray Fairbairn says:

Records not in NCB custody:

Ford Moss Colliery, Cooper Eye, 1905, Gray & Sons Millfield, Wooler.

Ford Moss Colliery; Blue Row: Hill. Kiln, 1905, Gray & Sons Millfield, Wooler.

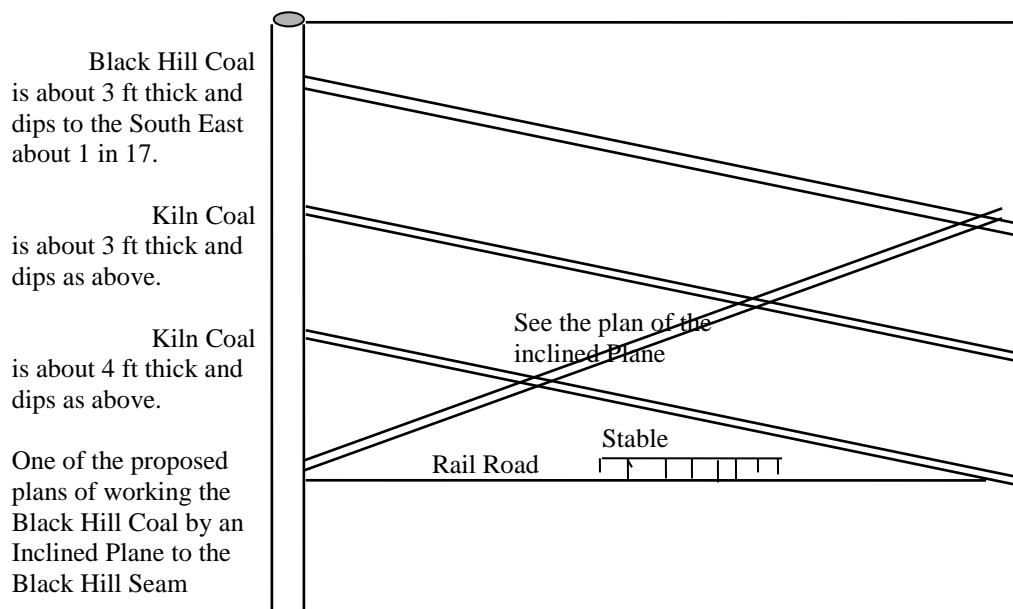
Ford Moss Colliery; New, Stead; Temple; Main; 1905, Gray & Sons Millfield, Wooler.

Ford Moss Colliery, Webster; un-named; 1905, Gray & Sons Millfield, Wooler.

NRO 559/73 A copy of 559/74, nd, but with additional notes.

Labelled on the outside 'Incline Plane to Black Hill Coal'.

No levels shown.



Notes and References.

