

PETER NIGHTINGALE, RICHARD ARKWRIGHT AND THE DERWENT VALLEY COTTON MILLS, 1771–1818: A REJOINDER

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In 1958 R.S. Fitton suggested that Richard Arkwright, having purchased the Cromford estate from William and Mary Milnes, sold it to Peter Nightingale to raise money for building the second Cromford mill.¹ In his later book Fitton attempted to take the story further by citing a letter from Edward Saxelby to William Strutt in July 1776 in which he reports that Richard Arkwright had parted with his purchase. This led Fitton to speculate that the estate had been purchased but sold back to the Milnes to raise money for mill building. He identified no part for Peter Nightingale until he sold the estate to Arkwright in 1789.²

It was in 2000, with the publication of the nomination document for the Derwent Valley Mills World Heritage Site, that a brief but more accurate account of Peter Nightingale's contribution was published.³ Now he was recognised as having taken over Richard Arkwright's planned purchase of the Cromford manor, so becoming Arkwright's landlord, and to have advanced at least £3,750 for the construction of the second mill and for housing. But it was not until 2013 that a more detailed account was published of the transactions which brought Nightingale and Arkwright together as landlord and tenant, financier and entrepreneur.⁴ At about the same time Stanley Chapman published his own account of this hitherto elusive partnership.⁵ We share with Prof. Chapman a concern to see Peter Nightingale afforded his rightful place as a major player in the development of Richard Arkwright's factory village. However, although both the recently published accounts are based on the same sources, there are significant differences in interpretation between the two. What follows is a review and analysis of these disparities which identifies in Chapman's text a number of factual errors of sufficient importance to affect his conclusions.

Articles of agreement between Richard Arkwright and Peter Nightingale, 3 April 1776

The episode at the heart of this matter began in September 1775, when Richard Arkwright agreed with Richard Nall (William and Mary Milnes's trustee) to purchase the manor of Cromford for £20,000. Part of this payment, £12,000, was to be paid at the end of the year following the date of the conveyance of the property with 4 per cent interest payable while the account was outstanding; the remaining £8,000 was to be paid on or before 5 April 1776 on the execution of the conveyance.⁶ Two days before this deadline Arkwright signed an agreement with Peter Nightingale whereby in effect Nightingale took over the purchase Arkwright had negotiated with Nall and the Milneses. The agreement was between Arkwright and Nightingale, although clearly with the acquiescence of Nall and the Milneses. The detailed terms remained the same as they had been in September 1775, when Arkwright first reached agreement with Nall and the Milneses, although then Arkwright was to have paid costs and charges. Now in the sale to Nightingale the Milneses were to pay costs.⁷

How Arkwright had contrived to complete this deal is uncertain. Had he at first believed that he could fund the purchase, then finding he could not, turned to Nightingale, his neighbour

and a wealthy lead merchant, to complete the transaction? This might seem to be the most straightforward explanation but it is difficult to accept that Arkwright could ever have believed that he had access to this amount of capital. Surely this is unlikely at this stage in his career. We do not claim to have the answer but incline towards the view that from the outset he must have intended to fund the transaction from an outside source.

There is, however, no uncertainty about the position Arkwright attained as a result of the purchase. This was embodied in his lease from Peter Nightingale of 3 April 1776, which granted him part of the estate which Nightingale had purchased for a term of 21 years at a yearly rent of £116 3s. 7d.⁸ The lease identified in detail the premises included. Of particular significance was the reference to the water corn mill which Arkwright was permitted to pull down, so enabling him to build his second mill. A second part of the lease included a 'capital messuage or Mansion House then in the tenure of William Milnes'. This we consider to be Rock House, because of references to some land, including the Lawn and the Ryecroft, which the Cromford tithe map locates just to the south of Rock House.⁹ Also included in this part of the lease is property occupied by twelve tenants, and five old buildings, with a total yearly rent of £119 1s. 2d. The conditions of the lease of Rock House allowed Nightingale to take possession of it after four years should he wish to live in it himself, in which event he undertook to spend £500 on a new house for Richard Arkwright, which he would lease to him for £35 a year.

A further provision of the lease granted Arkwright £2,000 for the building of a mill and £1,000 for the erection of houses for the work people to be employed there 'in such manner as Arkwright directs', for which he was to pay a rent of £180 a year and 6 per cent interest on the loan. A memorandum dated 26 September 1778 records a further loan of £750 on the same terms, the monies already advanced 'not proving sufficient to complete and finish the mill and housing as specified'.¹⁰ Under the agreements of 1776 and 1778 the landlord would have received a total annual rental income of £415 4s. 9d., plus interest on the loans. For his part Arkwright obtained from this lease and agreement both the funding and the landholding that gave him a platform for the expansion of his mills and his embryonic factory village. We are unable to identify in this arrangement any element of inequity to either party. We see it as a straightforward business transaction. Nightingale secured a tenant paying a fair rent and 6 per cent interest on the capital he had made available and we know of no evidence which questions Arkwright's payment of his debts to Nightingale. We have reason to believe that the transactions recorded above do not represent the full extent of Peter Nightingale's investment in Arkwright's business. Adam Wolley, the Matlock attorney and antiquary, noted that Nightingale spent upwards of £7,000 on his Cromford estate.¹¹ There is an entry dated 25 December 1783 in one of Peter Nightingale's note books which reminds him to insure the new mill at Cromford for £1,800 and other buildings for a further £100.¹²

Throughout the thirteen years of his ownership, Peter Nightingale not only received a significant rent from that part of his Cromford estate which he leased to Arkwright, but in April 1789 he was handsomely rewarded, when he sold the manor together with some land in Matlock parish, which included what is now known as Church Walk, for £30,000.¹³

Part of Chapman's interpretation of the 1776 lease from Nightingale to Arkwright is devoted to an analysis which attempts to make a comparison of house rents in Cromford, claiming that 'in effect it summarises the population structure of Cromford' (Table 1).¹⁴

<i>Housing</i>	<i>Gross rental (p.a.)</i>	<i>Average rent per unit</i>
Village housing: 48 cottages, some with workshops, warehouses, gardens etc.	£116 3s. 7d.	£2.42
Mill Lane housing: 12 cottages and ‘five old buildings’ located for the calamine works.	£19 1s. 2d.	£1.59
Wirksworth Hill (North Street) housing: 28 new houses for weavers/knitters and mill workers’ families.	£180 0s. 0d.	£2.40

Table 1: Workers’ housing in Cromford, 1776–7

There are a number of reasons why this analysis is unacceptable. First, Chapman assumes the lease includes the entire manor. It does not. Even if it did, the first entry in the table should include the water corn mill and cottages or dwelling houses, shops, warehouses and stables with gardens, crofts or parcels of land in the tenure of 47 named tenants, followed by a list of 21 named areas of land, for a rental of £116 3s. 7d. The property identified is so diverse in character as to make the calculation of an average rental per unit meaningless. Furthermore, in the second line of the table there is a misreading of the lease. The actual figure is not £19 1s. 2d. but £119 1s. 2d. and, while it relates to twelve cottages and five old buildings, it also includes a capital messuage and several closes of land. So again the average rental calculation, even had it been based on a correct total, would be of no value. The final rental entry of £180 for the Wirksworth Hill housing includes the 27 houses on North Street and the second mill. Here again, the average rental calculation is without meaning. Nor is it clear how an average rental unit of £2.40 is derived from the information provided.

There are also assumptions in Table 1 which do not appear to be supported by the details in the lease. There is no mention of the twelve cottages and five old buildings being on Mill Lane or located for the calamine works. Since the terms of the lease in respect of these properties are identical to those for the capital messuage and the closes of land known to be in front of Rock House, it is more likely that the properties were in that part of the township. Certainly the ‘calamine cottage’ speculation can be ruled out. The cottages shown on a plan of 1759 of the Willersley estate¹⁵ are likely to have lain within the manor of Willersley, which Arkwright did not acquire until 1782.¹⁶

Richard Arkwright’s indebtedness to Peter Nightingale

Chapman represents the financial relationship between Peter Nightingale and Richard Arkwright as set out in Table 2.¹⁷ A reappraisal of the transactions listed in Table 2, using the same sources, is given in Table 3, in which a column for Richard Arkwright’s role has been added. The abbreviation PN stands for Peter Nightingale, RA for Richard Arkwright.

The first entry in Table 2 includes the capital sum of £20,000 for the purchase of the manor of Cromford and the loan to Richard Arkwright for the construction of the second mill and for workers’ housing. In Table 3 the purchase money has been excluded. We do not regard the purchase of the manor to be part of Arkwright’s indebtedness to Nightingale, given the rental it provided and the ultimate sale at a generous price; it was simply a shrewd property investment. The two loans in 1776 and 1778 are shown separately and the 6 per cent interest is also included. Rock House, which was the subject of a straightforward rental agreement, is excluded, since it did not form part of Nightingale’s loans to Arkwright. For the sake of the

<i>Date</i>	<i>Sum</i>	<i>Estate</i>	<i>Parties</i>	<i>Peter Nightingale's role</i>
1776	£20,000	Manor of Cromford (part)	Richard Nall and William and Mary Milnes (vendors)	£3,750 for the second mill at Cromford, workers' housing and Rock House
1782	£14,864	Manor of Cromford, part of Willersley, and estate in Matlock	T.H. Hodges	Further housing.
1789	£30,000	Manor of Cromford	Revd Thomas Manlove, John Toplis	£10,000 loan

Table 2: Richard Arkwright's major debts, 1776-89

<i>Date</i>	<i>Sum</i>	<i>Premises</i>	<i>Parties</i>	<i>PN's role</i>	<i>RA's role</i>
1776	£2,000	Second mill	PN and RA	Lender at 6%	Borrower
1776	£1,000	Housing	PN and RA	Lender at 6%	Borrower
1778	£750	Housing	PN and RA	Lender at 6%	Borrower
1782	£6,000	Willersley Farm estate and other land in Matlock parish	T.H. Hodges and Dorothy his wife to RA	—	Buyer
1789	£8,864	Willersley Farm estate and other land in Matlock parish	T.H. Hodges and Dorothy his wife to RA	—	Buyer
1789	£15,000	Manor of Cromford and land in Matlock	PN and RA	Seller	Buyer
1790	£15,000	Manor of Cromford and land in Matlock	PN to Sir RA and RA junior	Seller	Buyer

Table 3: Sir Richard Arkwright's major debts reconsidered

comparison the two transactions with Thomas Hallett Hodges are included in Table 3, despite having no link with Nightingale or including any part of the manor of Cromford or having any connection with the provision of further housing. This conveyance included the land on which Arkwright was to build Willersley Castle.¹⁸ We have recorded it in two payments to reflect more accurately the terms of the purchase agreement.

The final figure is the purchase price paid to Peter Nightingale for the manor of Cromford. We have recorded the payment dates and included Richard Arkwright junior, who had a role in the transaction.¹⁹ Chapman concludes that 'Nightingale was one of a string of local capitalists who struggled to accommodate Arkwright's ruthless borrowing, threatening their own solvency in the process'.²⁰ We do not believe the evidence supports this assertion. Wherein lies the ruthlessness in this account of loan interest paid and repayments made?