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- ¹ NRO 1765/65; Fig. 1.
- ² A listing of monies received from James Moffit in 1685 respecting Ford Colliery totalled £9. 10s., and from Thomas Reed and Stephen Reed respecting Gatherick Colliery £6 9s 6½d (NRO 1216 B2/5/1/2).
- ³ B25/VI/81.
- ⁴ NCH has a George Chalmers as rector of Ford between 1689 and 1722.
- ⁵ NRO 2795/8.
- ⁶ The mouth of this level was inspected (in fields of Fordhill farm) in 1973 by Stafford M Linsley; the level near the entrance was about 7 feet high and between 1 and 2 feet across, red water was flowing freely, and there was a deep deposit of a red sludge in the base of the level making it difficult to proceed along it.
- ⁷ NRO 650 I/11.
- ⁸ NRO 650 I 9/5.
- ⁹ NRO 650 I 9/6.
- ¹⁰ NRO 650 I 9/5.
- ¹¹ B25/6/96.
- ¹² NRO 650 I9/17.
- ¹³ NRO 650 I9/15, 19, 20.
- ¹⁴ NRO 650 I9/14.
- ¹⁵ NRO 650 I9/12.
- ¹⁶ NRO 650 I9/13.
- ¹⁷ NRO 650 I9/14.
- ¹⁸ NRO 650 I9/14 p3.
- ¹⁹ NRO 650 I9/14.
- ²⁰ NRO 650 I9/12.
- ²¹ NRO 650 I9/16.
- ²² NRO 650 I9/21.
- ²³ NRO 650 I9/21.
- ²⁴ NRO 650 I9/22.
- ²⁵ B25/VI/110, 112.
- ²⁶ NRO 650/14, 6; NRO 1765/67.
- ²⁷ NRO 650/I/3.
- ²⁸ 2DE 52/1; NRO 1216/B2/1/3/6; NRO 1216/B2/1/6/2.
- ²⁹ NRO 650 D6.
- ³⁰ NRO 1216 B2/1/6/2.
- ³¹ 2DE 53/7; 2DE 15/7/1; 2DE 2/5; NRO 1216 B2/5/5/1.
- ³² *Northumberland Gazette*, December 1965.
- ³³ Bulman & Redmayne, *Colliery Working and Management*, (1912) 11; *Richardson's Table Book*: 1 December 1761 - An explosion took place in the colliery at Hartley, by which unfortunate event, Mr [Luke?] Curry, the viewer, and four others lost their lives.
- ³⁴ 2DE 2/9.
- ³⁵ *Newcastle Journal* 23 September 1758.
- ³⁶ NRO 1216 B3/1/6.
- ³⁷ 2DE 2/1.
- ³⁸ NRO 1216 B3/1/7; NRO 1544/1.
- ³⁹ NRO 1216 B3/1/17.
- ⁴⁰ 2DE 2/1; *Newcastle Courant* 22 August 1761.
- ⁴¹ See for example 2DE 16/12-15.
- ⁴² NRO 650 I 7.
- ⁴³ NRO 1765/61; Fig. 2.
- ⁴⁴ NRO 1765/69.
- ⁴⁵ 2DE 6/3/17.
- ⁴⁶ Presumably John Hall who as well as being a significant tenant farmer acted as under-agent to Dobson (2DE 2/16).
- ⁴⁷ NRO 1765/69.
- ⁴⁸ NRO 1765/73.
- ⁴⁹ 2DE 16/2.
- ⁵⁰ 2DE 2/1,14 16.
- ⁵¹ 2DE 2/14.
- ⁵² NRO 1765/68.
- ⁵³ 2DE 4/10/1.