Richard Arkwright's social aspirations

Prof. Chapman has long held the view that one of the attractions of Cromford for Richard Arkwright was its potential as a vehicle for his social aspirations. In 1967 he argued that

Arkwright's move to Cromford was for 'non-economic reasons' and that he moved 'because he was familiar with that part of the country, and recognised it as an appropriate district for the gratification of his social ambitions'.²¹ Testimony to Arkwright's social aspirations was provided by Gravenor Henson, who alluded to his partner Need taunting him with his failure to make his spinning machine produce serviceable yarn, holding up lengths of the defective product: 'Pretty stuff this, all bumps and burs! Yes, yes: pretty stuff this to make a man ride in his carriage!'.²² Chapman refers to Henson 'drawing on the legend current among his fellow-workmen in Nottingham'.²³ It is a legend which fed the appetite of a Victorian audience eager to believe the rags to riches homily that Arkwright's life came to represent. Of course the legend contains a kernel of truth but we believe the reality is more prosaic: there were sound practical reasons for establishing a cotton mill in Cromford, as we indicate below.²⁴

The evidence that Arkwright relished the status his wealth had brought him is copious, and although it may be true, it does not represent a rounded picture of the man. It is also clear that to the end of his life he preferred work to social intercourse. Archibald Buchanan, sometime around 1784–7, found Arkwright 'so intent on his schemes and calculations' that they 'often sat for weeks together, on opposite sides of the fire without exchanging a syllable'.²⁵ Josiah Wedgwood in 1785, while finding Arkwright 'much more conversible', commented that 'he at present shuns all company as much as possible because it robs him of his time and breaks in upon his plans'.²⁶ In the context of this article, his passion for wealth or, as Chapman puts it, his 'scramble up the social hierarchy to the ranks of the Derbyshire industrial gentry and exhibiting the lifestyle associated with it' is illustrated through his move to Rock House and the assertion that by 1775 he had begun to spend lavishly.²⁷ Arkwright himself claimed that it was 'five years ... after the first patent and more than £12,000 expended in machinery and building that any profit accrued'.²⁸ This would place the return on investment at about 1774, and if this dates the commencement of profitability it would be some years before significant wealth had been accumulated. Chapman alludes to a source of information (which he does not identify) to suggest that Arkwright and his wife moved into Rock House when he first came to Cromford, sharing with the Milneses.²⁹ We are not familiar with this detail and would wish to question the reliability of the source, while accepting that if correct it is an important revelation. Fitton stated that Mrs Arkwright separated from her husband in 1779.³⁰ G.S. White claimed the couple separated not many years after their marriage in 1761 and therefore the separation was probably before Richard Arkwright came to Cromford;³¹ Edward Baines stated that Arkwright separated from his wife while they were still in Bolton.³²

If Arkwright, with or without his wife, did share a roof with his landlord it was likely to have been short-lived. In March 1774 Arkwright had so angered Milnes by flooding the road, stealing his fish and building outside the terms of the lease that Milnes brought a case against him at the Easter Quarter Sessions at Derby.³³ We have found no formal agreement for Arkwright to occupy Rock House until his lease from Peter Nightingale in April 1776, a document which describes the building as 'a capital messuage or Mansion House then in the tenure of William Milnes'. We believe Arkwright's place of residence in Cromford between 1771 and 1776 is at present unknown.

Nor is Chapman correct in describing the house as a gentleman's residence 'detached from the work-a-day world of textile production', enjoying 'sweeping vistas beyond the acres of mining dereliction to the Cromford Meadows and River Derwent in the middle distance'.³⁴ The house as it existed in the 1770s was probably quite modest in size by comparison with its later (and present) dimensions and the small building on the edge of the cliff overlooking

the mill site (now enlarged to form a dwelling) could be contemporaneous with Richard Arkwright.³⁵ This supports the tradition that this was Arkwright's workroom from which he could observe the entire mill site. This proposed use is of course conjectural.

What is more certain is that Rock House did not look out to the river over acres of mining dereliction. There is no evidence for lead mining between Rock House and Cromford Meadows.³⁶ To the north of Rock House there was ground associated with the calamine works known as Smelting Mill Green. A plan considered to date from 1771,³⁷ referred to by Chapman,³⁸ labels the ground around the 'Callimy Works' as waste. This might seem to be a description of the physical quality of the land, but it is not. The calamine works were owned by the Willersley estate and stood on manorial waste. The plan was produced for William Milnes, who was engaged in enclosing the wastes. He was seeking an agreement with Edwin Lascelles, who owned the calamine mills and had enclosed some waste within his mill curtilage, to give up his rights on the remaining waste.³⁹ Three contemporary illustrations of the area show the detritus of the manufacturing plant alongside cottages and nearby agricultural activities.⁴⁰ Readers must form their own opinion as to what constitutes acres of dereliction. Later, when the canal was opened, there was industrial activity to the north of Rock House: some quarrying and some lime burning.

There is no doubt Richard Arkwright did spend lavishly — his extravagance was legendary — but when was he first in a position to do this? Chapman favours 1776, and certainly by this time people had begun to comment on his lifestyle; there is evidence of a carriage, a ball, and 'genteel riding dresses' for his daughter,⁴¹ for whom, on her marriage to Charles Hurt in 1780, he was able to provide a dowry of £15,000, payable over four years.⁴² But in Cromford it is not until 1782, with the purchase of the Willersley estate, that he blatantly exhibited his wealth and arrival among the landed. Whether he ever entered the landed gentry or remained part of a nouveau riche industrial elite must await discussion on another occasion.

Conclusion

We are in complete agreement with Prof. Chapman that Peter Nightingale played a major part in the establishment of Richard Arkwright's second mill and infrastructure in Cromford and that it must be recognised that he was 'at the very centre of the action', but we do not accept that Nightingale was one of a string of local capitalists 'who struggled to accommodate Arkwright's ruthless borrowing'. Who were these local capitalists? Chapman does not name them and, in Nightingale's case, where he does provide details, the evidence suggests that it was Nightingale who over-borrowed. His struggle was the result of his own ambition or greed, rather than Arkwright's behaviour towards him. No evidence has been presented that Arkwright's dealings with Nightingale involved repayment default, loan rescheduling, or the exertion of pressure by one party on the other and, until there are facts that support the charge of ruthlessness, it must remain an unsubstantiated allegation and without merit.

Peter Nightingale's involvement in industry, commerce and finance included smelting and dealing in lead, and coal mining, in addition to cotton spinning and weaving, and also the development of his estate in Lea, where he constructed a canal wharf, a private branch of the Cromford Canal and a hat factory. A substantial Nightingale archive has survived,⁴³ which, if studied in detail, would reveal a more rounded impression of this hitherto neglected figure. His letters contains a wealth of information about his intended investments and cover day-to-day details of the cotton business (including the purchase of raw cotton), lead smelting and sales; and the construction of the weavers' housing and workshop and the housing for the mill

workers. Nightingale's business interests were diverse and widespread and only by further research will we capture their full extent and importance. However, it is clear from accounts of his career that have already appeared⁴⁴ that his importance in the industrialisation of the Derwent valley must place him alongside such other iconic figures as Richard Arkwright, the Strutts and the Evanses. Peter Nightingale's final link with the development of Cromford came in 1795 when he built himself a house on the eastern edge of the settlement, Woodend. Here he lived out his last years two or three hundred yards from his sister Ann and her husband George Evans, who lived in Senior Field House (now Cromford Bridge House), the house her father had bought them on their marriage in 1757.

APPENDIX

In addition to the major points discussed above, Prof. Chapman's article contains a number of errors of detail and points of interpretation, to which we wish to draw attention. The numbers in bold type refer to the pages of his article.

166: Chapman describes Arkwright as choosing to develop his cotton spinning interests 'close to the lead mining village of Cromford'. Arkwright's mills were in Cromford itself.

166: Richard Arkwright the younger (1755–1843) married Mary Simpson, the only daughter of Adam and Elizabeth Simpson of Bonsall. She did not have a sister.⁴⁵

167: Chapman attributes a leading role to Peter Nightingale (1736–1803) in the rebuilding of the south aisle and gallery of Matlock 'old church' (i.e. the medieval parish church) in 1760, when he was 24 years old. This attribution is tenuous; Peter's father, who died in 1763, could equally have been the benefactor.

167: The massive expenditure on lead mine drainage projects may well have been in total ten times or more the cost of an early cotton mill but the comparison is unsatisfactory. The investment in drainage soughs, which took decades to construct, was incremental, as were the rewards from the mines unwatered. Investment in a cotton mill required a capital sum more or less as a single payment.

168: Fig. 1: see the revised chart pedigree printed here as Fig. 1.

169: Chapman describes the agreement of 1775 between Richard Arkwright, Richard Nall and William and Mary Milnes and his wife as 'secret'. It has proved elusive for historians but in what contemporary sense was it secret? Furthermore, what is the evidence that the terms offered by the Milneses to Arkwright were generous?

169: The photograph of Lea Hall attributes its extension and new facade to Peter Nightingale (1736–1803). The facade includes a date-stone of 1754, when Peter had not reached his majority. The improvements were surely the work of his father, also Peter (1704–63).

169: The 1771 lease from Nall and the Milneses to the Arkwright partners allowed Arkwright to use the waters of both Cromford sough and Bonsall brook, not merely the latter, as stated here. The first mill did not use the brook until after it was extended in 1785. Until then it relied entirely on the sough.⁴⁶ We believe it is wrong to attribute to Arkwright at this date a concern to secure a social foothold. With his partners he had just signed a lease for 1½ acres of land for 21 years at a rental of £14 a year. In retrospect this can be seen as a momentous step; we cannot accept that at the time the lease was signed social aspirations played any part in Arkwright's thinking when he located his business in Cromford.

170: Appendix 2, mentioned in Chapman's note 9, was omitted from the article.

170: The manager's house falls outside the period of Peter Nightingale's business association with Richard Arkwright and indeed outside Arkwright's life. The house is believed to have