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- ⁵⁴ 2DE 2/18. Immediately beneath the payment for carriage is an entry '7 December 1764, Samuel Nanders for sail cloth, £3 9 11½d' which may also refer to this windmill.
- ⁵⁵ 2DE 6/4/2.
- ⁵⁶ 2DE 4/10/6.
- ⁵⁷ 2DE 3/4/5.
- ⁵⁸ 2DE 3/2/3.
- ⁵⁹ 2DE 3/2/1.
- ⁶⁰ 2DE 3/3/3.
- ⁶¹ 2DE 2/25.
- ⁶² NRO 1216 B3/3/16.
- ⁶³ 2DE 2/25.
- ⁶⁴ 2DE 3/4/5.
- ⁶⁵ 2DE 4/10/7.
- ⁶⁶ NRO 3439/36.
- ⁶⁷ 2DE 4/10/15,21.
- ⁶⁸ 2DE 4/10/9.
- ⁶⁹ NRO 1216 B3/6/8.
- ⁷⁰ 2DE 4/10/27.
- ⁷¹ 2DE 4/10/28.
- ⁷² 2DE 4/10/29.
- ⁷³ 2DE 4/10/32; see also 1765/63.
- ⁷⁴ 2DE 4/10/36.
- ⁷⁵ 2DE 4/10/33,35,37.
- ⁷⁶ NRO 1765/45; Fig. 3.
- ⁷⁷ 2DE 4/10/41.
- ⁷⁸ NRO 1765/70.
- ⁷⁹ 2DE 2/64 p23.
- ⁸⁰ 2DE 2/64 p29.
- ⁸¹ 2DE 15/5.
- ⁸² In 1770, the Ford Forge supplied '4 shoes to the pit sleds', 2DE 16/12.
- ⁸³ 2DE 15/6.
- ⁸⁴ 2DE 2/29,64 p23.
- ⁸⁵ 2DE 2/25.
- ⁸⁶ 2DE 2/18.
- ⁸⁷ 2DE 2/72, 74.
- ⁸⁸ 2DE 2/72.
- ⁸⁹ 2DE 18/4/6.
- ⁹⁰ 2DE 2/72, 74.
- ⁹¹ 2DE 18/4/14.
- ⁹² 2DE 2/72.
- ⁹³ 2DE 4/10/73.
- ⁹⁴ 2DE 6/4/23.
- ⁹⁵ 2DE 4/10/64.
- ⁹⁶ 2DE 6/4/25,26.
- ⁹⁷ NRO 1765/71,72.
- ⁹⁸ 2DE 2/74.
- ⁹⁹ 2DE 6/4/30.
- ¹⁰⁰ 2DE 2/74.
- ¹⁰¹ NRO 1765/63; Fig. 4.
- ¹⁰² 2DE 4/11/11.
- ¹⁰³ 2DE 6/4/32,34; 2DE 4/11/12.
- ¹⁰⁴ 2DE 4/11/20.
- ¹⁰⁵ 2DE 16/1/23.
- ¹⁰⁶ NRO 3439/36.
- ¹⁰⁷ Note the term Coal Hill seems to have been quite widely used at this period, perhaps to denote a colliery; the Coal mine at Drumtemble near Cambelltown was called 'Coal Hill'.
- ¹⁰⁸ NRO B 20/70; 2DE 1/14/1; 2DE 4/53/10.
- ¹⁰⁹ See for example 2DE 1/12/3-6.
- ¹¹⁰ NRO 650 I7.

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- ¹¹¹ NRO 1765/65; Fig. 1.
¹¹² Watson Collection Shelf 8 No. 10.
¹¹³ NRO 1765/62; Fig. 5.
¹¹⁴ 2DE 16/1/25.
¹¹⁵ 2DE 4/11/42.
¹¹⁶ 2DE 4/11/41.
¹¹⁷ 2DE 4/11/39.
¹¹⁸ 2DE 4/11/40; 3/13/17; 6/3/27.
¹¹⁹ NRO 1765/64.
¹²⁰ NRO 1765/55.
¹²¹ 2DE 16/1/25.
¹²² NRO 650 I 5; 2DE 15/7/4.
¹²³ NRO 650 I4 p15-16.
¹²⁴ NRO 650 I4.
¹²⁵ 2DE 4/14/45.
¹²⁶ *Newcastle Courant*, 4 January 1783, but possibly also earlier.
¹²⁷ NRO 650 I 5.
¹²⁸ 2DE 4/4/73.
¹²⁹ This was probably the 'Mr Seebit' who had made an offer in 1775; note also that an Adam Sibbit had a brewery at Ancroft during part of the eighteenth century [Reference? Fuller?] 'Adam Sibet of Shorswood' bought unspecified items from Ford Forge before October 1770 (2DE 15/6).
¹³⁰ 2DE 16/1/28.
¹³¹ NRO 1216 B1/38, 39.
¹³² 2DE 4/60/3.
¹³³ 2DE 4/15/7.
¹³⁴ NRO 1216 B3/3/26.
¹³⁵ 2DE 4/15/11.
¹³⁶ 2DE 16/1/31.
¹³⁷ 2DE 16/1/32.
¹³⁸ 2DE 4/15/54.
¹³⁹ 2DE 4/15/56.
¹⁴⁰ 2DE 4/21/4.
¹⁴¹ 2DE 4/16/14.
¹⁴² 2DE 4/16/17.
¹⁴³ 2DE 16/1/30.
¹⁴⁴ NRO 650 I 5.
¹⁴⁵ 2DE 16/1/36.
¹⁴⁶ NRO 1765/54,58; 2DE 4/17/3; 2DE 4/22/16.
¹⁴⁷ 2DE 4/56/27.
¹⁴⁸ 2DE 4/56/24.
¹⁴⁹ 2DE 1/13/4, 15-20.
¹⁵⁰ 2DE 1/14/2a.
¹⁵¹ 2DE 4/57/13.
¹⁵² NCH XI p471.
¹⁵³ Watson Colln. View Book 1741-1808, p 104. 'Breadth of bord 3½ yards, length of pillar 3 to 4 yards. Breadth of pillar 2 yards, ditto of heads 4 foot.'
¹⁵⁴ 2DE 1/14/3; see separate report.
¹⁵⁵ 2DE 4/58/73.
¹⁵⁶ 2DE 4/58/75.
¹⁵⁷ 2DE 4/58/75.
¹⁵⁸ 2DE 4/58/75.
¹⁵⁹ 2DE 16/1/39.
¹⁶⁰ 2DE 4/18/69.
¹⁶¹ 2DE 4/59/35.
¹⁶² 2DE 4/59/41.
¹⁶³ 2DE 36/11/13.
¹⁶⁴ 2DE 1/14/4.
¹⁶⁵ Note: One Ten = 440 Bolls; One Chaldron = 24 Bolls; Therefore one Ten = c.48 Tons.
¹⁶⁶ 2DE 36/11/14; 2DE 16/1/40,41.