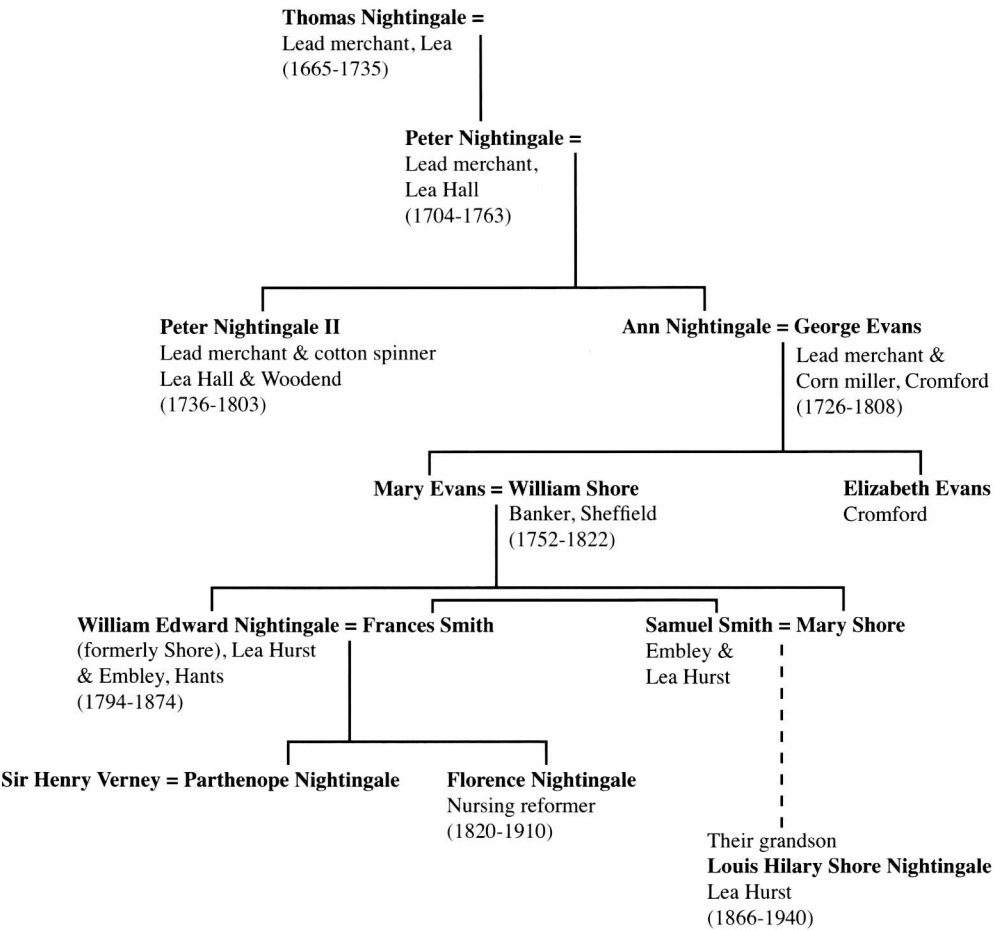


Fig. 1: Chart pedigree of the Nightingale family of Lea

been built in 1796⁴⁷ by Richard Arkwright the younger for William Seddon, who came from Bakewell to take up a position ‘Superintending managing and carrying on his Cotton Works situate at and about Cromford’. The contract, for ten years, was dated 7 October 1793. Seddon was to be paid 5 per cent of net yearly profit and if that amounted to more than £100 the extra sum was to remain in the hands of Arkwright, who was to pay Seddon 5 per cent yearly interest on it.⁴⁸ The terms of the contract indicate Arkwright’s trust in Seddon; his ceding day-to-day management outside the extended family is evidence for his gradual disengagement from the cotton industry. The reference to Rock House being acquired and here described as ‘a lofty perch above the newly-built industrial complex’ mixes time periods. In 1776, the date of the agreement, only the first mill, a weaving shed and a handful of cottages had been built. The development of the Cromford site continued well after this date: ‘very considerable additions’ were made, for example, after Arkwright’s purchase of the manor in 1789.⁴⁹

172: Chapman speculates that the Greyhound may have been ‘born in Arkwright’s ambitions as his residence’ and only later became an inn ‘as the commercial potential of the site was

recognised with the opening of the turnpike road'. There is no evidence for this. The turnpikes from Wirksworth to meet the Chesterfield–Chapel en le Frith turnpike near Longstone (Act, 1759) and from Cromford Bridge to Langley Mill (1766) were established by the time the Greyhound was built in 1779⁵⁰ and Cromford's position on these routes surely justified the provision of an inn.

172: There are 27 'Arkwright' houses in the North Street (not 28). They were not blind-backed; the top storey in each had weavers' windows to both the front and the back elevations and there is some archaeological evidence that they were built with outshuts containing a kitchen. The conjecture that each house could have contained as many as two adults and eight to ten children, the whole street making available 280 (or rather 270) people 'to supply labour for the standard Arkwright-type cotton mill' is socially and biologically improbable, taking into account high infant mortality, and assumes that every child was of an age for mill work at the same time. In any case such an interpretation of these advertisements is to miss their point. When Arkwright and Nightingale advertised for skilled men with large families, their need was for the skilled operative; the employment offered his children and the increase in the family income this would deliver was the inducement to move to the new settlement.

173: The inference that Coniah Wood's refusal to move to Cromford led Arkwright to offer more attractive homes for migrants than 'the industrial dereliction of an isolated old mining settlement' may suggest that it was the industrial dereliction that deterred Wood from leaving Nottingham. Henson ascribes this decision to Mr and Mrs Wood 'having imbibed religious enthusiasm so strongly, that they conceived they should lose the opportunity of obtaining that instruction which they prized beyond worldly wealth'.⁵¹ There is no doubt that the loss of Wood would have been a disappointment to Arkwright. To Wood is credited the all-important fluting on the rollers of the Arkwright frame without which the machine would not spin perfect yarn.⁵²

173: The reference to Cromford tithe award (1840) is irrelevant to a discussion of the manors of Cromford or Willersley (since tithe maps do not show manors), nor is there any evidence for a patchwork of ownership in either. The map Edwin Lascelles had drawn up of his land in Willersley in 1759 seems to show a largely consolidated estate;⁵³ and the Cromford manor estate which William Soresby bequeathed to his two sisters in 1760, one of whom was Mary Milnes, appears to have been as he inherited it from his father and grandfather, of whom the latter purchased it in 1716.⁵⁴

173: If the Cartwright brothers' plan to build pioneer factories in the Derwent valley is 'imagined', what is the evidence for it being 'thwarted for want of capital'?

174–5: Arkwright did not acquire the manor of Cromford in 1782, but in 1789,⁵⁵ nor are we aware of any competition from other mill owners challenging this purchase.

175: Lea wharf did not come into operation when the Cromford Canal opened in 1793.⁵⁶ Only in 1800 did the canal company agree to the construction of a branch, 2½ furlongs long, from the Derwent aqueduct to a wharf at Lea Wood at Peter Nightingale's cost but with a contribution from the company of £100.⁵⁷ The branch was probably completed in 1802.⁵⁸ Joseph Wass, known as Joseph Wass of Lea Green, died in 1838 aged 72,⁵⁹ and so was probably born in 1765 or 1766. He would have been 17 or 18 when Nightingale's 1783 mill was built and is unlikely to be the Joseph Wass who was Nightingale's millwright.

175: Milnes was Arkwright's landlord; there is no evidence that he was ever his partner.

175, 178: The suggestion that Arkwright may have been uncertain where his interests lay when he advertised for weavers or framework knitters in 1781 is to call into question a

matter which has seemed clear and unambiguous since the first accounts of Arkwright's achievements were written. Certainly contemporaries recognised the importance of Arkwright's yarn for hosiery. Henson ascribes to Arkwright the rescue of the hosiery trade 'from the evils of the Tewksbury frauds, and the competition of the India knithose; as the yarn spun by his machinery, when composed of two threads, was equal to all purposes required'.⁶⁰ Not only had Arkwright and his partners to overcome the tradition of using linen warps they were also confronted by the punitive tax regime on calico production and the prohibition of printed calicoes. They overcame both obstacles: the first by setting up their own weaving shops, the second by Act of Parliament in 1774.⁶¹ James Pilkington described the way Messrs Need, Strutt and Arkwright 'surmounted the obstacle ... they formed a design of working up themselves the cotton prepared upon their machine, by beginning a manufacture of calicoes'.⁶² Arkwright employed weavers but it is not clear how many or for how long he continued in this business. Strutt entered the trade on a grand scale, erecting a new building in Derby solely for this purpose.⁶³ Felkin dated the partnership's entry into calico weaving to 1773.⁶⁴ If this is correct this trade began at or close to the start of production at the first Cromford mill which is known to have been by January 1774.⁶⁵

175: The six cottages to the north of what is now the Jug and Glass were in Lea and not 'just round the corner from North Street in Cromford'. Peter Nightingale invested in weaving before embarking on the construction of his own spinning mill at Lea further down the valley, which was complete and stocked by Christmas 1783.⁶⁶

176: The mill Arkwright constructed in Wirksworth, later known as Haarlem mill, used steam powered technology first developed to unwater lead mines, which by the 1770s was well established, to pump water from the tail-race back into the pond. There is no reason to question the effectiveness of this system, which continued in use for many years, nor any evidence that it was a 'prototype steam engine', whatever that term means. Rotary steam power, as Chapman implies, was never part of Arkwright's system.

176, 179: There were three Benjamin Pearsons living in the Cromford area between the 1770s and 1790s. There is no record of a Bernard Pearson. One Benjamin had no links to Cromford or Lea. The other two were father (b. 1735) and son (1756–1827). Benjamin the father was agent at the Gang mine in Cromford and it is likely that he was the first landlord of the Greyhound.⁶⁷ Between 1775 and 1778 a Benjamin Pearson acted as guarantor for several licensed victuallers in Cromford and from 1779 to 1782 a Benjamin Pearson is himself recorded as a licensed victualler.⁶⁸ We believe these entries refer to the father, as the son would have been about 19 in 1775. We also believe it was his son who was Arkwright's employee and later Nightingale's partner. He died in 1827; thus he could not have been active at Bradwell mill in 1841.

176: The 1776 agreement does not single out Benjamin Pearson with respect to a house. It does mention a Benjamin Pearson with others in a list of tenants of land. Another list of tenants lists Benjamin Pearson as tenant of a house in Cromford.⁶⁹

176: The metric equivalent for the length of Lea mill is 34m, not 55m.

177: The cottages illustrated in Plate 3 are not Middle Row. The cottages which form Middle Row are illustrated in the Nomination Document; they were built in 1791.⁷⁰

178: Would it be safe to assume that the mule (or mules) Nightingale purchased at this early date would have been hand-operated rather than powered? And is the number of spindles known? Were mules among the machinery included in the 1818 inventory referred

to on page 182?

179: Chapman was in error in 1967 to state that the first mill was powered by Bonsall brook and that Cromford proved a poor site for water power,⁷¹ nor was he correct in dismissing what he called ‘the legend that Arkwright chose the Cromford site because of its unique source of power — a warm-water sough’.⁷² Subsequent research has vindicated the legend. The first mill was powered exclusively by the sough until 1785, when the mill was extended and the second wheel added. The second mill used both the sough and the brook. Nor was the site inadequate; building continued until c.1790.

179: Chapman names Arkwright’s millwright as ‘James Lowe’; he was in fact Thomas Lowe.⁷³

179: Water-power was most certainly not ‘in its infancy’ in the 1780s. The first water wheel at Cromford was high breast-shot, rather than undershot, with water brought to it via an embankment and aqueduct.⁷⁴

179: The contention that Nightingale’s mill maintained its position for fifty years is difficult to equate with the known facts. It was ready for business by December 1783 and continued as a cotton spinning mill until the Smedleys took it over in 1818. They used it, if John Smedley’s account of his father’s unhappy time at the mill is to be believed, to spin fine wool for the Norwich trade, a different branch of textiles altogether. When that failed, seven or eight years later, hosiery and other knitted goods were produced and some spinning was reintroduced.⁷⁵ While the original mill building has a proud history of continuous use the Nightingale era lasted approximately 34 years.

180: Sir Richard Arkwright died in 1792, not 1791.⁷⁶

180, 181: The dispute between Arkwright and the Cromford sough proprietors in 1785 arose because of the decision he had made to use the water in Bonsall brook to power a new water wheel located on the north end of the extension to the first mill.⁷⁷ The structure he created, now known as the Bear Pit, was driven into the course of the sough so as to make it possible to stop the flow of water and cause it to pass into the newly created Greyhound pond through a new underground channel.⁷⁸ The effect on the sough and the mines it drained of diverting water in this way was indeed serious and, as Chapman states, led to a dispute between Arkwright and the sough proprietors, which was finally taken to arbitration. Arkwright presented no evidence, paid the fine and agreed to pay the sough proprietors a rental of £20 a year. But he was able to use the Bear Pit for the valuable purpose for which it had been constructed: diverting water into the Greyhound pond each Sunday to increase the water available to power the new waterwheel and supplement Bonsall brook. It is unlikely that he had ever intended to use it more frequently. If sough water had been diverted during the normal working hours of the mill there would have been no water to supply the waterwheel fed by the aqueduct. The reference to smashing floodgates ‘so the water wheels ground to a halt in 1780’ cannot be part of this episode. Its relevance here is not understood.

181: Far from the construction of Masson Mill in 1783–4 diminishing the importance of the Cromford mills, Arkwright continued to invest at Cromford until c.1790, when they are believed to have reached their final form.