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- ¹⁶⁷ Watson Colln. View Book 1741-1808, p 455.
- ¹⁶⁸ 2DE 16/1/45.
- ¹⁶⁹ NRO 467/42/3 p 188f.
- ¹⁷⁰ 2DE 4/51/35.
- ¹⁷¹ 2DE 16/1/44.
- ¹⁷² 2DE 4/60/3.
- ¹⁷³ Ford Tythe Case.
- ¹⁷⁴ 2DE 4/60/53.
- ¹⁷⁵ NRO 1765/28.
- ¹⁷⁶ 2DE 4/60/60.
- ¹⁷⁷ 2DE 4/60/59.
- ¹⁷⁸ 2DE 4/60/61.
- ¹⁷⁹ 2DE 4/51/6.
- ¹⁸⁰ 2DE 4/60/63.
- ¹⁸¹ 2DE 4/60/64.
- ¹⁸² NRO 1216 B5/3.
- ¹⁸³ Bell collection v. XV, 630.
- ¹⁸⁴ *Newcastle Courant*, 8 January 1820, p4 col 2.
- ¹⁸⁵ *Newcastle Courant*, 15 January 1820, p4 col 3.
- ¹⁸⁶ *Newcastle Courant*, 22 January 1820, p4.
- ¹⁸⁷ Parson and White, 1828. The NCH notes that nearly 20,000 bolls of coal were won at Etal in 1825-28.
- ¹⁸⁸ Robert D Thomson, 'Observations on the Strata of Berwickshire and North Durham', *Trans. of the Berwickshire Naturalists' Club*, 1 (1841?) xx-xx
- ¹⁸⁹ For details of these schemes see 'transport on the Ford Estate.
- ¹⁹⁰ NRO 559/47; Fig 7.
- ¹⁹¹ NRO 559/73, 74; Figs. 8 and 9.
- ¹⁹² *Ford at the time of the Waterfords, 1822-1907* by James Joicey, (Northumberland Library, 1992.
- ¹⁹³ *Trans. NEIME*, vol 9.
- ¹⁹⁴ Forster Collection Shelf 54 Vol. 4.
- ¹⁹⁵ According to Joicey, 16 people were employed at the colliery in 1891.
- ¹⁹⁶ Forster Colln.
- ¹⁹⁷ Kelly's *Directory of Northumberland*, 1897.
- ¹⁹⁸ NRO 559/96c.
- ¹⁹⁹ NRO 559/96a.
- ²⁰⁰ NRO 559/96.
- ²⁰¹ NRO 559/108a.
- ²⁰² NRO 559/49.
- ²⁰³ e.g. NRO 559/48.
- ²⁰⁴ Ford Castle Workbook ed. T. H. Rowland.