181: The Simpson brothers were Richard Arkwright the younger’s brothers-in-law. John worked primarily at Manchester; Samuel, the youngest, was concerned with Bakewell and other Arkwright mills.⁷⁹

181: The reference to Arkwright taking a lease of an old calamine works on Bonsall brook in 1771 for £11 a year is unknown to us. Two calamine mills are known to have existed at

or near Cromford, although at this date there was only one. The existing mill was a former lead smelting mill which had been leased to John Turner of Birmingham for 40 years c.1762. This mill, though standing on the right (Cromford) bank of the Derwent, was actually part of the Willersley estate.⁸⁰

181: We have expressed our reservations concerning the extent of mine workings and dereliction in the areas in Cromford under consideration⁸¹ and would add a further caveat about timber. It was not a bare scene. There is no doubt that Richard Arkwright the younger planted trees on his estate but there was existing woodland. To the west of the village there was woodland in the valley of Bonsall brook; higher up the valley the Gells of Hopton managed some of their woodland for game shooting. The extensive riverside woodland shown on Lascelles's estate survey of 1759⁸² on the left bank of the Derwent was also carefully managed: the timber was protected for the landowner's use and the tenant could harvest the underwood on a strictly controlled cutting cycle.⁸³ The fact that less than 4 per cent of the Willersley estate was cultivated in 1778⁸⁴ compares with a similar figure for Cromford in 1801⁸⁵ and in our view is less to do with mining dereliction than with the lie of the land and the depth of soil. It was better suited to pasture than other agricultural uses.

182: Did John Smedley buy or lease the cotton mill machinery in 1818? We await the publication of the inventory of the machinery in Lea mill in that year. We understand that W.E. Shore Nightingale's trustees, who administered his estate during his minority, had forbidden the mill tenants to remove or replace the machinery it contained. If this was so, the inventory should give a clear picture of how the mill was equipped during its last years under Peter Nightingale's ownership.

184: See Fig. 1 here for a chart pedigree correcting Chapman's Fig. 4.

185: We agree with Prof. Chapman's conclusions in almost every respect but would point out Strutt may not have been quite so impatient with Arkwright as he implies. Strutt is still recorded as an interested party in 1779 in the insurance policy for 'goods in trade in their new cotton mill situated in Cromford',⁸⁶ and from 1775 until 1792 he leased a house in Scarthin Nick for £30 a year.⁸⁷

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- ¹ R.S. Fitton and A.P. Wadsworth, *The Strutts and the Arkwrights, 1758–1830: a study in the early factory system* (Manchester: Manchester University Press, 1958), 77.
- ² R.S. Fitton, *The Arkwrights, Spinners of Fortune* (Manchester: Manchester University Press, 1989), 184; for the sale of 1789 see Derbyshire Record Office (DRO), D1575/12/1, articles of agreement, 8 April 1789.
- ³ *Nomination of the Derwent Valley Mills for inscription on the list of World Heritage Sites* (Matlock: 2000), 114 (cited here as 'Nomination Document').
- ⁴ D. Buxton and C. Charlton, *Cromford Revisited* (Matlock: Derwent Valley Mills World Heritage Site Educational Trust, 2013), 56.
- ⁵ S.D. Chapman, 'Peter Nightingale, Richard Arkwright, and the Derwent valley cotton mills, 1771–1818', *Derbyshire Archaeological Journal*, 133 (2013), 166–88.
- ⁶ This deed of Sept. 1775 is known only from a recital in the document of 3 April 1776 in Derbyshire Record Office (DRO), D7573, Box S. This deposit comprises a large quantity of uncatalogued family and estate papers formerly belonging to the Arkwright family of Willersley Castle.
- ⁷ DRO, D7573, Box S, agreement of 3 April 1776; details of Nightingale's payments to the Milneses are given in DRO, D1575/18/3.

- ⁸ DRO, D7573, Box S, agreement of 3 April 1776. Rentals of c.1770 in Box A of this collection show there were more premises, including cottages and land, belonging to the manor of Cromford than are listed in the agreement of 1776, which confirms that the lease was for part of the manor only.
- ⁹ DRO, D360/3/52.
- ¹⁰ This memorandum is endorsed on the lease of 3 April 1776 in DRO, D7573, Box S.
- ¹¹ British Library (BL), Add. MS 6670, f. 85 (a microfilm copy of Wolley's collections (Add. MSS 6666–6718) is available at the DRO).
- ¹² DRO, D1575/12/2.
- ¹³ DRO, D1575/12/1, articles of agreement, 8 April 1789.
- ¹⁴ Chapman, 'Peter Nightingale', 173.
- ¹⁵ Copy in DRO, D978/E12a–b; reproduced in Buxton and Charlton, *Cromford Revisited*, 84–5; cf. H. Nichols and M. Wiltshire, *A Catalogue of Local Maps of Derbyshire c.1528–1800* (Derbyshire Record Society, 37, 2012), no. 779. There are two copies of an accompanying terrier in DRO, D7573, Box A, no. 72.
- ¹⁶ BL, Add. MS 6668, ff. 113–15.
- ¹⁷ Chapman, 'Peter Nightingale', 170.
- ¹⁸ BL, Add. MS 6668, ff. 113–15.
- ¹⁹ DRO, D1575/12/1.
- ²⁰ Chapman, 'Peter Nightingale', 174.
- ²¹ S.D. Chapman, *The Early Factory Masters* (Newton Abbot: David & Charles, 1967), 67; see below, p. 000, for Chapman's misrepresentation of the quality of the Cromford water supply available to Arkwright.
- ²² G. Henson, *The Civil, Political, and Mechanical History of the Framework-Knitters, in Europe and America* (Nottingham: Richard Sutton, 1831), 369.
- ²³ Chapman, *Early Factory Masters*, 63.
- ²⁴ See p. 000.
- ²⁵ R.S. Fitton, *The Arkwrights: spinners of fortune* (Manchester: Manchester University Press, 1989), 210.
- ²⁶ Ibid.
- ²⁷ Chapman, 'Peter Nightingale', 169.
- ²⁸ F. Espinasse *Lancashire Worthies* (1874), 418.
- ²⁹ Chapman, 'Peter Nightingale', 172.
- ³⁰ Fitton, *Spinners of Fortune*, 209, quoting R. Guest, *A Compendious History of the Cotton-Manufacture; with a disproof of the claim of Sir Richard Arkwright to the invention of its ingenious machinery* (Manchester, 1823), 110–11.
- ³¹ G.S. White, *Memoirs of Samuel Slater* (1836), 102.
- ³² E. Baines, *History of the Cotton Manufacture in Great Britain* (London, 1835), 196.
- ³³ R.B. Flindall, 'Calendar of the Barmaster's Lead Mining Records' (Unpublished typescript, 1998; copy in the local studies library, DRO), 24.
- ³⁴ Chapman, 'Peter Nightingale', 172.
- ³⁵ B. Joyce, 'Rock House, Cromford' (Unpublished typescript, 2009; copy in the local studies library, DRO), 22–3.
- ³⁶ Ordnance Survey map, 1:2500, Derb. XXXIV.11 (1880 edn).
- ³⁷ Joyce, 'Rock House', 9 (not in Nicholas and Wiltshire, *Catalogue*).
- ³⁸ Chapman, 'Peter Nightingale', 181.
- ³⁹ DRO, D7573, Box S, release of rights on Cromford Common, Edwin Lascelles to William Milnes, 25 Dec. 1771.
- ⁴⁰ Buxton and Charlton, *Cromford Revisited*, front cover, pp. 48, 86.
- ⁴¹ Fitton, *Spinners of Fortune*, 39, 183, 185.
- ⁴² Ibid., 182.

- ⁴³ i.e. DRO, D1575 and D3585.
- ⁴⁴ In the Nomination Document, Buxton and Charlton, *Cromford Revisited*, and Chapman, 'Peter Nightingale'.
- ⁴⁵ Derby Local Studies Library, 'Pedigrees of families in and about Wirksworth and other places thereabouts in Derbyshire by Thomas Norris Ince' (MS; copy in county local studies library, DRO).
- ⁴⁶ Buxton and Charlton, *Cromford Revisited*, 40.
- ⁴⁷ Nomination Document, 44.
- ⁴⁸ This contract is in private hands; there is a transcript in the DRO.
- ⁴⁹ *The English Reports*, CLI (1915), 90 (Arkwright and another v. Gell and others, Exchequer of Pleas, 1839, pp. 87–100).
- ⁵⁰ Derbyshire Museum Service, *Arkwright: the Man, his Mills and the Industrial Revolution* (Exhibition catalogue, 1983; copy in DRO, D7853), item 27 (page from Guardian Royal Exchange ledger, 18 Feb. 1779).
- ⁵¹ Henson, *Framework-Knitters*, 371.
- ⁵² *Ibid.*, 370.
- ⁵³ Buxton and Charlton, *Cromford Revisited*, 84–5.
- ⁵⁴ BL, Add. MS 6694, ff. 20–40.
- ⁵⁵ Above, p. ooo.
- ⁵⁶ H. Potter and P. Riden (eds.), *Minutes of Meetings of the Cromford Canal Company 1789–1799* (Derbyshire Record Society, 39, 2015), xv, corrects the date of completion of 1794 given in earlier accounts of the canal.
- ⁵⁷ C. Hadfield, *Canals of the East Midlands (including part of London)* (Newton Abbot: David & Charles, 1966), 52; DRO, D1575/18/3.
- ⁵⁸ Hadfield, *East Midlands*, 52.
- ⁵⁹ MI, St Helen's churchyard, Darley.
- ⁶⁰ Henson, *Framework-Knitters*, 371.
- ⁶¹ Fitton, *Spinners of Fortune*, 34.
- ⁶² J. Pilkington, *A View of the Present State of Derbyshire: with an account of its most remarkable antiquities* (Derby, 1789), II, 305.
- ⁶³ Espinasse, *Lancashire Worthies*, 413.
- ⁶⁴ W. Felkin, *History of Machine-wrought Hosiery and Lace Manufactures* (London, 1867), 97.
- ⁶⁵ *Nottingham Journal*, 1 Jan. 1774.
- ⁶⁶ DRO, D1575/12/2.
- ⁶⁷ Information about the Pearson family has been assembled from various genealogical sources.
- ⁶⁸ DRO, Q/RA 1/2–3.
- ⁶⁹ DRO, D7573, Box A, Cromford rentals, c.1770.
- ⁷⁰ Nomination Document, 59.
- ⁷¹ Chapman, *Early Factory Masters*, 64.
- ⁷² *Ibid.*
- ⁷³ Fitton, *Spinners of Fortune*, 67, 80.
- ⁷⁴ Buxton and Charlton, *Cromford Revisited*, 46.
- ⁷⁵ Nomination Document, 59.
- ⁷⁶ *Oxford DNB*.
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- ⁷⁸ Buxton and Charlton, *Cromford Revisited*, 46.
- ⁷⁹ Fitton, *Spinners of Fortune*, 57, 64.
- ⁸⁰ Buxton and Charlton, *Cromford Revisited*, 84–5 (plan of Willersley estate, 1759); Sheffield Archives, TC 642.
- ⁸¹ Above, p. ooo.
- ⁸² Buxton and Charlton, *Cromford Revisited*, 84–5.

⁸³ Sheffield Archives, TC 642.

⁸⁴ Chapman, 'Peter Nightingale', 181.

⁸⁵ Buxton and Charlton, *Cromford Revisited*, 110.

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⁸⁷ Buxton and Charlton, *Cromford Revisited*, 31 (from a lease of 31 May 1775 to Jedediah Strutt of a house and garden in Scarthin Nick (in Matlock), for 80 years from Mich. then next following, in DRO, D7573).